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FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS.
H. AND F. SHARPE are now prepared to make Special Offers of their fine selected stocks of GARDEN and FIELD SEEDS of 1879 growth.
Seed Growing Establishment, Wisbech.

SALE of ORCHIDS.—Orchid Growers are invited to INSPECT the ORCHIDS of the late Mr. SERJEANT COX, previous to their removal to Stevens' Auction Rooms. For Cards to view, apply to
Captain EDWARDS, Moat Mount, Mill Hill, N.W.

To the Trade Only.

WHITE FLOWERS FOR CHRISTMAS.
HELLEBORUS NIGER.—Strong Plants, full of flower-buds, £5 per 100, for cash. Sample ten forwarded on receipt of P.O.O. for 10s.
THOMAS KITLEY, Oldfield Nursery, Bath.

Established in 1815.

Hollamby's Nurseries, Groombridge, Tunbridge Wells.
100 Acres to select from.
EDWIN HOLLAMBY'S Descriptive Priced CATALOGUE of Roses, Evergreens, and Flowering Shrubs, Conifers, Fruit and Forest Trees, &c., will be forwarded free on application.
N.B.—Through trucks to all parts: a great saving in packing.

Immense Quantities of

FOREST TREES, CONIFEROUS, ORNAMENTAL TREES and SHRUBS, ROSES and FRUIT TREES.
CATALOGUES will be sent free on application.
LEVAVASSEUR AND SON, Nurserymen, Ussy, Calvados, France.
Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, London, E.C.

Christmas Trees.

SPRUCE FIRS, very bushy, suitable for 48 and 32 size pots, 1½ to 2 feet, 35s per 1000.
W. BALL AND CO., Bedford Road Nursery, Northampton.

SPRUCE FIRS.—Many thousands, 2, 3, 4 and 5 feet. Stout, well furnished, and good rooted.
ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

SPRUCE FIRS for Christmas Trees, well formed, 3 to 4 feet, 30s. per 100; 4 to 5 feet, 40s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Laurels.

THOMAS PRESSLEY has again much pleasure in offering his stock of very strong, healthy, and well-rooted Laurels; 2½ feet, 7s. per 100; 65s. per 1000; cash with order. Trade supplied.
The Gardens, Fonthill, Tisbury, Wilts.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to
Mr. JEAN NUYTENS VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium.
London Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

To the Trade.

PEARS (Marie Louise and Beurré Diel), extra strong, fan and horizontal trained trees, 18s. per dozen; extra fine pyramids, 6 to 8 feet, 24s. per dozen.
FILBERTS, transplanted layers, 20s. per 100.
ELMS, English and Chichester, 8 to 10, and 10 to 12 feet, 60s. and 70s. per 100.
GARAWAY AND CO., Durdham Down, Clifton, Bristol.

STANDARD PEARS, to offer:—Williams' Bon Chrétien, Hessel, Beurré Capiaumont, and others.
STANDARD CHERRIES, Bigarreau and Black Heart.
MUSSEL STOCKS. Price per 1000 on application to
WILLIAM FLETCHER, Ottershaw Nursery, Chertsey, Surrey.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

FRUIT TREE STOCKS.—Strong, fit to graft—Apples, Pears, Plums, Mussel, Mahaleb, Cherry, 30s. per 1000. Very fine 3-yr. and 4-yr. (transplanted) QUICK, 14s. and 16s. per 1000.
W. JACKSON, Blakedown, Kidderminster.

CUCUMBER SEEDS, NEWTON HERO.—Saved in 1879 Good ripened Seed. Excellent Cropper, Hardy variety. 20 Seeds for thirteen stamps, or 100 for 5s.
J. GARDENER, Sutton Road Nursery, Kidderminster.

ON SALE at a reasonable offer, or EXCHANGED for Specimen CAMELLIAS or other plants, a Pair of splendid PALMS, in consequence of having outgrown their house; in robust health, 10 feet by 8. Good opportunity for any one about to furnish a large conservatory. Fine for exhibiting.
T. J. HART, Birr Castle Gardens, Parsonstown, Ireland.

FOR SALE, CUT BLOOMS of LILY of the VALLEY, ROMAN HYACINTHS, and MAIDENHAIR FERN.
WANTED, Plants of EUCHARIS AMAZONICA, CAMELLIAS of any kind, or Grafts of LADY HUME, IMBRICATA, FIMBRIATA, ALBA PLENA, CANDIDISSIMA.
J. GRIFFIN, Florist, Eastbourne Road, Birkdale, Southport.

WANTED, Four CASTLE KENNEDY FIG, and Two LEE'S PROLIFIC FIG, in extra strong Trees, dwarf-trained preferred. Send sizes and all particulars to
JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

Gold Medal Begonias.

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is now harvested from their unequalled collection, which was again awarded the Royal Horticultural Society's Medal in August. Sealed packets free by post, 1s. and 2s. 6d. each. The Trade supplied.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

Roses.

DOWNIE AND LAIRD, Royal Winter Gardens, Edinburgh, are prepared to supply the Finest Dwarf Roses in cultivation. Their own selection, 9s. per dozen. Purchaser's selection, 12s. per dozen.
CATALOGUES of the above free on application.

Bedding Roses.

CRANSTON'S CRIMSON BEDDER.—No Garden should be without a bed of this brilliant crimson and perpetual flowering bedding Rose (Hundreds of testimonials.) Strong ground plants 10s. per dozen, 75s. per 100. Other choice select Roses for bedding, 60s. to 75s. per 100.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

STOCKS for DWARF ROSES—comprising Multiflora de la Grifferaie, Manetti, and Brier—about 10,000 in all, many of them disbudded, price 18s. per 1000.
J. J. MARRIOTT, Highfield Nurseries, Matlock, Derbyshire.

LILIES, Superior, of English growth. BULBOUS PLANTS of all kinds.
HARDY ORCHIDS, and ORCHIDS for Cool-house culture.
Before Purchasing, see CATALOGUE of the NEW PLANT AND BULB CO., Colchester. Post-free on application.
Dr. Wallace's "Notes on Lilies," Illustrated, post-free 5s. 6d.

SPIRÆA PALMATA.—The largest and best stock in Europe, 10s. 6d., 15s., 20s., and 25s. per 100.
SPIRÆA JAPONICA, for forcing, the finest possible clumps.
CHARLES NOBLE, Sunningdale.

SPIRÆA PALMATA.—This beautiful pink variety, with immense flower bunches, justly called "The Queen of Spiræas," is offered at 20s. per 100, strong clumps.
Wholesale CATALOGUES free on application.
BUDDENBORG BROTHERS, Bulb Growers, House, Bloemswaard, Hillegom, near Haarlem, Holland.

To the Trade.

NUTTING AND SONS have now posted their Annual Wholesale Garden, Agricultural and Flower Seed CATALOGUE to all their friends; if not to hand, on application another shall be immediately forwarded.
NUTTING AND SONS, Seed Merchants, 60, Barbican, London, E.C.

WILLIAM BARRON AND SON'S New CATALOGUE of FOREST TREES, ROSES, FRUIT TREES, and RHODODENDRONS, also STOVE and GREENHOUSE PLANTS, is now ready, and will be sent, post-free, on application.
Elvaston Nurseries, Borrowash, near Derby.

CHARLES NOBLE has a very cheap and good Stock to offer of the following:—
APPLES, PEARS, and CHERRIES, Standards.
PEARS on Quince, Dwarf.
ROSES, Dwarf, including Moss Perpetuals.
CONIFERS and RHODODENDRONS of all sizes.
An unsurpassable lot of Standard RHODODENDRONS.
Post address—Sunningdale, Staines.

SEAKALE, ASPARAGUS, and RHUBARB Roots, for Forcing, exceedingly fine. Special quotations. Apply to
H. THORNTON, 1, Maxwell Road, Fulham, S.W.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SEED POTATOS.—We have a fine Stock of all the principal Old and New Varieties.
Special Price List on application.
KERR AND FOTHERINGHAM, Seed Merchants, Dumfries.

To the Trade.

SEED POTATOS.
H. AND F. SHARPE'S LIST of SEED POTATOS is now ready, and will be forwarded on application. It comprises all the best varieties in cultivation, including their latest novelty, "Pride of Ontario."
Seed Growing Establishment, Wisbech.

MAGNUM BONUM POTATOS, for disposal, true stock, about two tons, in one lot preferred. Cash price on application to
DAVISON AND CO., White Cross Nurseries, Hereford.

Rhubarb and Seakale Forcing.

STRONG, well-made POTS for the above can be supplied by
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List Free.

ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.
ALFRED GRANT AND CO., Steam Works, 39½, Leather Lane, London, E.C.

SALES BY AUCTION.

Auction Mart, Tokenhouse Yard, E.C.
MONDAY NEXT.

IMPORTANT SALE of a splendid consignment of 7000 LILIUM AURATUM just arrived from Japan, in fine condition; also a quantity of LILIUMS and other roots from California, a consignment of rare PLANTS from Florida; fine clumps of DISA GRANDIFLORA, FREESIAS, and other BULBS, from the Cape; a fine assortment of English-grown LILIES, including very large bulbs of Brownii, giganteum, and pardalinum; HARDY BULBS, CHRISTMAS ROSES, and a few lots of choice established ORCHIDS.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, on MONDAY NEXT, at half-past 11 o'Clock precisely.

On view morning of Sale. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Roses, Shrubs, and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, January 7, at half-past 12 o'Clock precisely, 1000 choice named STANDARD, and 500 HALF-STANDARD ROSES, from a well known English Nursery; HARDY and ORNAMENTAL TREES and SHRUBS, from Surrey; FRUIT TREES, 5000 LILY of the VALLEY, and DUTCH BULBS, including HYACINTHS, TULIPS, CROCUSES, &c.

May be viewed the morning of Sale, and Catalogues had.

Highly Important Sale of Extensive Importations of ORCHIDS.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 8, at half-past 12 o'Clock precisely, a magnificent importation of the grand and rare LÆLIA ANCEPS DAWSONI; the masses and pieces are in splendid health and full breaks and leaves. The plants having been brought home in Wardian cases, are in a condition which could not possibly be improved, and having arrived some five weeks since, they are all perfectly safe. At the same time will be offered a magnificent new ODONTOGLOSSUM, dedicated by Professor Reichenbach to its discoverer, Mr. F. C. Lehmann—ODONTOGLOSSUM LEHMANNI, Rchb.; grand masses of LÆLIA ANCEPS, finest var.; a splendid Importation of the beautiful large-flowering TRICHOPILIA FRAGRANS, and the splendid red-spotted MORMODES PARDINUM, ODONTOGLOSSUM EDWARDI, the quite new ONCIDIUM XANTOCENTRUM, Rchb., which will be shortly described in the *Gardeners' Chronicle*; a large lot of ONCIDIUM MACRANTHUM and MESOSPINIDIUM VULCANICUM, MAXILLARIA GRANDIFLORA, a new ANGULOA and STANHOPEA, PAPHINIA SANDERIANA, NANODES MEDUSÆ; together with an Importation of the very rare CHYSIS AUREA and ODONTOGLOSSUM RAMOSISSIMUM; also a new yellow flowering MAXILLARIA, flowers and drawings of which will be shown.

May be viewed the morning of Sale, and Catalogues had.

10,000 Splendid Bulbs of Lilium auratum,
just arrived from Japan.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, January 9, at half-past 12 o'Clock precisely, 10,000 extra fine bulbs of LILIUM AURATUM, just arrived from Japan in the best possible condition, and comprising some of the finest bulbs ever imported, in Lots to suit the Trade and Private Buyers; 5000 TIGRIDIA GRANDIFLORA, 1000 T. CONCHIFLORA, and 5000 fine GLADIOLI, from New Jersey; 6000 crowns of LILY of the VALLEY, from Germany; 2000 LILIUM KRAMERI, some fine roots of a blue-flowered WATER LILY, MONTBRETIA, HYACINTHUS CANDICANS, BRUNSVIGIA JOSEPHINA, &c, from the Cape; LILIUM PURPUREUM, COLUMBIANUM, WASHINGTONIANUM, PARVUM, ERYTHRONIUM PURPUREUM (new), and others, from California; and a great variety of HYACINTHS, TULIPS, CROCUSES, NARCISSUS, IRIS, and other BULBS from Holland.

May be viewed the morning of Sale, and Catalogues had.

Florist's, Gardener's, and Fruiterer's,
Situate within two miles of Covent Garden,

TO BE DISPOSED OF, Proprietor having another occupation.—To Gardeners or others wishing to commence business this is an opportunity, seldom offered. Capital about £160, or by arrangement.

Particulars forwarded by addressing A. B. Z., *Gardeners' Chronicle* Office, W.C.

Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS' HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained gratis at 98, Gracechurch Street, E.C.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

MERTON ABBEY NURSERY, S.W.—Mr. W. L. MAITLAND having now NOTHING TO DO with the WORKING or MANAGEMENT of the above, it is requested that all Communications be addressed to
Mr. CHARLES EDEN, Merton Abbey Nursery, S.W.

ASPARAGUS.—Strong, for forcing. Seven years old. For price, apply to
CHARLES EDEN, Merton Abbey Nursery, S.W.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.

Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge.

LILIUM AURATUM.—Splendid Bulbs of this fine Lily at Reduced Prices, 6*d.*, 9*d.*, 1*s.* and 1*s.* 6*d.* each. For other new Lilies, rare and cheap Orchids, apply for CATALOGUE to
WM. GORDON, Bulb and Plant Importer, 10, Cullum Street, London, E.C.
Liberal discount to the Trade.

Kent, the Garden of England.

COB NUTS, fine Kentish; Kentish PLUMS, CHERRIES, PEARS, DAMSONS and APPLES; specimen MULBERRIES, large AUCUBAS, large LIMES, YUCCAS, and the finest general stock of FRUIT TREES in the Kingdom, some 200,000 to choose from.

General Descriptive FRUIT LIST on application. The Trade supplied
THOS. BUNYARD AND SONS, Old Nurseries, Maidstone.

New Potato.
PRIDE of ONTARIO.

H. AND F. SHARPE have succeeded in securing a very fine Stock of the above-named POTATO, which has given so much satisfaction wherever it has been sent this season, in not only resisting the disease, but producing an excellent yield.

Price to the trade on application.
Seed Growing Establishment, Wisbech.

A. M. C. JONGKINDT CONINCK, Dedemsvaart, near Zwolle, Netherlands, has much pleasure in offering the following choice hardy perennials and alpines. Prices on application:—

ARENARIA CÆSPITOSA. — A dwarf compact growing alpine, not exceeding 2 inches in height. Almost during the whole summer it is covered with numerous small white flowers. This little gem is sure to become a great favourite when more generally known.

GNAPHALIUM LEONTOPODIUM (EDELWEISS). — Plants grown in pots sure to bloom next summer. So much admired by tourists in the Alps, so highly spoken of by the horticultural press, that it needs no further description.

JUNCUS EFFUSUS FOL. AUREO STRIATIS. — The golden-striped Rush. A very interesting plant.

JUNCUS EFFUSUS SPIRALIS.—Each leaf imitates a corkscrew.

PHLOX SETACEA.—In early spring this charming plant, not exceeding 2 inches in height, produces a profusion of rose-coloured flowers.

SELAGINELLA HELVETICA. — A native of the Swiss Alps. The only reason why this plant is so seldom met with seems to be its perfect hardiness, it not being less pretty than indoor Selaginellas.

SEEDLING COLORADO CONIFERS, NURSERY GROWN.

PICEA PUNGENS, (Abies Menziesii Parryana, or "Blue Spruce"), strong 2-yr. old plants, £6 per 1000, £50 per 10,000.
PICEA ENGELMANNI, 2-yr. old plants, £6 per 1000.
PSEUDOTSUGA DOUGLASII, very strong 2-yr. old plants, £6 per 1000, £50 per 10,000.
ABIES CONCOLOR, very strong 2-yr. old plants, £10 per 1000.
PINUS PONDEROSA, very strong 2-yr. old plants, £30 per 10,000.

Sample packages of the above, warranted to reach their destination in good condition, will be sent by mail, post paid, to any address on receipt of an International Money Order for the amount.

100 Picea pungens, 15*s.*
100 Picea Engelmanni, 15*s.*
25 Abies concolor, 8*s.*
25 Pseudotsuga Douglasii, 6*s.*
25 Pinus ponderosa, 4*s.*

Also 10 plants of the new CATALPA SPECIOSA for 2*s.*
R. DOUGLAS AND SONS, Waukegan, Illinois, U.S.A.

To the Trade and Large Buyers.

ISAAC MATTHEWS AND SON'S
Special offer:—

200,000 ASH, Mountain, 3 to 4 and 4 to 5 feet.
100,000 ,, Common, 3 to 4 feet.
50,000 ALDER, 3 to 4 and 4 to 5 feet.
150,000 FIR, Scotch, 15 to 18 inches and 1½ to 2 feet.
50,000 ,, Spruce, 1½ to 2 feet and 2 to 2½ feet.
50,000 PRIVET, Evergreen, 2 to 3 feet.
50,000 WILLOWS, Osier, 3 to 4 feet.
20,000 RHODODENDRON, splendidum, white.
20,000 ,, Jacksoni.
50,000 ,, Ponticum, 1½ to 2 feet and 2 to 2½ feet.
50,000 ,, Hybrid Ponticum, seedlings, 1½ to 2 feet.
20,000 ,, named varieties, 2 feet.
50,000 YEWS, English, 1½ to 2 feet.

For prices and particulars apply to
The Nurseries, Milton, Stoke-on-Trent.

New Rose Trees.
New Sorts obtained by

MARGOTTIN PÈRE (Prize of Honour Exhibition of 1878, Paris).—22, Grande Rue, Bourg-la-Reine (Seine), France.

Hybrides Remontantes.
GLOIRE de BOURG-LA-REINE.
HENRIETTE PETIT.

Very vigorous plants; large flowers, most beautiful red-scarlet colouring, surpassing in brilliancy all sorts in existence. Price £1 per plant. Shipments upon orders.

TREES for AVENUE, PARK, or STREET PLANTING.

ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
,, Horse, 14 to 16 feet, girting 8 to 10 inches.
,, Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
,, Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.

They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.

The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

THE NURSERIES, DUMFRIES.
(Established 1787.)

Our stock, which is one of the largest in Scotland, comprises FOREST, FRUIT, and ORNAMENTAL TREES, DECIDUOUS and EVERGREEN SHRUBS, ROSES, GREENHOUSE PLANTS, &c.; also a very large and splendid stock of THORN QUICKS, for hedging and for filling up gaps.

The Trees and Shrubs are of all ages and sizes, and are well adapted for extensive planting, or giving immediate effect in the formation and improving of Ornamental Parks, Pleasure Grounds, &c. Prices on application. Special offers to the Trade.

THOMAS KENNEDY AND CO., Seed and Nursery Establishment, Dumfries.

CHOICE SEEDS.—Carriage free.

CUCUMBER, Rollisson's Telegraph, warranted true, 2*s.* 6*d.* per packet.
BEGONIAS, Gower's Superb Tuberous, saved from the best English and Continental Varieties, 1*s.* 6*d.* per packet.
PRIMULAS, White and Red, very choice, saved from all the best strains, 1*s.* 6*d.* and 2*s.* 6*d.* per packet.
CYCLAMEN PERSICUM, extra choice, 1*s.* 6*d.* and 2*s.* 6*d.* per packet.

WM. HUGH GOWER (late Manager to Wm. Rollisson & Son), Nurseryman and Seedsman, Tooting, London.

Dickson, Brown & Tait's Eclipse Cauliflower.
See advertisement, *Gardeners' Chronicle*, Nov. 22, 1879, p. 646.

DICKSON, BROWN AND TAIT, SEED MERCHANTS, Manchester, have pleasure in intimating that the following Firms have received a supply of the above new Cauliflower.

Trade price on application.

Austin & McAslan, Glasgow.
Backhouse & Son, York.
Brotherton, W., Leeds.
Cattell, John, Westerham.
Connon & Reid, Aberdeen.
Cooling, George, Bath.
Cooper, Robert, London.
Dickson, F. & A., & Sons, Chester.
Dickson & Co., Edinburgh.
Dickson & Turnbull, Perth.
Dixon, E. P., Hull.
Downie & Laird, Edinburgh.
Edmondson Bros., Dublin.
Finney, S., & Co., Newcastle-on-Tyne.
Fisher, Son & Sibray, Sheffield.
Fraser, John, Lea Bridge.
Fraser & Murley, Exeter.
Garaway, Jas., & Co., Bristol.
Hogg & Wood, Coldstream.
Howden & Co., Inverness.
Hurst & Son, London.
Ireland & Thomson, Edinburgh.
Jackson T., & Son, Kingston-on-Thames.
Kent & Brydon, Darlington.
Ker, R. P., & Son, Liverpool.
Lee, Chas., & Son, Hammersmith.
Little & Ballantyne, Carlisle.
Nairn, S., & Son, Newcastle-on-Tyne.
Nutting & Sons, London.
Shaw, Hiram, Sheffield.
Smith & Simons, Glasgow.
Stuart, Mein & Allan, Kelso.
Sutton & Sons, Reading.
Veitch, Jas., & Sons, Chelsea.
Williams, B. S., Holloway.
Wood & Ingram, Huntingdon.
Wrench, Jacob, & Son, London
Wright, W., Retford.
Yates, James, Stockport.
Yates, Samuel, Manchester.

Special Offer of Hardy Conifers.

MORRISON BROTHERS, Aberdeen, having a large stock of the above, will be glad to send, carriage paid to any address, 6 1-yr. transplanted Plants of each of the following fine sorts for £4 10*s.*, or 12 of each for £8.

ABIES Douglasii
,, Douglasii glauca
,, Englemanni
,, Hookeriana
,, Menziesii
,, Mertensiana
,, orientalis
,, Schrenkiana
CEDRUS atlantica
,, Deodara
,, Libani
CRYPTOMERIA elegans
CUPRESSUS Lawsoniana
,, ,, erecta viridis
,, ,, lutea
,, macrocapa
PICEA bifolia
,, concolor violacea
,, magnifica
,, nobilis
,, Nordmanniana
PINUS aristata
,, Benthamiana
,, Bolanderii
,, Cembra
PINUS contorta
,, Coulterii
,, deflexa
,, flexilis
,, insignis
,, Jeffreyii
,, Lambertiana
,, monticola
,, muricata
,, parviflora
,, ponderosa
,, tuberculata
RETINOSPORA filifera
,, obtusa
,, pisifera
,, plumosa aurea
,, squarosa
THUJA gigantea
,, Lobbii
,, orientalis
,, Vervæniana
THUJOPSIS dolabrata
,, lætevirens
,, Standishii
WELLINGTONIA gigantea

Being able to offer most of the above varieties by the 1000, will be glad to make special offers to large buyers.

Also a large stock of Seedling and Transplanted FOREST TREES.

Priced CATALOGUES may be had on application.
Forbesfield Nurseries, Aberdeen.

Special Trade Offer.

W. BALL AND CO., Bedford Road Nursery, Northampton, have a very large stock of the undermentioned to offer to the Trade and large Buyers, in fine condition:—

APPLES, good Standards, best market varieties, our selection, 55*s.* to 65*s.* per 100.
PEARS, good Standards, best market varieties, our selection, 65*s.* to 70*s.* per 100.
PLUMS, good Standards, best market varieties, our selection, 65*s.* to 70*s.* per 100.
APRICOTS, Dwarf-trained Moorpark, 20*s.* to 24*s.* per dozen.
CURRANTS, Black, 3-yr., very strong, 12*s.* per 100.
LIMES, Standards, fine, 5 to 6 feet, 6 to 7 feet stems, 80*s.* to 100*s.* per 100.
CHESTNUTS, Common, 6 to 7 feet stems, fine heads, 75*s.* per 100.
ELMS, Standard Italian, 6 to 7 feet stems, fine heads, 90*s.* to [100*s.* per 100.
ASH, Common, 2 to 3 feet, 23*s.* per 1000.
BEECH, Common, strong, 5 to 7 feet, 25*s.* per 100.
HORNBEAM, strong, 3 to 5 feet, 25*s.* per 1000.
QUICK, very strong, 3-yr., 15*s.* per 1000.
BLACKTHORN, very strong, 3-yr., 15*s.* per 1000.
HOLLY, Green common, fine, 3 to 4 feet, 50*s.* to 60*s.* per 100.
LAUREL, Portugal, very fine, bushy, 3 to 3½ feet, 60*s.* to 70*s.* per 100.
YEWS, Common, fine Pyramids, 3 to 4 feet, and 4 to 5 feet, 90*s.* to 100*s.* per 100.
,, well rooted, 3 to 4 feet, 60*s.* to 70*s.* per 100.
ROSES, fine Standards, 4 feet stems, large heads, our selection, 70*s.* to 75*s.* per 100.

NEW SEED CATALOGUE.

Spring, 1880.

Now ready, price 1s., post-free, or gratis to Customers,

THE ILLUSTRATED GUIDE

FOR

AMATEUR GARDENERS,

ENLARGED and IMPROVED EDITION,

With copious and Original Articles on

THE CULTIVATION of GARDEN CROPS,
THE DECORATION of the FLOWER GARDEN,
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With One Hundred Pages of beautifully printed Letterpress, handsomely Illustrated with two magnificent Coloured Plates, and nearly 200 fine Wood Engravings. This is the most beautiful and comprehensive Seed Catalogue yet published, and *should* be in the hands of all interested in Horticulture.

DANIELS BROS.,
THE ROYAL NORFOLK SEED ESTABLISHMENT,
NORWICH.

WILLIAM FLETCHER, Ottershaw Nurseries, Chertsey, will be glad to quote prices to the Trade, as named :—
BIRCH, 2 to 3 feet, 3 to 5 feet, and 5 to 8 feet.
HAZEL, 2 to 3½ feet.
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ALDER, 2 to 3 feet, 3 to 5 feet.
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W. BALL AND CO. have many thousands of WINTER and SPRING BEDDING PLANTS; also a large quantity of HERBACEOUS and ALPINE PLANTS, at very low Prices to the Trade and large Buyers. Price LISTS forwarded on application.
Bedford Road Nursery, Northampton.

Gros Guillaume Grape.—Roberts' Variety.

W. TAIT AND CO. are offering strong well-grown CANES of this wonderful variety at 5s., 7s. 6d., and 10s. 6d. each, grown from eyes taken from the parent Vine. Orders from strangers should be accompanied with remittance.
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May be had Gratis on application.

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SUTTON'S RESISTING POTATOS DISEASE FOR PLANTING.

SPECIAL RATES FOR LARGE QUANTITIES.

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Mr. R. PHILLETT, *Weston-super-Mare, writes us* :—"The Magnum Bonum Potatos you supplied me with this year produced a most extraordinary crop, amounting to an average rate of 210 sacks per acre, of 240 lb. per sack, and there was not a single diseased one among them."

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THE QUEEN'S SEEDSMEN, READING.

Vines—Vines—Vines.

WM. CUTBUSH AND SON have a very fine stock of the above, both of Fruiting and Planting Canes, of most of the leading sorts. Prices and sorts on application.
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THOMAS METHVEN & SONS

Beg to intimate that their Descriptive Priced CATALOGUE of KITCHEN GARDEN and FLOWER SEEDS, IMPLEMENTS, FRENCH HYBRID GLADIOLI, &c., for 1880, is now ready, and may be had, post-free, on application.

EAST LOTHIAN INTERMEDIATE STOCK (true), White, Purple, Scarlet, and White Wall-leaved. In packets, 1s., 2s. 6d., and 5s. each colour.

NEW CRIMSON EAST LOTHIAN INTERMEDIATE STOCK. A splendid Novelty. In packets, 1s., 2s. 6d., and 5s. each.

GODETIA WHITNEYI RUBRA. An improvement on G. LADY ALBEMARLE. Per packet, 1s. 6d.

MELON, CAPTAIN BURNABY. Raised from seed sent home from Khiva. Received First-class Certificate from Royal Caledonian Horticultural Society in October last. Per packet, 2s. 6d.

For Descriptions see Catalogue.

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AND NURSERY GATE, LEITH WALK, EDINBURGH.

VEGETABLE AND FLOWER SEEDS.

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Have pleasure in intimating that their

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LIST of NOVELTIES, 1879-80.

CHARLES SHARPE & CO.,
SEED GROWERS AND SEED MERCHANTS,
SLEAFORD.

SHARPE'S INVINCIBLE
NEW LONG-PODDED BLUE MARROW PEA.

The Invincible is about 3 feet in height, of a robust branching habit. The pods are produced in pairs, and occasionally three together, from near the ground to the top of the stem—the rows having the appearance of being clothed with pods from top to bottom. The pods are closely packed with from 10 to 12 large Peas, which, when cooked, are of exquisite flavour, and of a beautiful deep green colour.

As a main-crop Pea, either for the Gentleman's Garden or the Market Gardener, CHARLES SHARPE & Co. have no hesitation in saying that the Invincible Pea will be found superior to anything yet sent out.

The Editor of the *Gardeners' Chronicle*, in his review of New Vegetables in the spring of 1878, mentions Sharpe's Invincible as one of the three Peas of the season worthy of notice.

Price, per Quart, 3s. 6d.
Half-pint Packets, free by post, 1s. 6d.

TOMATO, NISBET'S VICTORIA.

This is a seedling from Vick's "Criterion," and for cultivating under glass or in the open air there is no Tomato can approach it for fruitfulness. The plant requires no stopping, as it keeps growing and fruiting in the greatest abundance. The fruit is pyriform and grows in bunches, each bunch containing from eight to twenty fruit, which are the size and colour of a Victoria Plum; it contains but few seeds, and for flavour is unsurpassed.

"The original plant is growing under glass at Aswarby, covering a space 15 feet by 6 feet, and at the present time is carrying a crop of 600 bunches of fruit, as many more having been gathered from it during the summer.—RICHARD NISBET, *Gardener, Aswarby Park, August 30, 1879.*"

Price 2s. 6d. per Packet.

RAUCEBY HALL MELON.

This splendid New Green-fleshed Melon was raised by Mr. Brown, the Gardener at Rauceby Hall, and has been exhibited many times—in every case gaining a First Prize. It is hardy, a fine setter, and a very heavy cropper. The fruit is very beautifully netted, the flesh juicy, sweet, and melting, and of a very rich flavour. Altogether it is a variety of unquestionable superiority, and worthy of a place in every garden. List of Testimonials on application.

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This fine New Melon was raised by Mr. Nisbet, at Aswarby Park, and is a cross between the Victory of Bath and Colston Bassett Seedling, and is certainly one of the Best Melons yet introduced. It is deeply ribbed, finely netted, and when ripening off it changes to a beautiful soft golden colour, thin skinned, great depth in flesh, which is of a rich transparent white; flavour exquisite. Strongly recommended.

Price, 2s. 6d. per Packet.

SHARPE'S "CONQUEROR" LONGPOD BEAN.—The longest and best of all Longpods. Price 1s. 6d. per Pint.

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(GNAPHALIUM LEONTOPODIUM, Jacq.)
(LEONTOPODIUM ALPINUM, Cass.)

This lovely little alpine, with woolly silvery-white bracteal-leaves, is yet little known in our gardens, though the culture is very easy. Sown early in spring in a flat pot, filled with sandy peat mixed with some good loam and kept moist, it will grow in about a fortnight; replanted and put in a cool frame they will be fit for planting out-of-doors in about six weeks. Any good garden soil, not too stiff, will be sufficient, and a good place freely exposed to the sun will suit them. In the winter a thin cover of leaves will be of use.

Price per Packet, 2s. 6d.

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These three varieties of Florists' Flowers are the finest ever offered, having been carefully selected for years and grown specially for us.

CHARLES SHARPE AND CO., Seed Merchants, Sleaford, beg to intimate that their Descriptive CATALOGUE, with Cultural Instructions, for 1880, is now ready. Post-free on application. The Cultural Instructions have been revised by Mr. WILLIAM INGRAM, The Gardens, Belvoir Castle.

HOME-GROWN SEEDS CARRIAGE FREE.

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FIFTY ACRES of FRUIT TREES.—Apples, Pears, Plums, Cherries, Peaches, Nectarines, Apricots, and other Fruit Trees, as Standards, Dwarfs, Pyramids, Bushes, Cordon and Trained Trees, in great variety, all full of vigour and warranted true to name. Descriptive Price List, containing a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their Synonyms, Quality, Size, Form, Skin, Colour, Flesh, Flavour, Use, Growth, Duration, Season, Price, &c., for a penny stamp.

TWELVE ACRES of ROSES.—Standard, Dwarf, and Climbing, all the popular sorts; also 80,000 choice Tea-scented and Noisette Roses in pots; extra strong Roses in pots for immediate forcing. See Descriptive Price List, free for a penny stamp.

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LIST of all the EVERGREEN FIR TRIBE, suitable for Britain, giving size, price, popular and botanical names, derivations, description, form, colour, foliage, growth, timber, use in arts, native country, and size there, situation, soil, and other information, with copious index of their synonyms. Free by post for six stamps.

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W. G. CALDWELL AND SONS, The Nurseries, Knutsford, are now offering the above, in strong, short-jointed, and well-ripened CANES, suitable for Fruiting or Planting.
Price on application. The Trade supplied.

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Respectfully invite inspection of their immense stock of hardily grown EVERGREEN and DECIDUOUS TREES and SHRUBS, FOREST TREES, ROSES, &c.
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The Largest Rose Gardens in England

CRANSTON'S NURSERIES,
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CULTURAL DIRECTIONS for the ROSE.
By John Cranston.
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KING'S ACRE, HEREFORD.

SCOTCH CHAMPION POTATOS,

And all other Leading Sorts.

THE Subscribers offer several hundred tons of fine samples of the above for seed. The Champions have this year been almost proof against disease. Victorias, Improved Regent's, Snowflake, and Myatt's Kidneys in quantity, all fine samples, especially grown for seed.

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Nurseries, Two Hundred and Fifty Acres.

FOREST TREES, many millions, all kinds and sizes.
QUICKS, 3,000,000, strong, transplanted, and smaller.
EVERGREENS, a grand lot, covering about 50 acres.
ROSES, 200,000 splendid plants.
FRUIT TREES, remarkably well grown and healthy trees.
CAMELLIAS, AZALEAS, HEATHS, and all other Greenhouse plants.
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VINES, 2000 thoroughly ripened Canes.
HERBACEOUS and ALPINE PLANTS, including rare and beautiful kinds.
SEEDS, BULBS, and every requisite for Estate, Garden and Farm.

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NURSERYMEN, SEEDSMEN and FLORISTS,
HANDSWORTH, SHEFFIELD.
Nurseries:—Handsworth.
Seed Warehouses:—Corner of Market Street, Sheffield, and Church Street, Rotherham.

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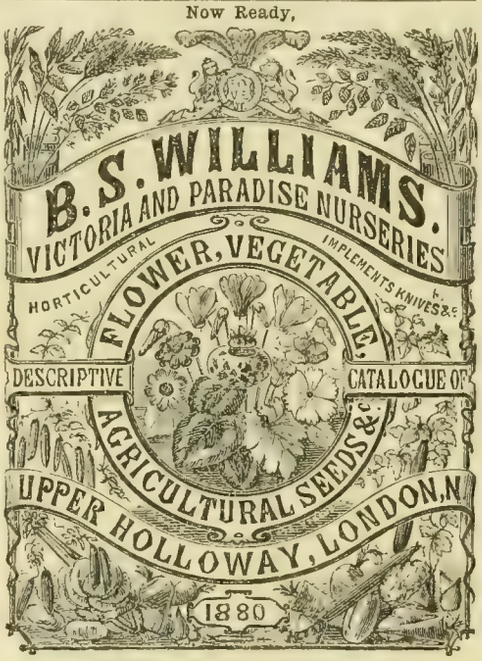

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R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.
All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
CATALOGUES free by post on application.

Frisby's Excelsior Beet.

For Testimonials see *Gard. Chron.*, Nov. 15 and 22, 1879.

E. P. DIXON begs to state that he has purchased the entire stock of Mr. Frisby's new BEET, named Frisby's Excelsior, and has the pleasure to announce that it is acknowledged by a number of practical growers who have tested it to be the best and most distinct variety of Beet in cultivation. Price, per packet, 1*s.* 6*d.*

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Hogg & Wood, Coldstream.
Holmes, E., Lichfield.
Lawson Seed and Nursery Company, Edinburgh.
Low, Hugh, & Co., Clapton.
Little & Ballantyne, Carlisle.
Lee, C., & Son, Hammersmith.
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KING'S ACRE, HEREFORD.
TO THE TRADE.
ROSES, LAURUSTINUS, LAURELS, all uninjured by frost.
Extra fine CHERRIES, CURRANTS, GOOSEBERRIES, PEARS, PLUMS, CONIFERÆ, &c.
LIST of sorts with present Prices on application to
CRANSTON'S NURSERY and SEED COMPANY, Limited.

EVERY ONE WHO HAS A GARDEN
SHOULD SEND FOR
KING'S PRICED LIST of CHOICE HOME-GROWN FLOWER and VEGETABLE SEEDS. CATALOGUES gratis and post-free, on application. Established 1793.
JOHN K. KING,
COGGESHALL, ESSEX,
Seed Grower to Her Majesty the Queen and His Royal Highness the Prince of Wales.

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JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.
Bardney Manor, Lincoln.

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The Finest Collection of Dahlias in the World.

H. CANNELL wishes to announce that his stock of POT ROOTS consists of not less than 10,000, and are in fine condition. Price from 6*s.* to 18*s.* per dozen.
H. C.'s Selection in 100 distinct first-class kinds for £2.
PARAGON and other choice Single varieties.
Price LIST on application.

Fuchsia Stock Plants.

H. CANNELL has several thousand old Stock Plants full of cuttings, 18*s.* to 36*s.* per doz. Nothing could be better for working up a large quantity of plants for Market or Exhibition.
Cuttings, 12 for 1*s.* 6*d.*; 50 for 5*s.*; 100 for 9*s.*
H. C.'s Selection post free.

Calceolarias, Cinerarias, and Cyclamens.

H. CANNELL has now a fine lot of the above, in small pots, just ready for shifting.
The two former, 3*s.* per doz., 20*s.* per 100. CYCLAMEN, 5*s.* per doz., 30*s.* per 100, package included.

Strawberries—Wholesale and Retail.

H. CANNELL begs to announce that he has now 200,000 prepared very strong Runners of all the best Kentish varieties in cultivation, and if planted at once will produce fruit this year. Every one warranted true to name. LIST (also those in pots) post-free. Special prices for large quantities.

IT has long been known that my TOBACCO FUMIGATING MATERIAL, both by the quantity sold and the perfection to which I grow my plants, must be by far the best. 1*s.* 8*d.* per pound; 5 lb., 7*s.* 6*d.*; 28 lb., £1 10*s.*
No apparatus required. H. C.'s secret, and every particular of his art of exterminating the fly for a long time, sent with every parcel.
J. J. SMITH, Esq., Willow Lodge, Mudeford, Christchurch, Hants, December 22, 1879:—
"I will thank you to send me 6 lb. of your Tobacco Cloth, for it is the best which I have ever used and the least trouble."

H. CANNELL,
THE HOME FOR FLOWERS,
SWANLEY, KENT.

LÆLIA ANCEPS DAWSONI.

MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, January 8, at half-past 12 o'Clock precisely,

A MAGNIFICENT IMPORTATION of the grand and rare LÆLIA ANCEPS DAWSONI.

The masses and pieces are in splendid health, and full of breaks and leaves. The Plants having been brought home in Wardian Cases are in a condition which could not possibly be improved, and having arrived some five weeks since they are all perfectly safe.

At the same time will be offered a magnificent NEW ODONTOGLOSSUM dedicated by Prof. Reichenbach to its discoverer, Mr. F. C. Lehmann—ODONTOGLOSSUM LEHMANNI, Reich.; grand masses of LÆLIA ANCEPS (finest variety), a splendid importation of the beautiful large flowering TRICHOPILIA FRAGRANS, and the splendid red-spotted MORMODES PARDINUM, ODONTOGLOSSUM EDWARDI, the quite new ONCIDIUM XANTOCENTRUM, Reich, which will be shortly described in the *Gardeners' Chronicle;* a large lot of ONCIDIUM MACRANTHUM and MESOSPINIDIUM VULCANICUM, MAXILLARIA GRANDIFLORA, a new ANGULOA and STANHOPEA, PAPHINIA SANDERIANA, NANODES MEDUSÆ; together with an importation of the very rare CHYSIS AUREA and ODONTOGLOSSUM RAMOSISSIMUM, also a new yellow-flowering MAXILLARIA, flowers and drawings of which will be shown.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

SEND FOR A PRICE LIST OF

BLAKE'S SELF-ACTING HYDRAULIC RAMS,

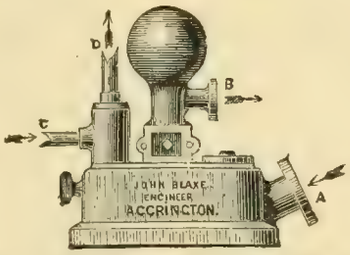
For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions, Fountains, Farms.

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

No Oiling or Packing Required.

Made in sizes to raise from 300 to 100,000 Gallons per day.

Parties requiring a Water Supply should not too readily conclude that the quantity and fall of water, if any is available, is too small to work a Ram before consulting J. B.



BLAKE'S SPECIAL RAMS,

FOR DEEP-WORKING FALLS,

Will force up One Third of the Water passing through them.

Fig. B.—This Ram will raise a part of the same water that works it, or will raise pure water from a well or spring whilst worked by a stream of impure water, and will force to a height of 1500 feet.

TESTIMONIALS.

From JOHN TAYLOR, Esq., *The Rocks, Bath, August* 22, 1878.—"The Self-acting Hydraulic Ram you fixed here in March of last year continues to work well. It has only the same quantity of water and fall to work it as the water-wheel and pump which I used previously to force a height of 294 feet, and yet the Ram sends up more than double the quantity of water that the wheel did to the same height."

From W. SCARTH, Esq., *Agent to* His Grace the Duke of Cleveland.—"Raby Castle, Darlington, July 16, 1878.—The Hydraulic Ram you supplied to his Grace the Duke of Cleveland in 1875 is a complete success. It worked for more than two years without once stopping, and throws more water than promised."

From Major STARKIE, *Lovely Hall, Blackburn, May* 13, 1878.—"Sir,—I have great pleasure in testifying to the good qualities possessed by the Ram you erected here last year. It has done its work well, and not failed as the other Ram did, which was of a different construction, and supplied by a different firm. I consider that there are great difficulties to contend with here, but your practical mechanical knowledge, both as to the construction of the Ram and its situation here, overcame most of the difficulties that we had to contend against."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December* 21, 1868.—"Sir,—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force-pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

From the Right Hon. T. SOTHERON-ESTCOURT, *Estcourt Park, Gloucestershire, September* 6, 1875.—"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful." (The delivery pipe in the above case is 4200 feet long, with a 100 feet rise.)

From Captain TOWNSHEND, *Wineham, February* 10, 1877.—"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe, 900 yards long, at the rate of 80,000 gallons per day, although you only promised 50,000."

Deanewater, Wilmslow, November 20, 1873.—"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house about 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required—namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—Yours, &c., L. HANMER."

From Mr. THOMAS MASON, *Alkincoates Hall, Colne, September* 30, 1871.—"Sir,—Your Self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours, to a height of 194 feet."

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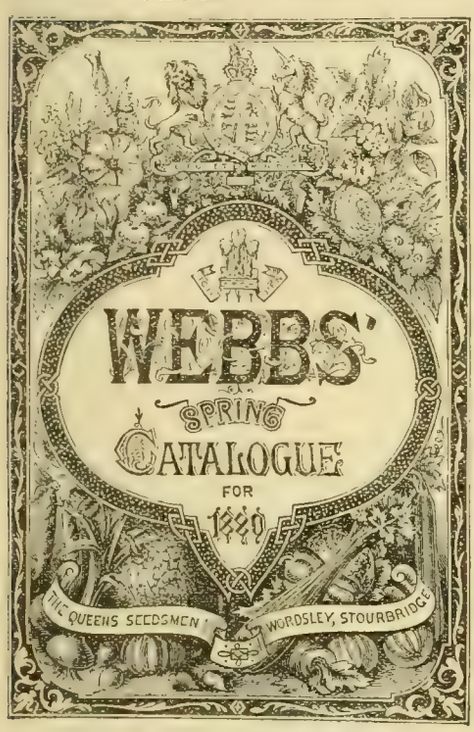

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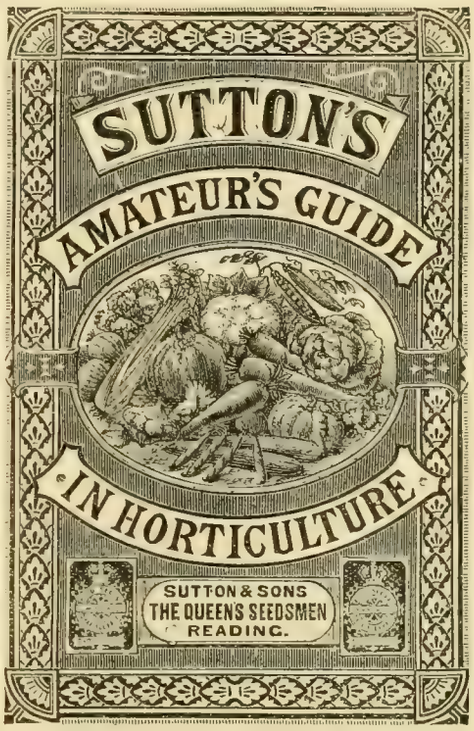

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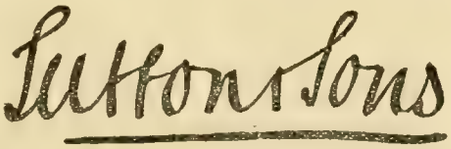

The Queen's Seedsmen,
READING, BERKS.

THE
Gardeners' Chronicle.
SATURDAY, JANUARY 3, 1880.

THE NEW PLANTS OF 1879.

AMONGST the many introductions of the year just closed there have been none of such extraordinary splendour as to throw a ray of brilliancy upon the sombre hue of a season, the records of which, so far as gardens and gardening are concerned, must be written down as dreary and disappointing. Yet, though we cannot point to any star of the first magnitude as having risen above the floral horizon, we have a galaxy of lesser luminaries, each of which we may assume will throw its own particular ray of beauty across the path of those who, in the future, lovingly watch over it, while some of these minor meteors, though not so dazzling as others which have formerly appeared, may serve to throw a gleam of brightness over the garden, or the greenhouse, in the coming season. Let us then proceed to advert to some of the most remarkable of the novelties of 1879.

HARDY TREES AND SHRUBS.

The list is brief, but not unimportant, since it may include the valuable Japanese evergreen coniferous trees which have been recently illustrated in these pages, although it is true that some of them have been in cultivation under other names for some time. Abies brachyphylla (xii., p. 557, figs. 91, 92), homolepis (xii., p. 823, fig. 136), Mariesii (xii., p. 789, fig. 129), and sachalinensis (xii., p. 589, fig. 97), all of which may be expected to prove fine additions to the group of Silver Firs, heretofore called Piceas in this country—a name which it seems the law of priority, to say nothing of a mistake on the part of Linnæus—what a consolation for his successors!—will prevent them from retaining. So far as can be at present judged they are meritorious introductions, which we shall estimate the more highly when they get up—that is, become more fully developed, and show more of their natural form and character.

As an ornamental flowering tree the Æsculus rubicunda Briotii, raised by M. Briot, of Versailles, is highly spoken of for its attractive inflorescence, the blossoms being of a bright violet-tinted red, with an orange-red blotch on the upper division of the flower.

Amongst hardy shrubs, the Hibiscus syriacus var. cœlestis is perhaps the most striking—not absolutely new, but so little known that its novelty has not yet worn off; the flowers, of a soft celestial blue, with crimson eye, are indeed so charming that the shrub ought to be planted in every shrubbery. The variety, which bears the somewhat ungainly name of H. syriacus totus albus (*Gardeners' Chronicle*, x., 525, fig. 91), is also a good introduction, the flowers being pure white, and produced with exceptional freeness. Both are of Continental origin. The Japanese Rosa rugosa, syn. R. Regeliana (*Gardeners' Chronicle*, x., 565, fig. 98), is also not absolutely novel, but is only now beginning to be known; its fine flowers, bold rugose foliage,

and handsome fruits, together with its thoroughly distinct aspect, give it a claim to a very prominent position in every garden. Two fine single white Lilacs, of garden origin, have been made known—Syringa vulgaris alba grandiflora, a very fine pure white, far superior to the older whites, and S. Mdlle. Marie Legraye, a splendid form, with white flowers fully an inch across, named by Professor Morren after the raiser, a *fleuriste* of Liége. The Weigela candida of the French gardens is another valuable white-flowered hardy shrub, vigorous in habit and very prolific of blossoms, and, like the Lilacs, an invaluable plant for forcing purposes. The Yucca gloriosa elegans variegata, which is, we believe, extremely rare, is a remarkably handsome plant, and has appeared at one of the metropolitan exhibitions during the past summer. It is said to be very slow or difficult of increase, but from its fine appearance it deserves to be widely grown.

HARDY PERENNIALS.

The most striking plant of this group—in point of genuine botanical interest perhaps the plant of the year—is the Conandron ramondioides (*Gardeners' Chronicle*, xii., 232), a native of the higher mountains of Japan, with the habit of Ramondia pyrenaica, a dwarf herbaceous plant, with a small glabrous tuber, a solitary or almost solitary ovate-oblong, rugose, coarsely serrated leaf, and a forked cyme on a leafless scape of pinkish flowers, with a subglobose, whitish tube, internally spotted with yellow; its botanical interest consists in its being a regular-flowered, five-stamened Gesnera; its horticultural interest in its probable hardiness, which, however, has not yet, we believe, been completely tested. Two other pretty tuberous-rooted plants are the Corydalis Kolpakowskiana and C. Ledebouriana, both dwarf plants with purplish flowers, the latter having broader, less divided, glaucous leaves. A very pretty Spiræa, S. nivosa, from Japan, with bipinnate leaves made up of obovate cuspidate serrate leaflets, and showy panicles of abundant white flowers, promises to be a useful border plant, and will perhaps be eligible for indoor work also. Dracocephalum Ruyschiana japonicum (*Gardeners' Chronicle*, xii., 167, fig. 29), a Japanese labiate, is a showy subject, with bright blue flowers in dense spike-like heads. Erigeron aurantiacus, from Eastern Turkestan, has orange-coloured flowers with numerous narrow ligulate flowers, in five or six series resembling the blossoms of the orange Mesembryanthemum, and showy if sufficiently numerous. In Iris Eulefeldi, collected by Dr. A. Regel on the mountains of Thian-Schan, we have a pretty dwarf-habited species, with short glaucous ensiform leaves, and pale violet bearded outer petals, marked with coppery veins, and contrasting strongly with the erect inner petals, of a coppery-bronze hue. In Iris iberica insignis (*Gardeners' Chronicle*, xi., 693, fig. 100) we gain a much improved form of that fine species, which was selected from a batch of imported roots. A fine Campanula, grown in the French gardens under the name of C. Van Houttei, is in the way of C. nobilis, and has the large drooping blossoms of an indigo-blue. Strongly contrasting with this is the Androsace Laggeri, a pretty little rock plant of the Primulaceous order, growing in tufts, the short stems having linear oval-shaped leaves, and looking not unlike those of a Polystichum, while the heads of little pink flowers are very abundant. The dwarf rosy-tinted Primula rosea, from Kashmir, is another gem belonging to the same group, as is the purple-flowered P. cashmiriana from the same region.

HARDY BULBS.

Amongst the novelties in this group we find a gem of the first water, Chionodoxa Luciliæ, one of the most charming of spring decorative subjects, humble in its habit, but perfectly dazzling in the brilliant blue of its starry blossoms, which rival if they do not excel those of the Scilla sibirica, being larger in size and at the same time fully equal to them in intensity of colouring. Novel in character but several grades lower in merit than the foregoing, though still a pretty plant and worth a place in every bulb garden, is the Gladiolus Lemoinei, a hybrid in which the blood of the mother, G. purpureo-auratus, is strongly marked; the creamy flowers are flushed with salmony-red, and handsomely blotched with maroon-crimson and orange; quite different from those in the ordinary Gladioli, and quite hardy, having stood in the open ground uninjured for the past two or three winters. There are two new American Lilies of the affinity of L. canadense, with pendent bell-shaped flowers: L. maritimum, with deep orange-brown flowers spotted with dark purple; and L. lucidum, with translucent light orange-yellow flowers and dark purple spots inside. Sundry new Tulips have been obtained from Central Asia, of which none are perhaps so striking as the spotted-leaved T. Greigi, introduced a year or two ago, but some are very interesting, as T. Schrenkii, which resembles T. Gesneriana, the parent of our garden Tulips, but is smaller and more funnel-shaped, the colour crimson with a yellow base; T. Kesselringi, which has the same relationship, and is also small-flowered by comparison, the outer segments being yellow streaked outside with purple, the inner whitish towards the tips; and T. Kolpakowskiana, also a pretty species, already affording sundry varieties of colour. To these may be added a rather good-looking Fritillary, namely, F. Burnatti, which belongs to the same set as our native F. meleagris, and is much like it in marking, only the colours are richer, being a deep lurid brownish-red closely tesselated with white, especially on the inside, the outer surface having a glaucous bloom.

HARDY ANNUALS.

The Chorispora Greigi, found by Dr. A. Regel in Thian-Schan, in Central Asia, is a very pretty but simple-looking cruciferous annual (or biennial) with pinnatifid leaves and erect racemes of purplish flowers somewhat like those of a Virginian Stock, the seed-pods of which are prettily torulose; it may possibly become a rival to the popular annual just alluded to if it proves equally amenable to cultivation. In the Californian Erythræa venusta we have a charming little plant of 8 to 10 inches high, with the dichotomous branching of the genus, and showy star-shaped rosy-scarlet flowers. Nemesia cynanchifolia (*Gardeners' Chronicle*, xii., 136, fig. 22) is a showy Scrophulariad from Natal, growing some 1½ or 2 feet high, with close terminal clusters of rich lilac-blue flowers. The additions here are few, but they are all interesting plants in their particular group. *T. Moore.*

(*To be continued.*)

New Garden Plants.

CŒLOGYNE BARBATA, *Grif.*

Tandem aliquando! How long have we had to sigh for this beauty, growing on Anglo-Indian ground and lurking in our herbaria for more than a quarter of a century, having been discovered by one of the very best and keenest of English botanists, Dr. William Griffith. There they lie, two mighty inflorescences, the one with a peduncle more than 2 feet long, strong, rigid, with eight stiff imbricate brown scales under the inflorescence, thus showing the plant to belong to Dr. Lindley's section, Imbricatæ. The inflorescence bears ten flowers, which might be compared to those of Cœlogyne elata (though they are much larger), if it were not for the glorious labellum which is trifid with projecting triangular acute middle lacinia, three rows of narrow lamellæ on the disk, and a border of ciliæ. These lamellæ, those ciliæ, and the top are altogether of a sepia-brown verging to black, which gives an exceedingly neat contrast to the beautiful white colour of the other parts of the flowers. The upper part of the column is hooded, and there is a toothletted membrane around the anther. The stigmatic hollow is transverse under the very broad projecting rostellum.

To the credit of the collections of Burford Lodge, and High Cross, Tottenham, it may be said that the internodes between the flowers are shorter than in the wild specimens, and not one of the fourteen wild specimens has so many flowers as the glorious Burfordian raceme. Perhaps in consequence of this the individual flowers are smaller than in Mr. Day's splendid but few-flowered inflorescences. I have a letter of Thomas Lobb himself (kindly presented by Messrs. Veitch), who says, "flowers must shrink in drying, as is always the case with Orchids." Now those shrunken flowers are larger than those of my fresh many-flowered peduncles. I must also state that the zigzag bends of the inflorescence are much less apparent in the garden plant than in the wild one.

A good orchidist should have a microscope (of course a compound one) to increase his enjoyment and to astonish his profane guests in the drawing-room before dinner. This plant offers much interest in the ciliæ and lamellæ as seen under the microscope, as they have numerous projecting conical teeth, making a wonderful appearance; all those organs belonging to De Bary's "Zotten" (see his invaluable *Vergleichende Anatomie:* Leipsig, 1877). Then the tela conductrix of the stigmatic hollow is unrivalled in the multitude of shapes assumed by the cells. Unger mentioned as an inexhaustible store of various kinds of cells the fruit of Elæagnus (even mentioning the forms of biscuit cell, and the bagpipe cell !), we may cite the biscuit cells and numerous other kinds in our Cœlogyne, though, I am sorry to say, there are no bagpipe cells. Dr. Lindley gave a very good description of the plant in his *Folia*, which is very Lindleyan in saying all that was wanted in as few words as possible. His censure of Dr. Griffith's figure is a little hard, though not quite undeserved. We must bear in mind that the faults—and faults there are—are decidedly not due to our lamented hero, but to Mr. McLelland and his would-be lithographers.

My specimens come from Bootan, Griffith! Khasia Hills, Lobb! Dr. Hooker and Dr. Thomson! Mann! A memorandum from this excellent friend states that it flowers in November, at the height of 3000 to 4000 feet! I must also state that I have some specimens (once the property of the Horticultural Society), signed "Malacca, Griffith." This appears to be a great mistake.

Dr. Lindley calls the bulbs "sub-ampullaceis" (see *Folia*). This is quite true for my single specimen of Hooker-Thomsonian origin; but my other specimens have a different shape of bulb, which are almost sessile at the base, hence conical, and not swelling out in the middle.

I was told by my English acquaintances that the specimens require a continuous and abundant supply of water while growing. I have to express my warmest thanks for these glorious inflorescences to Sir Trevor Lawrence, for the first, and to Mr. John Day, for the second. What a pity the beauty did not flower in Dr. Lindley's days, who called it "perhaps the finest of this fine genus." I believe the introduction is due to Mr. W. Bull, for whom it was collected by Mr. Freeman. *H. G. Rchb. f.*

ABIES LASIOCARPA.

FOR the photograph of the beautiful specimen engraved at fig. 1, p. 9, we are indebted to Allesley Boughton Leigh, Esq., of Brownsover Hall, Rugby. The height of the tree is 13 feet; the girth of the stem, at 3 feet from the ground, 17 inches. Its weeping habit renders it unusually elegant. The small spray sent to us was very like one of A. grandis, but the leaves were paler, on which account we think it not unlikely that the plant is really a form of A concolor. Balfour's lasiocarpa is generally admitted to be the same as grandis; while, according to Dr. Engelmann, the lasiocarpa of the nurseries is a young state of A. concolor which has not as yet produced cones. A. concolor on the same authority includes as synonyms Lowiana (Gordon), Parsonsiana (hort. Barron), and amabilis. A. concolor has, as its name implies, no, or but slight, difference in colour between the upper and the lower surface of the leaf, while all the forms of grandis have the upper surface of the leaf of a darker green than the lower. British Columbia and Northern California are given as the localities of both these species.

BARB FENCES. — The *American Agriculturist* gives figures of various wire fences, with formidable barbs at intervals, so that the fence has all the impenetrability of a quickset hedge without the loss of time in growth, and the numerous evils connected with hedges.

COTTAGE GARDENS.

ONE day during one of my autumnal rambles I was walking along a pleasant road in Derbyshire, making towards Darley Dale and the lovely rock gardens of Sir Joseph Whitworth, at Stancliff, where Art has been summoned to the aid of Nature, and disused stone quarries have been transformed as by the magician's wand into things of beauty, which I trust may continue "joys for ever."

During the greater part of my walk I saw nothing of much interest except the natural beauties of the surrounding scenery. They, however, were ample for my delight, and I wandered on, well content to be in the midst of so much that was lovely. I had nearly reached the limits of my walk when I came upon a small, decently-kept cottage, apparently occupied by some gentleman's servant (I afterwards found it was a coachman's cottage), with a small garden in front and on one side, which was absolutely perfect as an instance of good cultivation. The cottage had windows on both sides of the door, and a small narrow plot before each running from the cottage to the road, from which it was separated by a low fence of rustic palings of split Larch with the bark on.

The total area of this plot was small, and though not an inch of it was unoccupied, there was no over-crowding. The brightness of the flowers lit up the front of that cottage to such a degree that no one with eyes could pass it without having his attention arrested, and the more it was examined the more there was found to admire.

The cottage itself was covered with a Gloire de Dijon Rose, two kinds of Clematis, and a Japanese Honeysuckle, except at the extreme limits at both ends, where a small-leaved digitate Ivy, trained closely to the wall, acted as the sides of a green-frame to the other plants. The garden at the side of the cottage was filled with excellent vegetables; not a bit of it but was bearing a useful crop. There was no sign of untidyness or neglect anywhere; the whole bore testimony to industry, well-directed labour, and never-ceasing love for the gentlest of human pursuits.

A few years passed by ere I was in that neighbourhood again. I made a journey to my pet cottage on the first opportunity; but, alas! what a different sight awaited me! The bright flowers were all gone; the neat brightly furnished garden had lost all its distinctiveness; the climbers on the house were either dead or dying; the vegetable garden was mostly occupied by weeds; all was as miserable and forlorn as could be. The former tenant of the cottage was gone elsewhere, and had been followed in the occupation by an idle fellow on whom the lesson of that sweetly pretty garden was thrown away, and a spot of brightness and beauty was transformed into one of ugliness, disorder, and neglect. I left the spot saddened, and felt that the world was all the poorer for the loss of what was once so comely and beautiful.

Another of my autumn holidays was passed in Dorsetshire. I started one morning for a walk from Weymouth to Maiden Castle, and thence to Dor-

FIG. 1.—ABIES LASIOCARPA (? CONCOLOR) AT BROWNSOVER HALL. (SEE P. 8.)

chester. During my ramble I passed through a village which has ever since lived in my memory as an especially bright spot. The cottages were mostly low in height and grey in colour; the roofs were uniformly made of thatch, and however different in appearance, were all more or less picturesque. Vines were trained over the cottage fronts, or on the gables when they chanced to have the sunniest aspect. Every cottage had its garden, and all were bright with flowers, while in many, besides the vegetables, which were everywhere in plenty, there were heavily laden fruit trees, Apples, Pears, and Plums, adding to the value and beauty of the gardens. I have never had the chance since of ascertaining as a fact the reason for the uniform excellence and universality of gardening in that village; but doubtless it was due to the all-pervading influence of some good and wise man or woman, who by example and precept had set the villagers on a path of a useful and refining tendency. Not improbably the Vicar of the parish was the cause; for I have usually found that wherever a village is famed for its gardens, the parish priest is also a gardener, and fosters the pursuit among all within the range of his influence.

A striking instance of a clergyman's power to make his parishioners good gardeners is afforded by a parish in Staffordshire, not far from the borough boundaries of a large town in an adjoining county. The villagers are a mixed community as to occupation, some being farm labourers, others workers in the mills and forges near at hand, or skilled artisans of one kind or other. Before the advent of the present Vicar the village was just like hundreds of others similarly situated. Being mainly built on land belonging to a neighbouring nobleman, the cottages were good and substantial; some of them picturesque and pretty; all having gardens, which were generally cultivated in the manner usually prevailing. Somewhere about Good Friday signs of activity were seen in them. The rows of Kidney-Bean sticks remaining from the last year were then removed; spades were once more brought into use, and the soil, which had remained untouched from the previous spring, was dug, seeds sown, Potatos dibbled in, and Cabbage-plants placed in the rows. Here and there a few flowers were to be seen. It was, as will be inferred, an ordinary common-place village. All is now changed, as it has been for years past. The present Vicar, while unremitting in the performance of his duties as a parson, as they are usually understood, is a living influence in many other ways, but in none more marked and visible than as the chief gardener of the district. He is himself a most skilful cultivator; he has made all his humble parishioners scarcely less so. He commenced quietly, but none the less effectually. He instituted social gatherings of his people long before the days of penny readings. He chatted with them on a variety of topics, and amongst others on the subject of gardening. Having awakened an interest, he fanned it by judicious presents of seeds, cuttings, plants, &c.; now and then a Rose tree, a few flower-roots, or some tubers of a good sort of Potato. Before long some one suggested the holding of a village show of vegetables; this the next year grew in proportion, and included fruit and flowers. For a time it was limited to the cottagers, but as years rolled on the neighbouring gentry sent in plants to add to the interest of the show, and now there is a flourishing and admirable horticultural society, distributing annually a goodly sum in prizes. And what tale do the village gardens tell? Why there is now to be seen, in this once commonplace village, as fine a lot of well-tilled gardens as can be seen anywhere. Roses abound in them; fruit trees are to be seen in every plot, and the houses are covered with beauty-giving climbers. Truly the Vicar has been an influence for good, and his cottagers are living instances of his beneficent reign. May it long continue, and may his example be followed in every parish in the kingdom!

Now for a contrasting picture. I pass from the centre of England far northwards. I am in one of the lovely dales of the Lake country. I shall never forget my delight when I first saw it. It is out of the line along which the bulk of summer tourists usually travel. It is surrounded on all sides by magnificent mountain scenery. Down its centre runs a merry beck. Not far from it is a glorious lake. I was out of health when I went there, and had lodgings, which a friend in the neighbourhood had taken for me, in a quaint old-fashioned dalesman's farm, where I found myself surrounded by conditions altogether unlike those of my ordinary life. I look back on my quiet leisurely life there with regret, and often wish myself back among the lovely scenery of that quiet dale. My first visitor was the "fell-side priest," as the parson is called. A fine specimen of a robust, vigorous-minded man, I found him. Chatting on one subject or another, I asked him, "What about gardening?" "Oh," he replied, "the farmers don't do much that way; they are too busy with the sheep, or in the fields." I soon found this to be so. With the exception of the parson's garden there was not even an approach to a decent garden in the whole dale. The pieces of ground called gardens, attached to the houses, I found to be the worst cultivated plots in the holdings. A few badly grown Cabbages, of a degree of badness new to my experience; a few herbs, occasionally a row or two of indifferent Peas, and fairly good Potatos, were all I saw. And yet the climate was good; the soil not by any means bad. I inquired, "Could not these men be induced to pay more attention to their gardens?" "No," was the never-failing reply. I suggested that an attempt should be made. "It's no use," said my clerical friend.

But I maintained, in many a talk that followed, if he would but take the lead, and set the example, a great change might be effected. The parson, however, was not to be moved; and when I came away from that pleasant spot I felt as I have never failed to do ever since—that if the Staffordshire clergyman of whom I have spoken had been living in that dale, his influence would soon have been felt, and the charms of pleasant, profitable gardens would have been added to the many natural charms of that lovely spot. *E. W.*

PLANT PORTRAITS.

ORYTHIA OXYPETALA, Kunth, *Gartenflora*, t. 987, f. 2.—A yellow-flowered Tulip, the outer surface of the outer perianth segments being green. The stalk bears two green glabrous leaves. It only differs from Tulipa in the presence of a style. Native of the mountains of the Southern Altai, whence it has been introduced by Mr. Alfred Regel.

PAPAYA GRACILIS, Regel, *Gartenflora*, t. 986.—A slender unbranched tree, 4—6 feet high, with 3—5 partite leaves, whose lobes are again divided; flowers funnel-shaped in terminal cymes. New Granada. Introduced by M. Linden.

PEAR CHARLES ERNEST, *Revue Horticole*, Nov. 1.—Highly spoken of as a very fruitful new Pear; fruit large, pyriform, turbinate, oblique at the base, peduncle short, stout; eye shallow; skin sulphur-yellow, spotted with fawn-coloured spots, and blotched with crimson on the sunny side; flesh white, melting, flavour delicate. November—December. Raised by MM. Baltet, of Troyes.

SAXIFRAGA GERANIOIDES, L., *Gartenflora*, t. 989.—A Pyrenean species, with the habit of S. granulata.

TILLANDSIA TRICOLOR, Schlecht. and Cham., *Belg. Hort.*, 1879, t. xxi.—Bromeliaceæ. A handsome Mexican species, with tufted habit, narrow arching leaves, which on the flowering-stem become rose-coloured; spike compound, flattened; bracts green; flowers purplish, white at the tips.

TEMPERATURE AND VEGETATION.

DR. STAUB, of Buda-Pesth, has been following up the observations of De Candolle and others on the influence of "sums of temperature" on the leafing and flowering of various trees. We are indebted to the *Botanische Zeitung* for the following particulars, which are of special interest in relation to forcing. Dr. Staub's deductions, we may mention, were made from a large number of observations in various parts of Hungary. One of the most striking results obtained was the exceeding susceptibility of plants in relation to the changeableness of climatal factors, especially of temperature. This peculiarity becomes even more prominent on a closer examination of the observations of several years at the various stations. Comparing, for example, on the one hand, the monthly mean of the temperature of one year's observations with the monthly mean of several years' observations, and on the other hand, the deviations in the commencement of the flowering period in the months for single years with the general mean of the flowering period (as may also be determined by the observations of several years), we recognise the following phenomena. The flowering period is only hastened when the mean temperature for the month in question is 3°.5 Fahr. higher than the mean of several years; a smaller augmentation of the temperature does not affect vegetation. An exception to this law occurs when the temperature of the preceding month or months is above the average mean; for in such a case vegetation is under the influence of the secondary effects of temperature. The smallest fall in the average mean temperature of the month entails a corresponding retardation of the flowering period, and the retardation is all the greater the more the temperature of the preceding months has been below the average mean. Should the mean temperature of the preceding months be higher than the average, the lower temperature of the one month is unable to hinder the development of vegetation. Some other peculiarities observed by Dr. Staub, or those who have co-operated with him, are interesting. Thus the large-leaved Lime, according to ten or more years' observation in several places, always flowers some days before the small-leaved. In one place it is a week later, and in another upwards of a fortnight. Dr. Weszelowsky has noted that Colchicum autumnale has flowered twice every year at Arva-Váralja ever since 1874. The white-flowered varieties of Syringa vulgaris and Nerium Oleander always come into blossom under the same conditions at Buda-Pesth, earlier than the typical red-flowered varieties. From a geographical standpoint the thermal constants certainly offer a useful basis. Dr. Staub had observed the flowering of 128 plants for five years, and recorded the daily mean temperature from January 1 to the day the first flower opened of its species, and from these sums he calculated the mean for five years. As an example, we give the dates of flowering and the sums of heat, in degrees Centigrade, for the Horse Chestnut:—

	First Flowers Opened.	Heat Required.
1871 ..	April 26 ..	514°.31 C.
1872 ..	,, 15 ..	432°.70 C.
1873 ..	,, 9 ..	460°.80 C.
1874 ..	,, 24 ..	514°.20 C.
1875 ..	May 9 ..	470°.20 C.
Mean ..	April 27 Mean ..	506° C.

Comparing, for woody plants, Dr. Staub states, the calculated sums of heat of each year, with the commencement of the flowering period, we involuntarily come to the conclusion that the expansion of their flowers is bound up with the season—that is to say, woody plants in their struggle with the climatal factors strive to keep within the limits of a certain flowering season to which they have become accustomed during generations. In relation to this there is a characteristic mean temperature for a certain period, say from the beginning of the month in question preceding the appearance of the flowers. Thus, according to five years' observation at Buda Pesth, it amounts to +11°.5 C. for the Horse Chestnut, with a mean error of ±1°.836 C.

The accompanying table includes five examples for the period named:—

	Average date of flowering or coming into flower.	After using an average amount of heat of—	With a mean daily temperature of—	The average error being—
Æsculus hippocastanum ..	April 27	479°.70 C.	11°.5 C.	± 1°.836 C.
Convallaria majalis	April 25	506°.00 C.	11°.6 C.	± 1°.430 C.
Ligustrum vulgare	June 6	1135°.00 C.	19°.0 C.	± 3°.820 C.
Prunus spinosa ..	April 11	339°.80 C.	9°.9 C.	± 2°.168 C.
Vitis vinifera ..	June 6	1120°.20 C.	19°.9 C.	± 2°.741 C.

THE NEW ZEALAND FLAX.*

THE acclimatisation of foreign plants in this country is a subject of so much general interest, whether as regards their economic value or as ornamental additions to our gardens, that I have put together the following notes on the result of a late attempt to introduce the Phormium tenax, or New Zealand Flax Lily, into the Orkney Islands, which islands, from their high latitude—59° north—enjoy comparatively

* "On the Growth of the New Zealand Flax Plant (Phormium tenax) in the Orkney Islands." A paper read by Dr. W. Traill, at the December (1879) meeting of the Botanical Society of Edinburgh.

little heat in summer, though their winters are remarkably mild, there being little snow and frost, which is perhaps partly attributable to their insular position, but is chiefly caused by the action of the Gulf Stream, which makes its presence felt, not only by raising the temperature of the sea 7° above that of the air in the months of December and January, but by frequently casting up seeds of tropical plants on the shores of the different islands. During the severe gales of wind that often occur, there is usually a good deal of salt in the atmosphere, hence the extreme difficulty of growing trees or even shrubs, although there are a few exceptional plants that do not seem to be much affected by this, such as different kinds of evergreen shrubby Veronicas, and a few other plants, such as the New Zealand Manuka or Captain Cook's Tea-plant (Leptospermum scoparium), the Pernettya mucronata, and the Japan Euonymus, &c., which, favoured by the mildness of the winters, thrive remarkably well, and to all appearance the New Zealand Flax Lily is likely to prove as well adapted to the climate of Orkney as any of them.

About eight years ago or rather more I got some of the seeds from a friend in New Zealand, which I raised in a hotbed in St. Andrews, and during the same season I planted out several of them in the open air in my garden at North Ronaldshay, Orkney, where they have remained ever since with no protection beyond the proximity of a low wall, some having a southern exposure and others an eastern aspect. These plants seem in no way affected by the winter except that the tips of their leaves become somewhat frayed and ragged, but in the course of the following summer they soon recover their beauty, and they have gradually increased in size until the leaves on some plants now measure from 5 to 6 feet, and in others from 6 to 7 feet long.

I had also distributed duplicate plants among friends in the neighbourhood, in whose gardens they appear quite healthy. It was not until the first week of June this year that my plants showed any signs of flowering, but I then observed that (of the three largest plants) two were throwing out each two flower-shoots; the third and largest plant, however, produced no fewer than five flower-stalks, enveloped by long sheathing leaves that closely embraced the stems, which were at this time from 4 to 5 feet high; the upper part, which evidently contained the future flower, being inflated, and tapering to a point at the apex, not unlike the head of a spear. They increased in length at the rate of about an inch a day; the swollen mass of spathes separating, successively unfolding, revealing numerous bunches of flower-buds, until when the stem reached the length of 8 to 9 feet, there were twelve or fourteen distinct clusters of flower-buds of a purplish-brown colour, disposed alternately on each side of the stem. The spathes at this stage added much to the effect, their interior being of a deep orange colour. Our weather had been rather dry for some time, which seemed to retard the opening of the buds; but after a heavy shower of rain on August 1 the buds rapidly increased in size, and in three or four days the first flowers opened; they were tubular in shape, 1½ or 2 inches in length, of a deep red colour, with projecting orange stamens. The odour of the flowers was powerful, like that of Russia leather. It seemed to be very attractive to bees, moths, and other insects. Each main stem bore at least 300 flowers. Altogether it is a most magnificent example of the Lily family, and the general appearance of the plant is highly suggestive of tropical vegetation. It is well known that the fibre of the leaves possesses extraordinary tenacity, though, from its containing a large quantity of silica in its composition, the economic value of the plant has hitherto fallen short of what was at first expected. For the manufacture of ropes and cordage, however, I should think it most valuable. The leaf, even in its natural state, is so strong and pliable, that I have seen strips of it torn off and used as boot-laces, and it s evident that the flower-stalks partake of the same tough character as the leaves, as they were not at all damaged by the equinoctial gales of last September, though they were not tied to sticks or otherwise secured from injury. I may add that the flowers, after lasting for some two months, were succeeded by numerous seed capsules containing apparently well ripened seeds. I understand that two other plants from the same batch of seeds have also flowered this season; one at Strathkinness, here, and another at Professor Swan's residence on the west coast. It is curious that they should all flower in the eighth year of their age, but whether the phenomenon is attributable to that entirely, or to any peculiarity in the past season, time alone can determine.

MR. FORTUNE'S INTRODUCTIONS.

I HAVE the pleasure to enclose to you a list of the trees, shrubs, and herbaceous plants discovered and introduced by me during my travels in China and Japan. They are described as follows, namely, 1st, Chinese plants discovered and introduced by me while in the service of the Horticultural Society of London from 1843 to 1846; 2d, Chinese plants discovered and introduced by me on my own account; and 3d, Japanese plants discovered and introduced by me, also on my own account. Most of these have proved perfectly hardy in the climate of England, and I hope will long continue to adorn our gardens and pleasure-grounds.

May I hope the list will prove interesting to the readers of the *Gardeners' Chronicle*. There may be some omissions, as it is somewhat difficult to get a complete list after so many years. The names are those under which the plants were originally introduced:—

CHINESE PLANTS DISCOVERED BY ROBERT FORTUNE WHILE IN THE SERVICE OF THE HORTICULTURAL SOCIETY OF LONDON, FROM 1843 TO 1846.

Trees.

Abies Kæmpferi
Cephalotaxus Fortunei (male and female)
Chamærops Fortunei
Cryptomeria japonica

Shrubs.

Abelia rupestris
Akebia quinata
Azalea obtusa
,, ovata
,, squamata and other spring variegated kinds
Berberis Fortunei
Daphne Fortunei
Edgeworthia chrysantha
Fingered Citron
Forsythia viridissima
Gardenia florida Fortunei
Glycine sinensis alba
Indigofera decora
Jasminum nudiflorum
Kumquat (Citrus japonica)
Mandarin Orange
Prunus sinensis fl.-pl. albo
Rose (fine coloured)
,, Anemone-flowered
,, yellow (Fortune's)
Rhynchospermum jasminoides
Spathoglottis Fortunei
Shanghae Peach
Spiræa prunifolia flore-pleno
Viburnum macrocephalum
,, plicatum
Weigela rosea

Herbaceous Plants.

Adamia versicolor
Anemone japonica
Arundina sinensis
Calistegia pubescens
Chirita sinensis
Chrysanthemum (Chusan Daisy)
Dielytra spectabilis
Platycodon grandiflorum
,, ,, album
Pæonia (a large number)
Lycopodium cæsium
,, Wildenovii
Shantung Cabbage
Statice Fortunei

CHINESE PLANTS DISCOVERED AND INTRODUCED BY ROBERT FORTUNE.

Trees.

Abies jezoensis
Cupressus funebris
Peach (double red) and others
,, Carnation flowered
Pinus Bungeana
Olea fraxinus, a fine copper-coloured flowered kind
Quercus sinensis
Torreya grandis

Shrubs.

Abelia uniflora
Bambusa Fortunei variegata
Berberis Bealei
,, consanguinea
,, japonica
,, trifurca
Camellia Cup of Beauty
,, Prince Frederick William
Camellia reticulata fl.-pl.
Clematis lanuginosa
Ilex cornuta
Lonicera fragrantissima
Prunus triloba
Rose Fortunei
Skimmia japonica
Spiræa callosa

Herbaceous Plants.

Campanula nobilis
Farfugium grande
Ferns (many species)
Moutan Pæony (thirty vars.)
,, stock for grafting

JAPANESE PLANTS DISCOVERED AND INTRODUCED BY ROBERT FORTUNE.

Trees.

Acers (many species)
Corylopsis parviflora
,, spicata
Cryptomeria sp. nov.
Elæagnus variegata
Sciadopitys verticillata
Ligustrum japonicum aureo-variegatum
Osmanthus Aquifolium
Osmanthus variegatum
,, ,, nanum
Pittosporum variegatum
Retinospora aurea
,, obtusa
,, pisifera
Thujopsis dolabrata variegata
,, Standishii

Shrubs.

Aralia variegata
Aucuba japonica (male)
,, ,, vera
,, ,, limbata
,, ,, narrow-leaved and others
Clematis Fortunei
,, John Gould Veitch
,, Standishii
Daphne variegata
Deutzia crenata fl.-pl.
Eurya sp.
,, japonica variegata
Euonymus of sorts (many very beautiful)
Kerria japonica variegata
Lonicera aureo-reticulata
Podocarpus (many kinds beautifully variegated
Prunus japonica
Raphiolepis ovata
Skimmia japonica (vera)
,, nova, and some others
Thea viridis variegata
Vedo Vine

Herbaceous Plants and Bulbs.

Chrysanthemums of sorts (the Japanese kinds)
Convallaria variegata
Lastrea Standishii
Lilium auratum and others
Lychnis Senno and variegata
Rhododendron Metternichii
Rhaphis flabelliformis variegata
Saxifraga Fortunei
Spiræa palmata
Tricyrtis sp. [hirta]

Robert Fortune.

NEW FRUITS AND VEGETABLES OF 1879.

A VEIL might well be drawn over the past year in respect of new fruits, for never have we had to record such a disastrous season for fruit crops in general as that of 1879. The cold wet spring played sad havoc with the fruit blossoms, and prevented their setting, and the continued cold, wet, sunless summer, extending to the very end of the season, entirely destroyed the true character and quality of the outdoor fruit crop in this country. No open-air grown fruit of any kind, it may be safely stated, reached its average quality or character during the past season. It would, therefore, be manifestly unfair to gauge the merits or demerits of new introductions by the experience of such a season. Better by far would it be to blot it out, and wait for brighter prospects to come.

The inclement character of the season was very fitly illustrated by some of our commonest and hardiest of fruits. The Hessel Pear, for example—one of the very hardiest sorts grown—although a full crop in almost every part of the country, never attained much more than half its natural size, and was almost uneatable. Louise Bonne of Jersey, usually one of the most reliable, was one of the very worst.

Messrs. Ewing bring forward the Norwich Prolific Nut as a new and distinct variety. It bears a close resemblance to the Atlas Nut, and wants careful comparison with that variety.

Coming to fruits grown under glass—although these were to some extent protected from the immediate climatal influences, they suffered from the absence of solar heat, resulting in a loss of flavour, the most noticeable new variety that came before us being a very handsome black Grape, from Mr. Allen, of Gunton Hall. This is a cross between Syrian and Alicante, and promises to become a useful variety. New Melons form a triplet—one of the finest, a large green-skinned sort, resembling the old Egyptian green-flesh, being named after that good old gardener, William Tillery. We hope it may prove a worthy memento of a worthy man. Mr. Carmichael's Victory of Bristol is a very fine, free-fruiting, good sort, and the same may be said of the Davenham Early. We go no further this season.

VEGETABLES have been also injuriously affected by the inclemency of the past season—not perhaps to such an extent as fruit, but very greatly so, and sufficient in many cases to render all comparative tests as to special merits nugatory. In light soils many vegetables succeeded fairly well, but on heavy lands the failure was melancholy. Seeds during the present season cannot but be scarce and unsatisfactory.

Peas, in most cases, where they grew at all, were remarkably good. Carter's Telephone and Culverwell's Telegraph—the former a wrinkled selection of the latter—proved well, and maintained the high character awarded to them the previous year; and Mr. Culverwell is to be congratulated as the raiser of two such meritorious Peas. But yet another giant comes to us from the same source, named Autumn Marrow. This is an extraordinarily large-podded Pea, excellent for autumn use and splendid for exhibition purposes. Carter's Stratagem, a dwarf wrinkled blue marrow, is a grand acquisition—a heavy cropper, with large, remarkably well-filled pods. This will, no doubt, be largely grown for market purposes. Big Peas being the fashion, Messrs. Veitch are at last to give us Laxton's The Baron, a monster variety, grown at Chiswick in 1873, but only now sent out.

Amongst Kidney Beans a very desirable variety will be found in Messrs. Hurst's New Mammoth Negro, having fine long pods like Canadian Wonder. Of Turnips Benary's Early Munich is very valuable for its earliness, coming into use three weeks in advance of the earliest varieties. Amongst Radishes, a very extensive and excellent trial of which was made by the Fruit Committee at Chiswick, the earliest and finest stock proved to be the Early Rose Globe (Rond Rose Hâtif) of Leroy. This is a rose-coloured variety, intermediate in form between the Turnip and Olive-shaped sorts. The Earliest Red Erfurt short-top white Turnip Radishes may also be mentioned as very desirable varieties for forcing, being very early and with very small tops. Of Lettuces Messrs. Webb speak of Summerfield Giant, a variety of the Drumhead Cabbage.

New Potatos have not been quite so prominent during the past year, the capability of resisting disease seeming to have been the chief desideratum. Two varieties have come prominently forward in this

garb—Magnum Bonum and Scotch Champion. The latter lays claim to some novelty. Although already grown to a very great extent it is comparatively new, and only last month received a certificate from the Royal Horticultural Society. It comes from Forfarshire, and is intermediate between the Regent and Irish Rock. Although by no means a handsome Potato, it is one of fine quality and a most satisfactory cropper. Amongst newer varieties may be mentioned Cosmopolitan and Avalanche, smooth white kidney varieties of great promise; also McKinlay's Beckenham Beauty, Vicar of Laleham, and Davis' Model Seedling, a very handsome variety, exhibited by Mr. Perry at Birmingham.

Let us hope that the coming year may prove more kindly disposed.

LITTLE ASTON HALL,

THE residence of the Hon. E. S. Parker-Jervis, is near to Sutton Coldfield and Birmingham, and since the formation of the new branch of the Midland Railway, running from Birmingham to Walsall and Wolverhampton, is easily reached from Streetly Station. Although within a short distance of the Black Country—in fact, on the border of it—Little Aston Hall (see p. 17) nestles in a beautiful and well-wooded district, and the mansion, a noble structure, does full justice to the handsome and spacious park in which so many grand old specimens of Beech, Oaks, and other trees abound. The Beeches especially are perfectly at home here, attaining a great size and perfect luxuriance of growth, and are very numerous. In a stroll through the park I obtained the measurement of one fine patriarch, which has a girth of 15 feet at 4 feet from the ground, and it must be borne in mind that this is in the Black Country district.

The lawn at the garden front of the house is extensive and admirably kept, the standard pyramidal Yews and Hollies in pairs, alternating down the broad walk leading to the ornamental water, forming a very pleasing feature, as they are in good condition and are well looked after. Betwixt these specimen evergreens are ten long beds in pairs, each bed requiring 1000 bedding and edging plants, and as several other large beds exist in the pleasure grounds, and nooks and corners have to be filled, besides a great number of balcony and window work about the mansion to be supplied, a large stock of bedding plants has to be kept up.

In a conservatory—one of the old-fashioned structures such as were very common some forty or more years since—is a fine old tree of the Rosa indica odorata, planted fully thirty years ago, and which must be one of the oldest examples of this long since popular variety to be found in England. In the pleasure grounds about the mansion are noble specimen trees of Ailantus glandulosa, Tulip tree, Beech, some grand old Scotch and Larch, some rare Oaks, evergreen as well as deciduous, and a fine Taxodium distichum, 50 feet high, and the girth 4 feet 9 inches at 4 feet from the ground.

The pleasure grounds under the scythe and mowing machine consist of 7 acres, and the ornamental water is spacious and forms a most pleasing feature in the park scenery, the steam launch being considerably more than a toy boat.

Flower gardening is not carried out in a pretentious manner, although there is quite enough to lighten up the pleasure grounds with groups of colour. Still carpet bedding is adopted in a nicely designed garden near the conservatory, but here, as in so many other gardens this season, Alternantheras and Iresines failed, and colours had a very washed-out appearance.

The kitchen gardens are 4 acres in extent and enclosed by walls. Some capital pyramidal Pears are in good condition but bore thin crops, whilst the walls are well planted. Filberts and Cob Nuts abound, large plantations of them; and the trees were loaded with Nuts, but it is probable at the gathering of them that many were without kernels. This seems to have been the case in many places, Filberts showing the effects of so much cold, wet, sunless weather.

There are several fruit and plant houses, in which, without aiming to ensure great results, Mr. William Ward contrives to grow a good lot of Grapes and other fruits, as well as plants. The gardens, like the conservatory, belong to a past generation, still Little Aston Hall well deserves a niche in the temple of fame where good gardens are enrolled. Here in a nook of the kitchen garden are several plants of the white Mediterranean Heath, which some time since were in full beauty, and how prettily it works into bouquets and table decorations!

In one of the vineries, 30 feet by 13 feet, is a fine old Black Hamburgh Vine, planted fully thirty years ago, monarch of almost all it surveys, for it has the greater portion of the house to itself, and notwithstanding its age yearly gives a crop, and this season it had a capital crop of fruit, and good wood promising well for 1880. It is planted on the north side of a lean-to house, with a 6 feet border, but the roots have no doubt travelled far away. The stem was brought through a hole in the back wall at the time of planting, and of course the Vine has been trained downwards to the front of the house. A broad gravel walk exists beyond the 6 feet border.

Strawberries are extensively cultivated here for forcing; and in another vinery, containing Vines which have been planted several years, is a fine old Mill Hill Hamburgh, quite thirty years old, which occupies a considerable space; some fine bunches weighing from 3 lb. to 4 lb. have been cut, and fit for the exhibition table. One bunch was 6½ lb. in weight, and in excellent character.

The practice of having a prolific supply of a substitute for forced Seakale has long existed here, and a visit to this place in the middle of December afforded ample proof of the excellence of forced Swede Turnip-tops, Mr. Ward having given us an opportunity of testing their value in a cooked form, and it would puzzle nine out of ten to detect the difference betwixt it and Seakale. The roots are gently forced in an old Mushroom-house, where the temperature is kept at an average of 60°. Like Seakale, when the forced crowns are cut out and used, a quantity of side-shoots are formed, which are equally delicious. As Swede Turnips are within the reach of all, a trial can easily be made at little or no cost, and where Seakale roots for forcing are not easily obtainable, the Seakale substitute will be welcomed. *Rambler.*

Notices of Books.

Sizing and Mildew in Cotton Goods. By G. E. Davis, C. Dreyfus, and P. Holland. Manchester: Palmer and Howe.

Every now and then profane outsiders hear rumours that John Chinaman, or some other remote barbarian, has had the effrontery to complain of the goods sent out from Manchester. It is even said that the character for integrity of the British manufacturer and the British merchant has been somewhat impaired in consequence of the inferior quality of the goods supplied. We cannot say whether this is so or not—it is out of our line—but only supposing it to be so, our far off friends, did they but know it, are avenged by the existence of cankering mildew, the direct consequence of the process of "sizing" to which cotton goods are subjected. Sizing consists in washing or steeping the yarn with a size made from Wheat flour and water. This is allowed to ferment, and after some days the nitrogenous or glutenous matters are removed, and the liquid is then ready for use. Various other farinaceous substances are used, which we need not enumerate. Suffice it to say, that the object of the sizing process is not, as some might think, to give a superior appearance to an inferior article, but is, within proper limits, absolutely necessary to manufacture the fabric and to strengthen it when made. Fatty substances are also used in the manufacture to soften the yarn, while various mineral substances are specified as "weight givers!"—such are China clay, soapstone, gypsum, and Epsom salts. Other materials are used to keep the yarn moist during the weaving process, such as chloride of calcium. The simple operation of sizing (so-called by our authors) is not fraudulent unless a large excess of starchy matter be introduced—"nor is the practice necessarily open to censure even then, provided the price for a pure cloth be not charged for one containing much size. Since the weaving process cannot be conducted without a dressing of the warps, it is not fair to the weaver that all the evils which have since arisen in connection with the subject should be accounted to him as the one responsible for them." The weighting process, however, seems less defensible, and, as we have said, the sizing process brings its own retribution in the shape of various fungi or moulds. These pests do not confine their ravages to the field or to the garden—the store-cupboard, the cellar, and the harness-room all afford them scope for their mischievous activity, and the glutenous and nitrogenous constituents of the size used in the manufacture of calico affords them just the very aliment they like best. The mischief they do in this case is twofold—they impair the strength of the fabric, and they deface it by causing unsightly spots and blemishes. No less than twenty-seven different kinds of moulds and mildews have been detected on cotton cloth, figures of which, from the pencil of Mr. Worthington Smith, are given in the volume before us. We are indebted to the publishers for the use of the blocks illustrative of these fungi, and as the list of names is so long we refer to the book itself for the catalogue of these miscreant mildews. In fig. 3, p. 13, are represented, very highly magnified, the individual fungi; in fig. 2 a portion of the woven cloth, with the fungi growing *in situ*—though we expect that the artist has taken the liberty of depicting more kinds then are ever met with at one time on a piece of cloth. At B (fig. 2) is shown a Cotton fibre looking like a twisted ribbon with thickened edges and invested by numerous minute threads, which constitute the spawn of the fungus. In consequence of these facts the authors have devoted a large space to the explanation of the mode of growth and other characteristics of fungi, including the phenomena of fermentation, and detailing numerous experiments made with a view of ascertaining the conditions under which they are produced, and the best means of preventing their growth. Chloride of zinc is one of the most efficient substances for the latter purpose, and various preparations of carbolic acid (phenol) are also very serviceable.

The remarks we have already made will suffice to convey a notion of the nature and scope of the book before us. It seems to have originated in an action brought to recover a large sum of money lost in consequence of the discoloration of the goods by a reddish brick-coloured stain, the nature of which was contested. The report of the trial is given, and it is instructive, as showing the necessity in such cases of having a jury of experts—manufacturers, chemists, and botanists—rather than a haphazard selection of gentlemen without any special knowledge of the matters in dispute.

Not so many years ago our great mycologist, in the preface to his *Introduction to Cryptogamic Botany*, thought it necessary to make what reads like an apology for the study of such minute and obscure organisms as fungi. He has lived to see the importance of the study universally recognised as a necessary preliminary to the study of the life history of man, as very essential in the study of the nature of many diseases of plants and animals, and in the investigation of the best means of preventing them; and now, from practical Manchester comes the evidence that what at one time was looked on as mere laborious trifling, mere harmless amusement, is now considered in very practical fashion—indeed from a pounds, shillings, and pence point of view.

Let some of our *cui bono* friends, who want to know what use science is in the practical business of life, peruse this little volume, and apply its lessons.

Florists' Flowers.

NEW FLORISTS' FLOWERS OF 1879.—In spite of storm and wet—frost, snow, and sunless weather—with the elements in apparent array against the horticulturist, and the seasons in somewhat eccentric action—the floral records of the year are yet as numerous, full of interest, and valuable, as in any preceding year; the faculty of happy conception and the quality of enterprise, knows no diminution of zeal. The fervour shown by the florist is as praiseworthy and as full of consequence in small things as in large ones. We ought never to lose sight of the value of the simplest work in relation to the production of new forms in floriculture.

> "Pay not thy praise to lofty things alone:
> The plains are everlasting as the hills"—

is a couplet suggestive of the truest philosophy in relation to progress. The man who produces a new Verbena or a new Pansy (taking these as representing the lowliest forms engaging the attention of the florist), if either be something higher in development than any that has gone before, wins as much honour as the skilful hybridiser who produces a new Cattleya or a distinct and splendid Nepenthes.

But to the task of passing in review the new floral productions of the year. What a wealth of new forms of the AMARYLLIS is one part of the heritage from 1879. Since the Hon. and Rev. Wm. Herbert sketched Hippeastrum splendens in his preliminary treatise in 1821, what wonderful strides have been made. In point of colour, size and form we appear to have come very close to the goal of perfection, only that the ideal recedes as we approach it. Take as illustrations Dr. Masters, Duke of Connaught, Mrs. Baker, Mrs. Morgan, and Virgil, as representing the best; it seems difficult to improve upon them, only that results are co-equal with enterprise.

The AURICULA is not overlooked; it is now receiving a greater share of attention than for years past, and new forms are a certain result of an enlarged interest. Of white edges, Read's Acme is a charming and chaste flower, with much refinement of colour. Llewelyn's Grey Friar is a bold variety, of large size and good properties, perhaps a little too over-sized to be compatible with refinement, while Horner's Ringdove is a dark violet self, with all the qualities so well balanced as to form an approximately perfect Auricula. Mr. Turner's new alpines, A. F. Barron, Duchess of Connaught, Mrs. Ball, and Susie Matthams, give added lustre to this interesting class.

In regard to the AZALEAS, the new varieties of A. indica fall into the second place, as compared with the splendid new types of A. mollis. On the Continent the improvement of these fine decorative plants has been pushed on with great success, and with the addition of rare depths of colour united to size and form. Baron de Constante Rebecque, Comte de Gomer, Charles Kékulé, M. Arthur de Warelles, Ebenezer Pycke, and Isabella Van Houtte, all introduced by M. Van Houtte, are very fine indeed. In respect of A. indica, Williams' Duchess of Connaught is a charming and useful decorative variety, and the same estimate holds good of Van Geert's Empress of India, a very attractive double form; White Madeline is a large, pure white, semi-double variety, shown by Mr. Turner. The hardy Belgian varieties of Azalea exhibited from Knap Hill, and by Messrs. Veitch & Sons, and especially Graaf von Moran and Narcissiflora, show that this section is advancing.

Still the production of new TUBEROUS-ROOTED BEGONIAS goes on with almost flood-like persistency; and they come near to the Rose, Chrysanthemum, and Zonal Pelargonium in attracting a large share of public attention. When a dozen or more new varieties are certificated in one season, there is abundant proof of added quality. Whether we take the double varieties, which are represented by greatly improved orm in such flowers as Clovis, Comtesse H. de Choiseul, Edouard Morren, and Marie Bouchet—or the large flowered single types, as seen in J. H. Laing, Maude Churchill, Mrs. Howe, Reine Blanche, a very fine white-flowered type; Royal Standard, Souvenir de Gand, or Stanstead Rival—or the dwarf-growing forms represented by Constance Veitch, and Mrs. Arthur Potts—the headway is very satisfactory.

The beautiful Transatlantic CAMELLIAS, brought over by Mr. C. M. Hovey in the spring, are characterised by so much quality and refinement as to be valuable acquisitions. C. H. Hovey, rosy-crimson; C. M. Hovey, bright crimson; and Mrs. Hovey, pleasing fleshy pink, are the new introductions. The first and last received First-class Certificates of Merit from the Floral Committee; they are being distributed in this country by Mr. Bull.

In a season not at all adapted to show off the CARNATION and PICOTEE to the best advantage, it is not surprising that but a very few good new flowers came to the fore, though it must not be inferred that they do not exist. S.B. Robert Lord, C.B. J. T. D. Llewellyn, both raised by Mr. E. S. Dodwell, and P.F. G. F. Wilson (Turner), promise to make a good reputation. Picotees — H.R.E. Dr. Abercrombie (Turner), L.R.E. Violet Douglas (Simonite), L.P.E. Clara Penson (Wilmer), and Baroness Burdett Coutts (Turner), are of excellent quality, as the Certificates of Merit they received proves. A Northern Carnation named William Sporr (Adams), S.B., is said to possess excellent properties. In the way of Clove Carnations, Susan Askey (Culverwell), pure white, Heather Bell (Turner), pale pink, finely fringed, and Coroner (Barron), rosy crimson, very fine, are capital additions to this useful class. Mr. Turner's batch of new yellow Picotees was noticed at length on p. 537 of the last volume of the *Gardeners' Chronicle*. Of their value there can be no doubt.

Named CINERARIAS are still certificated, as Mr. James produces every year some varieties distinguished by large size, approved form, and rich colouring. Earl of Beaconsfield, Master Harold, and Mr. Bland, had the foregoing award during 1879; and the same award was made to Mrs. Joseph Grimond, a deep purple-flowered double variety of dwarf habit. The double Cinerarias, however, do not appear to be making much headway, and are only sparingly grown.

The handsomely marked COLEUSES have been strongly reinforced during the past year, their golden leaves being flamed, flushed, marbled, and pencilled with brilliant colours, such as purple, orange, crimson, pink, green, black, &c. There is great diversity combined with striking hues. Butterfly, Duchess of

FIG. 2.—COTTON CLOTH, WITH MILDEWS GROWING OUT OF IT (MAGN.)

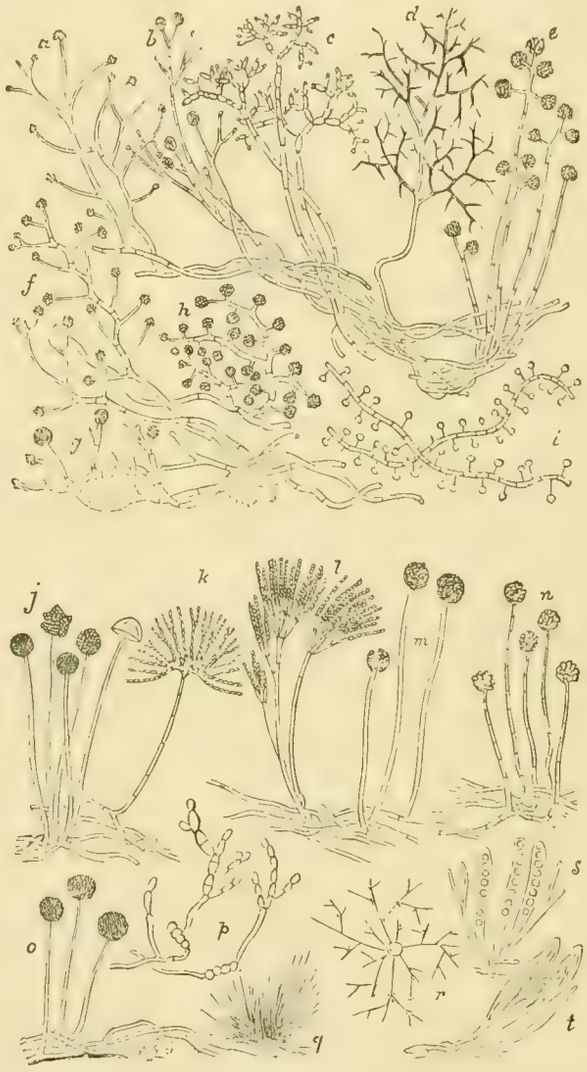

FIG. 3.—MILDEWS FOUND ON COTTON CLOTH (MAGN.)

Teck, Empress of Germany, Glow, Harlequin, James Barnshaw, Starlight, and Yellow Gem, from Mr. Bull's collection, are as beautiful as they are numerous; Dr. Brushfield (Lloyd), Majesticus, and Maud, raised by Mr. King, are strikingly handsome. Whether some of these new forms will retain their brilliant colouring when grown into size remains to be seen; it is to be hoped they will, as they cannot fail (with this proviso) to make most acceptable decorative and exhibition plants.

Each succeeding year the CYCLAMEN is found rising to a higher level of beauty. Take Mr. H. B. Smith's new large-flowered varieties, viz., Duke of Connaught, Picturata, Queen of the Belgians, among others, and they will be found uniting size and beauty of form with great freedom of bloom. Crimson King, very fine in colour, and Baroness Burdett Coutts, pure white, from the same raiser, are fine additions to the smaller flowered types, and so is Mr. Little's Gem. Reading Gem (Sutton & Sons) is also a very fine large-flowered variety of massive proportions and excellent form.

There has been no lack of new DAHLIAS, but, owing to the hostile character of the season, growers had poor opportunity of showing their flowers to the best advantage. The only certificated flower was Ethel Britton (Keynes & Co.), blush ground, tipped with pale reddish-purple. Triumphans, a rich purple self, and Mrs. Hodgson, rich yellow, tipped with crimson, are fine varieties by the same raisers. Messrs. Turner, Rawlings, Harris, and Smith, have new varieties also, of which we shall hear more next summer. From Germany have come some charming bouquet or Pompon Dahlias, and Mr. Turner's George Thomson is a rare yellow-flowered bedder, having all the good qualities that can well be desired in a plant used for this purpose. Mr. Cannell's Dahlia Juarezii, with its brilliant scarlet Cactus-like flowers, is the leading floral surprise of the year.

In the way of new FUCHSIAS, the varieties raised and distributed by Mr. Lye during the past year have proved valuable acquisitions, because of their excellent habit and free-blooming qualities. Beauty of Wilts (Lye), to be distributed in the coming spring, is a very fine light variety of the highest quality. Eclipse (G. Smith) is a very fine dark variety, of good habit, and very free.

Messrs. Kelway & Son have again produced some varieties of the GLADIOLUS remarkable for their superb quality, and that as many as eight varieties should be certificated is a good proof of their value. A few years must elapse before there will be sufficient stock to put them into commerce. A fine hybrid of M. Victor Lemoine's, named Hybridus Lemoinei, is of a very distinct and pleasing character.

The GLOXINIA, too, keeps pace with other flowers in the march of improvement, and some of the delicate maculated varieties are as beautiful as they are distinct. Charme de Latice (Lemoine), Yakoob Khan (Veitch), and Lady Holmesdale (Veitch), are excellent representatives of this section: while Duchess of Connaught (Veitch), and Mrs. Bause (Wills), are very fine in the section of ordinary marked types.

That Messrs. Veitch & Sons should receive something like a dozen Certificates of Merit for new HYACINTHS in one season, demonstrates that the year 1879 produced an unusual number of fine novelties. They are so good and distinct as to deserve separate mention.

The group of the new Japanese IRIS Kæmpferi has had distinguished additions during the past year. Messrs. Veitch & Sons have shown a select collection of very fine new forms, Charles Maries and Jersey Belle being especially noticeable; and Imperatrice, from H. J. Elwes, Esq., is a grand form also. No description can do justice to their superb beauty.

The production of new Show and Fancy PANSIES is confined mainly to Scotland, and they are rarely seen southwards in what may be termed show condition. But that there are marks of improvement is plain beyond doubt, though it manifests itself slowly. Bedding Pansies and Violas are also annually produced. Some of the varieties of the latter raised by Messrs. Downie & Laird are remarkable for good form and fine colours. Dr. Stuart, Chirnside, has also raised some useful and pleasing varieties.

A larger number than usual of new show or large-flowering PELARGONIUMS appeared in 1879. The existence of the Pelargonium Society serves as a stimulus to their production. As usual, Mr. E. B. Foster takes the lead as a raiser, and Alice, Emperor William, Fireball, Flag Captain, Queen of Scots, Sensation, The Baron, and The Pope, received Certificates of Merit. Amethyst (Bréhaut) and Joe (Matthews) were similarly honoured. What are termed the "decorative" varieties grow in the popular esteem as they undergo improvement, and their value for market work is constantly being illustrated. Countess of Rosebery (Methven), Madame André (Jackson), Maid of Kent (Hayes), Nellie Hayes (Hayes), and Volunte National (F. Perkins), are the best of the year's production and well deserving of cultivation. In the Fancy class Mr. C. Turner can be credited with a dozen or so new varieties. Electric Light, Mrs. Milne-Howe, and Thurio had Certificates of Merit. The Zonal class shows a large augmentation, and Dr. Denny, who is not forgetful of double varieties, received certificates for Dauntless and Pioneer, both scarlet in colour, with full double flowers. In the single class this same raiser is to the fore with Allegro, Commander-in-Chief, a most useful pale scarlet bedding variety and equally fine for pots; Dudu, Horatio, Leander, and Romeo, all showing that stoutness of texture, refined form and rich colouring characteristic of Dr. Denny's flowers. Mr. Catlin has Edgar Catlin, Fanny Thorpe, and Lizzie Smith, all of fine quality. In Mrs. Henry Cox (Hayes) we get a new variegated Zonal worthy of a Certificate of Merit, the well-formed leaves being richly coloured. Mr. Bull has obtained some pretty double and single varieties of the Ivy-leaved section, and to one of the former, Gazelle, a Certificate of Merit was awarded. The same award was made to Mons. V. Lemoine for a pleasing single variety named Vicountess Cranbrook, white shaded with rosy-lilac.

New PENTSTEMONS have been produced by Messrs. Downie & Laird, Dicksons & Co., Laing, and Cannell, and the two former and Mr. Hooper have new varieties of Phloxes, early and late flowering. Pinks, both show and forcing, are found coming to the fore also.

A new gold-laced POLYANTHUS is obtained in Mr. Brockbank's John of Gaunt, a Northern flower of some promise. Mr. Ingram's Golden Gem is a useful bedding variety with yellow flowers; Prince of Orange (Dean) is the same, but of a deeper colour, very fine, and having Hose-in-Hose flowers. Superbus (Dean) is a very fine glossy dark variety, excellent for pot culture and exhibition purposes. The new mauve-coloured P. acaulis platypetala plena is a good addition to our double garden Primroses; and Munro's white variety of P. denticulata is a desirable acquisition. Of Chinese Primroses, Mr. R. Gilbert's double variety, Earl of Beaconsfield, with its bright salmon-rose flowers, well deserved the certificate it obtained. Ruby King (Sutton & Sons) is a very fine richly coloured single variety; and the two Chiswick varieties, Chiswick Red and fimbriata rubro-violacea, have decidedly improved depths of colour.

Lovers of hardy hybrid RHODODENDRONS for forcing purposes should not overlook the claims of Mr. J. Davies' (Ormskirk) varieties. Duchess of Teck (Veitch) is another of the free greenhouse hybrids; and Mrs. Townshend, shown by the Rev. Mr. Boscawen, is a fine, pure white, of the arboreum type.

The new ROSES of the year are well reinforced by Mr. H. Bennett's hybrid Teas, which find much favour with rosarians generally; by Charles Darwin (Paul & Son), Duke of Teck (Paul & Son), and Isabella Ward (Ward.) A hybrid Tea, named Madame Alexandre Bernaix (Guillot), of a pleasing rose colour, was awarded with the afore-mentioned a Certificate of Merit. Of new Continental varieties there is, as usual, a formidable list, which require a season's culture to afford an estimate of their quality.

Of new VERBENAS there has been a considerable number. Mr. Mould's Mrs. Thompson was the only one that received a Certificate of Merit. His Beethoven, Lord Chelmsford, Mr. L. Harrison, Mrs. Mould, Sir Garnet Wolseley, and Sylvia are all fine exhibition flowers. Messrs. Cannell and Keynes & Co. have also raised new forms. A rich scarlet variety, named Lustrous, from the latter firm, is characterised by size, brilliancy, and splendid form.

It is only possible to touch on the leading new flowers of the year. Their multitude is prohibitory of anything like an extended notice. The times may be somewhat out of joint, and trade dull, but floriculture will flourish despite apparent, if not real, drawbacks. We turn with hopefulness to 1880, in the full belief that the procession of months will furnish their quota of novelties, and that the new will transcend the old in signs and tokens that will be as a valuable legacy to floriculture when the year on which we are now entering fades away into the irrevocable past. *R. D.*

Garden Operations.

KITCHEN GARDEN.

PEAS.—The season for this invaluable and much esteemed leguminous edible in a green state is looked for with much more interest than the coming in of many other subjects, simply because it is a vegetable so universally appreciated, and for this reason it is grown everywhere. The advanced crops at all places, without exception, are given the best position the garden affords, and every attention and care are given to them in order to obtain them in a fit state for use at the earliest date possible; but after all, how often does it follow that the ultimate result is much delayed, and oftentimes very disappointing? Whilst admitting there are naturally some sheltered places situated at a moderate altitude, where frost is not quite so destructive, and where the crop in question may, with some degree of certainty, be depended on almost every year, yet in general this is not the case; and here, as in many other gardens similarly situated in a low valley, with air almost constantly charged with moisture enough to make vegetation most susceptible to frost, the crop is most doubtful. For this reason we have of necessity been compelled to resort to a more certain and effectual method to secure the same end, and from past experience we strongly recommend the practice to the notice of those who labour under like difficulties as we ourselves—it is to have recourse to a temporary erection in the shape of a frame about 3 feet high at the back and 2 feet in front, with a strip under the junction of the lights in order to facilitate ventilation, and a width according to the size of the lights available for the purpose. This should be placed on a suitable border, and dwarf kinds of Peas only should be sown at about 18 inches apart between the rows, which should run from north to south. With such a convenience, covering an area of about 20 feet by 6 feet, and with ordinary coverings applied, a crop of Peas may be safely secured before the end of May, the average of which will favourably compare with the produce of many outside borders of far greater extent with but little additional trouble. For this purpose we sow thinly, in rows 18 inches apart, Laxton's Unique and Little Gem the first week in January—keeping the lights on until such time as the Peas are becoming visible, when a little air is given them every day. As soon as they are well up they are thinned out to about 2 inches apart, and before they have made much growth they are carefully staked to a height which will just admit the lights to run, and at this time they are mulched with 3 or 4 inches of the best decomposed manure, and well watered whenever necessary, and covered up likewise when occasion requires it.

FORCING DEPARTMENT.—The demand for forced vegetables, like many other things, is steadily increasing at most places, and supplies of Asparagus, Seakale, French Beans, Mushrooms, and Rhubarb are not only expected occasionally, but are supposed to be ready in quantity whenever demanded. After the new year comes in, to maintain such supplies, together with Cucumbers, Chicory, Radishes, Mustard and Cress, with a supply of Carrots and Potatos in due course, is a task which not only requires much labour and attention, but considerable ability and forethought in management. See, therefore, that timely preparations are made in order to receive the supplementary crops which are to be introduced into the respective places to come in after those which are now in bearing have become exhausted; and it is at this season always advisable, in order to be prepared for an emergency in the way of prolonged frost, to have a small store of roots of Asparagus, Seakale, and Rhubarb on hand for the purpose. Give bearing crops of Asparagus plenty of air whenever favourable, as without this element the quality will be much impaired. Seakale comes good with us this year, and it will be made a substitute to help us out of difficulties which we shall experience in the way of a deficient crop of some of our usual hardy edibles. For this object good quantities of this valuable subject should be put in at intervals as may be required. Rhubarb will with the advance of the year come much more kindly; this will also be in greater request than usual, owing to the short supply of Apples last year. This may be put into almost any place where there is heat, and it will now start freely. Crops which are in bearing will want ample supplies of tepid water. French Beans will, unless the utmost care is exercised, become infested with the red-spider; should this be apparent on the foliage be cautious in removing such plants to newly started vineries or similar places, or the pest will assuredly be quickly established. We prefer to sow the Beans in the houses in which they are to be grown, because it prevents the evil. As advanced crops of Tarragon, Chervil, and Mint show indications of failing, let others be brought in: a Peach-house at work is a fit place for these subjects. Soil-up early crops of Potatos as soon as they are fit, and use manured soil for the purpose. Sow Carrots for secondary crops, and thin out advanced ones—also

Radishes to succed former sowings. These will require air every day until rough leaves are made.

MUSHROOM-HOUSE.—See to the watering and the sprinkling in this place every day. As the Mushrooms become fit for use remove them from the beds, and stand them in trays or shallow boxes until they are required: in this way they will keep good for a considerable time. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

ORCHARD-HOUSE.—Those who have had little experience with forcing Peach and Nectarine trees will need to practise patience at this early period. They may expect to see the blossom-buds swell almost as soon as artificial heat is applied, but this will not be likely to happen unless the temperature is kept too high to begin with. It ought not to exceed 45° on cold nights and about 50° in mild weather. If the pots could be placed over a bed of fermenting material, that would excite the roots into active growth at the same time as the buds; but it is very certain that artificial heat must be applied with considerable caution, both to the roots and also to the temperature of the house. Another point to be considered is the supply of water to the roots: I would rather err by giving too much than too little; the atmosphere ought to be moist while the buds are swelling, although it ought to incline to dryness while the trees are in blossom. We are now clearing out the Chrysanthemums from our late house to make room for the trees that are still plunged out-of-doors. They certainly look remarkably well this year, showing that severe and long-continued frost does not injure them, although excessive rainfall probably will; indeed it does, as the late Mr. Pearson, of Chilwell, could testify from his experience at Nottingham, at the time that our trees at Loxford were braving the winter without the least injury—the inference being this, that the rainfall at Nottingham is too much for the trees in ordinary winters, while that in South Essex is not sufficient to cause any injury to them. Where the rainfall is very excessive tiles could be placed over the surface of the pots to throw off the water. I find that when the trees are placed out-of-doors to winter they do not suffer much from the attacks of insect pests of any kind. The Strawberry plants were placed on the shelves near the roof of the house some time ago. We used to grow about twelve varieties, but have reduced the number to less than half. We grow the Black Prince for earliest; this is followed by Keens' Seedling, and it ought to be stated that some persons have a spurious stock of this. An inferior variety was here for the true sort, and I only obtained it through a friend who exhibited the true sort in London. Next to this is President, then British Queen, and lastly Loxford Hall Seedling, which is the latest we have ever grown. See that the pots do not suffer for want of water, but be rather sparing with it until they start into growth. *J. Douglas.*

ORANGE-HOUSE.—There is little to be added to the instructions given in the number for December 20, p. 791. See that the requisite temperature is maintained, that the plants receive a sufficient quantity of water, and that the leaves are kept quite clean. It is usually best to trust to the nurserymen to supply us with young trees of most varieties of fruit, and I do not think of propagating any except Oranges; but when the trees are quite clean in a house, it is very monstrous to introduce trees that are infested with scale, and to prevent this I graft our own trees on Lemon stocks. Now is a good time to do it. The stocks for dwarf trees should be about as thick as a cedar pencil, and they may be grafted a few inches above the surface of the ground. After the operation is completed, place the pots (they may be 5 or 6 inches in diameter) in a forcing-house over a bed of tan or leaves, and cover them with a hand-glass; the union will soon be complete, when the trees may be removed from the hand-glass, and be placed over the bed. With careful management they will grow apace, and soon require repotting into 8 or 9-inch pots. By the end of the season the trees will be of considerable size, and after making another year's growth will produce blossoms and fruit. During the season the young growths must be stopped at the fourth or fifth leaves. The potting material should be the turf taken from a clayey loam, with a fourth part of rotten stable-manure and some ½-inch bones, say a 9-inch potful to a barrowload, added. *J. Douglas, Loxford Hall, Ilford, E.*

PINES.—In the preceding Calendar upon this matter rather comprehensive remarks were given in regard to the general treatment of these plants for that period which embraces the dullest time in the whole year. The details of management then described should continue to remain in force for the present, excepting in the case of plants which it may be necessary to bring together for the purpose of inducing them to come into fruit sooner than they would under other circumstances. If this should be necessary provide a light place in pit or house, as the case may be, where they can have the advantage of more heat both at the roots and tops. Assuming this to be done, and a batch is to be selected from amongst the successional plants, choose those which indicate signs of speedily showing fruit. These are quickly distinguished by practical hands, and others may be materially assisted in the matter by an examination of the centre or heart of the plant. Let these plants be plunged into a bed which should be constantly kept at about 90° to 95° at the base of the pots. If the plants be at all dry water them copiously, and maintain the top heat at 65° to 70° at night, with a few degrees more during the daytime, and keep the temperature about the plants in an invigorating and genial state, by syringing, &c., as may be necessary. *G. T. Miles, Wycombe Abbey.*

FIGS.—When the terminal buds on the early pot-trees have fairly broken, advantage may be taken of the favourable change to milder weather for increasing the mean temperature of the house, as the Fig, when fairly started into growth, delights in a good heat, plenty of moisture, and all the light that can be secured to it. On this account the glass should be kept perfectly clean, and the increase will be more beneficial if it can be obtained from fire-heat combined with solar influence by day, in preference to making any great advance by night. Syringe the trees and walls twice a day, according to the state of the weather, and damp the floors in the evening when the weather is dark, wet, and unfavourable to the performance of the afternoon syringing. Examine the plunging material, and if it exceeds 70° to 75° let it be turned over as a means of reducing the bottom-heat, and setting moisture at liberty. Aim at a night temperature of 55° to 60°, give a little air at 68° when the morning gives promise of an increase from gleams of sunshine, and close sufficiently early for the house to run up to 80° after it is shut up. If the succession-house is conveniently arranged for the introduction of a good body of fermenting leaves and short stable manure, but little fire-heat will be required by night until the buds show signs of swelling, particularly when the trees have been started about the same time for a number of years; but young trees that have not been forced will require a somewhat higher temperature to cause them to break. Syringe twice a day with water a few degrees warmer than the house, and if it be thought necessary to repeat the root-watering, use water at a temperature of 80° to 90°. Prune or rather thin-out the wood that has reached the extremity of the trellis in late houses, wash the trees well with warm soap-water, and, in the event of scale having gained a lodgment, a wineglassful of paraffin to the gallon of water may be used with advantage. Put in cuttings or eyes of favourite kinds, and make preparations for potting on young plants intended for next year's forcing, using strong loam, old mortar, and a little thoroughly rotted cow-dung. Train to a clean, straight, single stem, and allow the radiating shoots to form the foundation of a good pyramid. If wanted for early work the plants should be placed in gentle bottom-heat by the end of the month, in order that they may make and properly ripen their growth by September. *W. Coleman, Eastnor.*

PLANT HOUSES.

ORCHIDS.—The year 1879 is gone, and these plants have no cause to lament over its departure. Time has glided us into the new year, the first day of which is looked up to by so many as the starting point in many undertakings. In Orchid culture the new year does not commence or finish at any particular period, but may be taken as the centre of the resting and slow-growing period, which extends from November to February. The remarks in the two last months' Calendars are still appropriate. For the benefit of new readers of this paper I may as well state that I group the various structures in which Orchids are grown into three divisions—namely, cool-house, intermediate-house, and East Indian-house. In the aforementioned Calendars their respective temperatures are given as, night, 45°, 55°, 60°; day, 50°, 60°, 65°, as maintained by fire-heat, with a few degrees rise by sun-heat, and a few degrees less during exceptionally severe nights, when the houses, owing to the unusual amount of fire-heat, are, comparatively speaking, dry. During the last six weeks our night temperatures have rarely been, for a short time even, below those given; on some days our temperatures at noon have been a few degrees above those given, but a trifle of air has been on at the same time. In the three houses or divisions mentioned almost every tropical Orchid can be grown more or less well; at the same time, where a large number of some particular class has to be grown, it is wise to give them a structure to themselves. Thus in many places there will be besides those mentioned a Cattleya-house, a Mexican-house, and a Dendrobium-house. The Cattleya-house will be a low light structure containing such plants as C. Mossiæ, C. Trianæ, C. gigas, C. Mendelii, C. labiata, C. maxima, and C. exoniensis, &c., with an intermediate temperature. The Mexican-house will be thinly shaded, so as to receive abundance of sun-heat and light. It will contain such plants as Lælia majalis, L. acuminata, L. autumnalis, L albida, L. furfuracea, Odontoglossum Londesboroughianum, O. citrosmum, O. Reichenheimii, Epidendrum nemorale, E. Parkinsonianum, &c. The winter temperature of this will be a trifle under intermediate. The Dendrobium-house will be somewhat lofty, so as to allow of that family being suspended from the roof. A whole host of plants requiring a less close atmosphere than the Phalænopsis division will furnish the side stages. Through the summer this house will be hot, moist, and airy; and in the winter a trifle above intermediate. If any reader possessing only the first-named divisions should find me at any time recommending the growing of some plant in one of the last-named ones he need not despair, but may take it for granted that in some portion of his houses conditions almost identical with those advised can be found.

After six weeks' almost close confinement, no collection of Orchids will look in quite so brilliant a condition as they did at the commencement of winter. The foliage of some of the plants will be looking more yellow than usual, and too often in such cases water is rushed into them in order to speedily bring them green. This is a fatal error, ending as it does in the destruction of the roots. The proper thing to do is to keep the plants rather on the dry side, trusting entirely to the genial atmosphere which, thanks to a south-west wind, it is now easy to maintain, to bring them round. With such a gale of wind as we are now getting, there will be no necessity to open any ventilators, as enough fresh air will be forced through the laps, which are excellent and safe ventilators. As regards open laps, I have no hesitation in saying that nearly every Orchid-house would be all the better if a pane of glass here and there overlapped its fellow enough to keep out the rain, but with a space between sufficient for a penny to pass through. Houses in exposed positions will of course require no such openings.

Plants of Cypripedium villosum and C. Boxallii will now be fast sending up their flowers, which will require guiding up through the luxuriant foliage these plants make, or they in some cases get weighted down with leaves, and so grow distorted. In tying up the flowers of large plants where the breaks have become much crowded, care must be taken that the stakes do not injure the growths. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

The late hard frost gave a good opportunity for getting flower-beds and borders manured—that is to say, to have the manure carted or wheeled on and laid in heaps, so that when the season arrives for planting the manure may be spread and forked in. It is not a good plan to have the manure put on and dug in, in the autumn, as is often done; for if a wet winter follows all the goodness of the manure will be washed away before the planting season commences, and the labour and manure will be lost. Now is a good time for planting and pruning trees and shrubs, and turning in plantations, if not already done. With regard to pruning flowering trees and shrubs, I would remark that there should be a certain amount of discretion used before cutting off a branch. Look and see if is necessary to cut it off, for remember that every branch in many flowering shrubs is a bunch of flowers. I do not think there is much gained by pruning flowering trees and shrubs: if it can be avoided the best plan is to thin them out and re-arrange them. Nothing looks worse than to see a lot of naked sticks, the result of rough pruning, standing about in plantations. The last two winters have proved a very hard time for border plants, such as Veronicas, Phloxes, Pentstemons, Antirrhinums, Hollyhocks, &c. Last season nearly all were killed, and the present seems so far to have been equally as destructive to those that are left out. It is not wholly the frost that kills them, it is the fog. I have known Pentstemons, Antirrhinums, killed in one day with fog and frost combined. There are very few border plants that will stand out in town in such winters as this and last. Plants that are quite hardy in the country require a cold frame in town, and even such things as Pansies, Golden Thyme, Mentha Pulegium gibraltaricum, and Cerastium tomentosum, Veronica incana, and Sedum glaucum, are the better for being taken up in the autumn and planted out early in the spring, for if left out nine-tenths will be lost. This is a very bad season for keeping bedding Pelargoniums, the season being so wet when the cuttings were put in which caused them to be so sappy that a very small portion of them were well struck before they were potted off. I am speaking of cuttings that were put in in the open ground, which I believe is the best plan to follow. Pot them in the latter end of September in small 60's to stand through the winter, and one plant in a small 60 in the spring will be worth two of those crowded six to ten in a 48. *W. Gibson, Royal Hospital Gardens, Chelsea, S.W.*

APPOINTMENTS FOR THE ENSUING WEEK

MONDAY,	Jan 5	Sale of 7000 Japanese Lilium auratum, at the Mart, by Protheroe & Morris.
WEDNESDAY,	Jan. 7	Sale of Roses, Bulbs, &c., at Stevens' Rooms.
THURSDAY,	Jan. 8	Sale of Orchids, at Stevens' Rooms.
FRIDAY,	Jan 9	Sale of 15,000 Japanese Lilium auratum, at Stevens' Rooms.

AN appropriate subject at the present time is that of FORCING, and one that is testing the mettle of gardeners as well as the metal of boilers. First let us define the word forcing, which in a broad sense is as comprehensive a subject as any with which we have to deal in horticulture. Forcing is a work of time and skill rather than a display of stoking capacity or of mathematical exactness in the daily readings of the thermometer, and yet stoking has an important bearing upon the work of forcing, inasmuch as it affects the commercial value of the crop.

Forcing consists in changing the season of fruiting of the Vine or Peach tree, or the hastening of the flowering period. Outside the horticultural circle early produce, whether it be fruit, flowers, or vegetables, is regarded as the natural outcome of artificial heat and moisture—a mere mechanical process — such, for example, as a joiner would employ in making a chair or table, or a plumber in mending a burst pipe, and so on. Is this a fact?—is forcing a merely mechanical operation requiring nothing further than a fairly equipped hot-water apparatus, and a capacity for shovelling on coals in sufficient quantity to keep a house at a given temperature? If this were so the gardener's lot might fairly be compared with that of an ordinary mechanic, nor would the majority of the gardening fraternity object to such comparison if this assumption fairly represented their position: but how different is the true nature of the case. The mechanic having a fairly good set of tools to perform his work, and being a wood workman, fulfils his engagement creditably. The gardener, however well he may understand his work, is more or less at the mercy of the clerk of the weather, who cannot be said to have been over-lenient with the sons of Adam during the past year. Nor must we lose sight of the fact that in forcing the preparatory process, in other words the ripening of the wood of all kinds of fruit and flowering plants, is influenced in no inconsiderable degree by the conditions, whether favourable or otherwise, under which they have been grown the season before. Thus the practitioner who understands his work will review his position before starting, and if he is not a mere machine or a rule-of-thumb person, who is merely prompted by what he has seen others do, irrespective of circumstances, he will have a pretty accurate conception of what results may be expected after he examines the condition of the material which is to be forced.

Having determined a course of action to be pursued according to personal requirements, the next point to be considered is the principle upon which forcing should be conducted; and here again we turn to the great storehouse of Nature for an example. The days of steaming, stewing, and roasting, by means of trough-pipes, fermenting materials, &c., are happily being succeeded by a more rational system. Take the Vine, for instance, planted against an open wall, and mark when the sap first begins to move by the action of solar heat, and see if there be any precedent for building hotbeds from 2 to 3 feet deep on our outside Vine borders. It is the elaborated sap stored up in the branches that first moves in response to the action of solar heat, and not from any effect that is produced at the root by the application of fermenting heat, although an influx of water from the root is very speedily called for. By way of illustration it may be urged that a Pear or other fruit tree, trained, say, partly on a west and partly on a south wall, will be clothed with flowers and leaves on the south side several days before there is an expanded flower on the west side; proving conclusively that Nature, left to herself, does not start into active growth at the root until she has expended the supplies with which she had filled the cells and tissues during the season of maturation the year before. Artificial heating of Vine borders by means of dung beds "in the first stages of forcing" is therefore wrong in principle, and, indeed, it is impracticable—even if it were necessary—to warm a body of earth from the surface to any appreciable degree; and secondly, if its power be admitted it is applied at the wrong time, as it deranges the legitimate course of Nature by forcing root-action prematurely, to the subsequent injury of the crop. Those who follow the course of Nature rigidly, and whose principle it is to assist her according to her own teachings, will therefore have entrapped the warmth of the summer sun, and prevented its escape in late autumn by covering their borders with a thick layer of dry Oak leaves. These should be protected by boards laid obliquely from the front of the border to the back, in order to throw off the heavy winter rains, which would cause them to ferment and rot, thereby rendering the surface of the border a cold stagnant mass. Some persons defeat the very object they have in view by raising beds of material which ferments quickly, and ultimately rots, leaving the border seldom at the same temperature for three days in succession. The same rule is applicable with regard to the internal temperature—with this qualification, that there is no objection, except that of appearance, to a slight body of fermenting dung and leaves being placed contiguous to the Vines in order to engender a gentle warmth, and steam to assist the forces to break, representing in an artificial way the influence of an April shower.

And again, forcing is not, or rather ought not to be, as is commonly supposed, a very expensive series of operations. A vinery, or Peach-house, for instance, at the present time will not exceed a temperature of from 45° to 50°, or a very little more, at night; and bedding plants, or anything else, can hardly be safely left at a lower temperature for the night. It is in the last stages that fire-heat comes in useful, and that is when the increased heat makes the mark. Strawberries, like the Vine, will only bear hard forcing at the finish, and are generally grown in forcing-houses with other things. Melons and Cucumbers, being raised from seed, require a rather high temperature, and are perhaps the most expensive early commodities that we grow; but upon the whole, forcing (as far, at any rate, as fruit is concerned) is more a work of skilful computation than is generally supposed.

—— THE CHANGE IN THE WEATHER. — The wind bloweth where it listeth, just as it did in the time of the sacred writer, and still are we unable to tell of its whence or its going. Science somewhat cruelly tells us that somewhere or other Nature has produced an apparent vacuum which the wind is rushing in to fill up, but that still leaves behind the impression that the wind which rushes in with such fierceness and strength must leave a vacuum elsewhere; and thus the lay mind is puzzled when a discussion on natural causes comes uppermost. Based upon the hypothesis that there must have been a very considerable vacuum somewhere to necessitate such a rush of air as was experienced on Sunday last, and holding, as all orthodox believers in science-teaching should, that vacua are created by an excessive heating of the air somewhere, which causes it to ascend, and thus make room for the onward rush, we naturally wonder whereabouts in north-eastern regions has this extraordinary heat been found. So far, however, from there being any reason to prove such to be the fact, we really have seen, or rather felt, an immense volume of warm air rushing to expel the cold, and thus inverting the order of things as taught to us in our elementary science books. It would doubtless be a great advantage to us in an enquiry of this kind if we could get behind the south-west wind and trace its origin, its gathered force, and how it is impelled. The orthodox theory seems to be that of suction or attraction; but in the present state of knowledge of the action and cause of winds and currents, the explanation does not satisfy the enquirer. Though all due to natural causes that are perhaps not difficult of explanation, yet the sudden change in the temperature, and in the nature and force of the air currents, seems little else than the result of some phenomenon. To steadfast believers in the influence of the moon upon the weather, this very remarkable change, coming almost simultaneously with its attainment of entire fulness, will be regarded as positive proof, so much will one success outweigh a hundred failures. Whatever the cause, none the less is the change most welcome, and if we have seen the worst of the present winter, the more heartily will we greet the glad new year.

—— THE STORM IN SCOTLAND: DESTRUCTION OF ORCHID-HOUSES. — Dr. PATERSON writes from Bridge of Allan, under date December 29:—

"Last night (December 28) we had a most terrific storm of wind and rain. Such a gale has never been experienced in Bridge of Allan. Along with other damage done, I regret to say that two of my Orchid-houses were blown down at the same time as the Tay Bridge was destroyed, causing such lamentable loss of life. The injury done to the plants is wonderfully small, and it was very fortunate that the temperature, for the season, was high, being 52° Fahr."

—— ARGENTINE HORTICULTURAL SOCIETY.— This society proposes to hold an international exhibition of fruits, plants, flowers, and other matters of garden interest at Buenos Ayres, from February 22 to February 29 next. It is hardly likely any of our exhibitors will send plants or fruits, but seeds, bulbs, tubers, implements, &c., are mentioned in the programme. Prizes in the form of medals will be awarded. Señor FERNANDO MAUDUIT, 101, Reconquista, Buenos Ayres, is the secretary, to whom application for information should be addressed.

—— DIOSPYROS KAKI.—M. NAUDIN writes from Antibes:—

"I see in the last number of the *Gardeners' Chronicle* (p. 795) that Mr. WILSON presented to the Horticultural Society a ripe fruit of Diospyros, similar to a Tomato, under the name of Kaki. This name is incorrect; the Diospyros with red fruits (slightly 4-lobed) is the D. Schi-tze of China and Mongolia, a more hardy species than Kaki, which is Japanese. I have collected this year more than a hundred fruits of D. Schi-tze, in which I have not found a single seed. The fruits of Kaki are smaller, have neither ribs nor furrows, and they are never red, but greenish-yellow, which changes to brown when ripe; moreover, they always contain seeds, about seven or eight in number. Like those of Schi-tze, they only become eatable after having been exposed to frost. In this state the fruits of Schi-tze, which are very beautiful, can never be mistaken—before the frost they are always slightly sour. One can hardly understand how Mr. HIERN, in his admirable monograph of Ebenaceæ, could have confounded D. Schi-tze with D. Kaki. These two species are quite as different one from another as are the Melon and the Cucumber—one may recognise them a mile away."

—— THE MARNOCH PORTRAIT.—We are informed that this very successful portrait of a greatly respected man—*the* landscape artist of our day—has been presented, with an appropriate letter signed on behalf of the subscribers by the Rev. Canon HOLE. An original painting of one of the gardens laid out by Mr. MARNOCH has also been purchased for presentation to him. May his declining years be cheered by the feeling of gratitude which is felt for one who has done so much to enhance the pleasure and happiness of others.

—— THE BITTER VETCH.—It is only the other day that we had occasion to record the finding of the charred seeds of this plant, Ervum Ervilia, amid the ruins of Troy. A more practical, but not the less important aspect is given to the plant by Mr. SOUTHALL, who, in the *Pharmaceutical Journal*, devotes a long and interesting paper to the history of this plant, to whose poisonous properties the death of sundry pigs in divers places has been traced. Under the name of Egyptian Peas or Rovi, seeds are imported, the meal of which has been proved to be poisonous. The seeds when grown by Mr. SOUTHALL turned out to belong to Ervum Ervilia, the poisonous properties of which are well known. The seeds have a dangerous resemblance in colour and size to the Egyptian Lentil, which is so cheap and useful an article of food. The true Lentil, however, is, as its name implies, lenticular, convex, like a watch-glass, on both sides, while the Bitter Vetch seeds are more nearly triangular; still, when mistakes are made between Aconite and Horse Radish, it is reasonable to expect much more frequent mishaps between the two seeds in question. The Rovi seed of the Greek Archipelago is considered by Mr. SOUTHALL to be the Orobus of the ancient Greeks. He tells us, moreover, that the poisonous properties may be eliminated by soaking the seeds in water, and probably by decortication. As the matter is one of some considerable importance, we hope that Mr. SOUTHALL will supplement his historical notes on the plant by some experiments on the best way of neutralising its poisonous properties, whether by heat or by soaking, or both.

—— MIGRATION OF PLANTS, AND REPLACEMENT OF ONE SPECIES BY ANOTHER. — About thirty years ago, as we read in the *Botanische Zeitung*, only one species of Xanthium grew in the neighbourhood of Posen, and that was X. Strumarium, which was very common. Since that time, however, and shortly after 1850, as herbarium specimens prove, X. italicum appeared, and soon almost entirely supplanted X. Strumarium. The latter retained its ground in a few isolated places, especially about farmyards. It was curious to note, about four kilometers north of Posen, that on one side of the broad sandy road, where there are some cottages, hundreds of plants of X. Strumarium flourished, whereas on the other open side not a single plant of this species was to be seen, though X. italicum abounded. On the other hand, the latter was only very sparingly associated with the former on the inhabited side of the road. Hybrids between the two species are not rare.

—— TRENCHING.—There are few winter garden operations of more value than trenching, but that value largely depends upon the way in which it is performed. In all good private gardens where it is the rule to deeply move all vacant ground, to the extent perhaps of one-fourth of the whole area of vegetable ground each winter, trenching is usually well done, because the labourers get plenty of training in this peculiar work, and not only know how it should be done, but, what is more satisfactory, want little looking after. This kind of appreciation, unfortunately, seldom applies to men taken from the field or other occupations, few of whom can be brought to understand that a trench should be as broad at the bottom as at the top, and who, if this mistake be pointed out, still persist in the blunder. It is not because of any wilful desire to be obstinate that they do the work so imperfectly, but they are as a rule the victims of ignorance and of want of educational training in early years. Nothing can be more stupid or false than the common expression that we are in danger of educating our agricultural labourers too much, for in the most elementary or common avocations, such as in trenching, digging, mowing, and many other acts of labour, the best taught man will always show the highest intelligence, and make the best workman. Such an one will soon perceive that in trenching he must have his base as wide as the top, and the sides of the trench must be perpendicular, and no cores allowed to remain. Whether the work shall be deep or shallow must depend upon the nature of the subsoils, as gravel should be let alone, and clays incorporated slowly. It is in this deep cultivation that garden culture so much excels field culture, and enables crops to be grown that, if universal, would make England the most prolific country in the world.

—— BIRDS AND BERRIES. — A warm-hearted feminine friend of wild song birds has been writing to the papers protesting against the wanton waste of the natural food of our aërial warblers seen in the enormous use of berried Holly and Mistleto at Christmas. It is not so much the use of these hardy shrubs for decorative purposes against which the protest is directed, but rather against the withdrawal from free

FIG. 4.—LITTLE ASTON HALL, SUTTON COLDFIELD, THE SEAT OF THE HON. E. S. PARKER-JERVIS. (SEE P. 12.)

access by the birds in trees and woods of so much good food for them at a time of the year when, as seen this winter as well as last winter, the poor birds have need of every berry to keep their little bodies from starvation. It is scarcely probable that such an appeal will be heeded; it appeals too much to men's selfish desires and fancies grounded on long established custom. The use of Holly and Mistleto so universally at Christmas is, apart from all considerations such as arise when the birds and hard winters are in view, a pleasing and delightful custom. It carries some of the charms of the country, of its trees and woods, into the midst of our dull and gloomy town life, and evokes much that is sweet and loving in our work and in money-grubbing humanity. Still the birds deserve some consideration. If there are berries enough for them and to spare there is no room to complain, but there seems to be a universal concensus of opinion that berries suitable as bird food are comparatively scarce. Those who have taken from the birds Nature's food unthinkingly, may well in the season of human festivity remember our feathered friends, and scatter for them, when frost and snow robs them of their proper food, such crumbs and seeds as may save them to charm and delight us with their songs in future years.

—— GORDON'S "PINETUM."—A new edition, or a new issue (for it is called both) of this well-known book has just been published by Mr. H. G. BOHN (Henrietta Street, Covent Garden). The publisher has added a reference list of coloured plates to three books only—LAWSON'S *Pinetum*, LAMBERT'S *Pinus*, and FORBES' *Pinetum Woburnense*—all three valuable books, but not very accessible to the majority of people. A full list of references to figures, especially to books that are easily accessible, might easily have been compiled, and would have added materially to the value of the work. It is a pity, however, that it should not have been critically overhauled before re-issue, so as to have increased its trustworthiness. Though dated 1880 we have not found any additions to the addenda as published in 1875; moreover, the very trade catalogues bound up with this new edition or new issue bear the date 1875.

—— THE GARDENERS' ROYAL BENEVOLENT INSTITUTION.—At the annual meeting to be held on the 14th inst. nine applicants, whose cases have been carefully investigated and found in every way satisfactory, and who, or their husbands, have been subscribers for over fifteen years, will be placed on the pension list without the trouble or expense of an election; this will exclude all other applicants who have not subscribed so long, or not at all. We desire to give prominence to these facts, because some time since, we had occasion to appeal to the gardening fraternity to contribute more of their mites to the funds, so as to render less obtrusive the objectionable disproportion between subscribers who are, as it were, outsiders, without expectation of ever profiting by the Society, and those of the craft, any one of whom may, for aught he knows, live to be thankful for the benefits it yields. When we appealed for help on behalf of the Society, the appeal was not responded to as we hoped it might be. Moreover, it brought us letters stating that, for the work they do, gardeners are ill paid—that is, the better sort of gardeners—in comparison with the steward or the butler, or even the under-butler. Another told us that he had subscribed for a time, but was obliged to discontinue doing so, owing to the many calls upon his slender income. We do not dispute such facts as these, but now comes a more serious matter, which we mention because, as will be seen by our opening sentence, whatever may have been the case formerly, it does not hold good now. "I was often disgusted," says a correspondent, speaking of some twenty years back, "to find men placed on the list and carried through, while subscribers were passed by. Interest rather than compliance with the regulations served to secure the benefits of the Institution." If this were so once, of which we express no opinion, it is clearly not so now, and it is time that so injurious an opinion should be annulled. Other alleged reasons for non-subscription are the facts that the pensions are so small and so few. The obvious answer to this is that they are few and small in proportion to what they ought to be, simply because the funds at the disposal of the Society are small also. We are quite aware that a gardener with from £60 to £100 a year, and a family to educate, feed, and clothe, cannot spare a guinea a year for the Society. But where guineas cannot be expected shillings or even pence might be; a general collection in all garden establishments once a year would surely suffice to place a few more pensioners on the list or augment the existing pensions. Moreover, it would encourage those whose duty it is to beg from richer men on behalf of the Society to undertake their task with a bolder front by enabling to say, as they cannot fairly do now, that the gardeners do their best to support their own Society and should be helped accordingly.

—— EPPING FOREST AND COUNTY OF ESSEX NATURALISTS' FIELD CLUB.—The inaugural meeting of this Club will be held on Saturday evening, January 10, at 3, St. John's Terrace, Buckhurst Hill; the chair to be taken at 7 o'clock by R. MELDOLA, Esq., F.C.S., &c., Secretary to the Entomological Society of London. The objects of the Club, as set forth in the proposed rules, are:—"The investigation of the natural history, geology, and archæology of the county of Essex (special attention being given to the fauna, flora, geology, and antiquities of Epping Forest); the publication of the results of such investigations; the formation of a library of works of local interest and other publications, and the dissemination amongst its members of information on natural science and antiquities." Excursions, under skilful direction, to various localities of interest to the naturalist and antiquary, will also be a main object of the Club. We are pleased to hear that the Club will strongly discourage the practice of removing rare plants from the localities where they are to be found or of which they are characteristic, and of risking the extermination of rare birds and other animals by wanton persecution. The Hon. Sec. *pro tem.* is Mr. WILLIAM COLE, Laurel Cottage, Buckhurst Hill.

—— VEGETABLES IN LONDON.—"C. L.," writing to the *Times* from Manchester on December 29, says:—"Some six months ago I happened to be in Covent Garden when a sale of fruit and vegetables was being held. I saw Asparagus, which, I presume, had been consigned for sale, knocked down at 1*s.* per 100. I followed the buyer to his shop there, and priced the same bundles which he had just brought with him from the auction, and he told me that the price was 2*s.* 6*d.* per 100; that is, 150 per cent. was the profit put upon the articles, for which the grower would receive only 1*s.*, and out of this shilling he would have to pay rent for the soil, manure, labour, carriage, and commission, not to mention the time he has to wait for Asparagus to mature. I said to myself, 'Why is this thus?'"

—— GENISTA PRÆCOX.—This graceful shrub has withstood the late severe frosts, and is not injured in the least, while the white Broom is cut down to the snow line. We remember seeing last spring, in the York Nurseries, two fine specimens of this handsome Broom, where it was flowering most profusely. The bushes were literally smothered with drooping racemes of pale yellow flowers. For planting in borders, shrubberies, or on rockwork, it is very useful and conspicuous.

—— INSTITUTION OF SURVEYORS.—The next meeting will be held on Monday evening, January 5, 1880, when a paper will be read by Mr. E. R. ROBSON, member, entitled, "The Non-Educational Work of the School Board for London." The chair to be taken at 8 o'clock.

—— THE WINTER IN SWITZERLAND. — The Geneva correspondent of the *Times* writes, under date December 28:—"A peculiarity of the present season in Switzerland, which will doubtless prove interesting to meteorologists, is the fact that, while extreme cold prevails in the valleys and at low elevations generally, the weather in the mountains is mild and enjoyable, and the temperature for the time of the year is unusually high. In the early part of last week, relates a Lucerne paper, two young men, weary of the icy cold and perpetual fogs of the valley, made an excursion to the Righi. There they found unclouded sunshine, and the slopes about the Righi-Kulm Hotel were free from snow. In the middle of the day the thermometer marked 18° above zero (64° Fahr.), and on the southern slope of the mountain below Kaltbad, Gentiana verna, Gentiana bavarica, and other alpine plants were in full bloom. A correspondent of the *Bund*, writing from St. Beatenberg, near Interlaken, on Christmas Eve, describes the weather there as superb. The sun shines from 8.30 in the morning to 4 o'clock in the afternoon in undimmed splendour. Children play about in the open air as in summer; fires in the daytime are unnecessary; people sit out on their balconies; the trees are beginning to bud, and the snow has almost disappeared."

—— CENTIGRADE THERMOMETERS.—M. NAUDIN writes:—

"At p. 792 of your last volume I see a criticism on the use of the Fahrenheit thermometer, which appears perfectly reasonable. This thermometer is in fact one of the most inconvenient. The Centigrade is objected to because the degrees of temperature are too large; but this objection is cleared away by the fact that the degrees may be divided into ten, and, at will, into one hundred sub-divisions. The Centigrade thermometer is in reality a Milligrade thermometer, and even Dix-milligrade. In everything simplicity is better than complication."

—— "THE ANTIQUARY."—This is the title of a new monthly periodical "devoted to the study of the past" (ELIOT STOCK), but judging from the excellent article on the value and charm of antiquarian study, evolution and progressive development are as characteristic of the modern antiquary as conservatism and narrowness of view were in the case of the Dryasdust of olden time. The publication before us may be safely recommended as interesting to others than professed antiquaries. The paper and type are excellent, but is it heresy to suggest that the rough edges be carefully ploughed off and the sheets folded evenly? With all our reverence for antiquities, we do not think it is good sense or good taste to copy defects and imperfections.

—— A WINTER BED OF FLOWERS.—Miss HOPE, writing from Wardie Lodge, Edinburgh, on December 26, and forwarding an excellent photograph, says:—

"The late season is the cause of our having a fine bed of flowers this Christmas week. I send a photograph taken on December 16. The Helleborus niger maximus (?) is quite three weeks later than ordinary. There are above one hundred blooms fit to cut, and more than one hundred buds to come on. Facing the south we covered the bed with thin mats to prevent the sun thawing the frozen flowers suddenly. Plants of the same Hellebore away from the south were unprotected, and have stood the severe frost perfectly. We are between 2° and 3° higher than the Botanic Garden. A row (36 yards) of the double Colchicum autumnale is also late, and the snow having protected the flowers, it is now in fine blow. At Messrs. METHVEN'S nursery to-day I noticed a large bed quite lilac. Mr. MCKENZIE said he never had had them so late. It is very delightful to have two plants in quantity and in perfection of flower, after such a storm as we have already experienced this winter. The Aucubas (all sorts) have suffered desperately about Edinburgh, and wherever we turn our eyes here we are met with the burnt black foliage. The outline of METHVEN'S Coniferous beds is quite black; Aucubas are not to be counted on for winter beds if a wet summer and unripening autumn has preceded. Our 27 yards of Rosemary has again suffered as it did last winter, and again the half that is protected by a wall is browner than the portion merely backed by evergreens."

—— A GARDEN BOTHY IN FRANCE.—As most gardeners have had some experience of bothy life in this country, it may interest them if we give some details concerning the bothy at Ferrières, the seat of Baron A. DE ROTHSCHILD. The bothy at Ferrières is a large house, three storeys high, which stands at the bottom of the *fleuriste*, a department of the establishment in which are situated the forcing-houses and pits, and which is separated by a road from the show garden. The front of the house faces a large yard, in which is a shed and stables for the housing of the horses, vans, carts, &c., employed in the park and gardens. The ground floor of the house is occupied as a stable for four horses, next to which is a kitchen for the young men, a large dining-room and a store-room. On the other two storeys are twelve single-bedded rooms, a large fruit-room, and seed-room; the accommodation being for twelve young men. Each room contains bedding, table, chair, wash-stand, cupboard, and looking-glass, and, not forgetting a most useful thing in winter, either a fire-place or a small stove. The wages average from £3 4*s.* per month to £5, with

fire and light free. To do their cooking the young men have a cook, one-half of whose remuneration is paid by themselves, and the other half by the gardens. The working hours are from 6 A.M. to 6 P.M., two hours being allowed for lunch (*déjeuner*), viz., from 11 to 1 in summer. In winter they begin at daylight, and finish at dark, with only one hour for lunch. On Sunday they all work till 10 A.M., that is to say, they clean their respective houses, and water the plants contained in them. The young men are divided into two sections of six each, and go on guard or duty every other Sunday from 10 A.M. to 6 P.M. Their work is to show visitors round, to take the air off, &c. As regards attending to the fires at night, they take the night-guard weekly in turn. The one then on duty has to look after the fires, which are forty in number. As for the food, it is arranged in the following manner:—Before work in the morning each takes what he likes; at 11 they all lunch together, and dine together at 6. Their bill of fare generally includes meat, either roast, boiled, or stewed; vegetables, cooked in the French fashion; and salad or cheese. They drink wine, which they buy in casks, each of them paying according to the number of bottles he drinks. The cost of food for each man, including wine, averages monthly from £2 to £2 10*s.*, according to the quantity of wine they drink. At new year they each receive a present, ranging in amount from 5 fr. to 20 fr. The day on which falls the *fête* of St. FIACRE, the patron saint of gardeners, is regarded as a holiday, and the young men again receive some little money present, from 5 fr. to 20 fr. each, according to their qualifications. Lately a library has been established in the bothy, to which the best of the English and French horticultural papers are supplied; and as the funds get more plentiful books will be bought. The money used for the library comes from gratuities received from visitors, fines paid by the young men for neglect in their work, and an entrance fee of 4*s.* from each new-comer. We are sorry to hear, however, that, with the exception of a few amongst them, the young men do not seem to care much for improving their knowledge by reading.

—— THE WEATHER IN FRANCE. — M. MARIE DAVY, director of the Observatoire de Montsouris, near Paris, remarks that "the present winter is the sixth severe winter of the century. These six winters have recurred with great regularity in three periods of two each, thus: 1788-89 and 1794-95, an interval of six years; 1829-30 and 1837-38, an interval of eight years; 1871-72 and 1879-80, an interval of eight years. Least distance from the first group to the second, forty-two years; least distance from the second group to the third, forty-two years. Is this simply a coincidence? The fact is not less strange. Of these three groups the two extremes are the most severe. Below are noted the lowest observed temperatures, as well as the number of days of frost, as indicated by the thermometer of the Observatoire of Paris:—

Year.	Days of Frost.	Greatest Degrees of Cold.
1788-89	86	21°.5 C.
1794-95	64	23°.5
1829-30	76	17°.2
1837-38	77	19°.0
1871-72	59	21°.3
1879-80	(?)	23°.9

Thus the French, like ourselves, are experiencing the severest winter of the century, and the measures taken for public assistance are unfortunately but too well justified."

—— MARKET VEGETABLES. — The miserable appearance presented by vegetables in markets and shops during the severe weather has found its counterpart even in that favoured market city, Paris. We have so often been told in regard to vegetables, "They do these things better in France," that we learn with something like surprise that even there hard weather can create almost a vegetable famine, and that prices are exorbitant. The correspondent of a daily paper tells how just recently he visited the chief Paris markets, and found a scarcity of fruit and vegetables, that reminded him of the days of the siege. Leeks had doubled in price, and meagre. Lettuces were quoted at from ten to fourteen francs each, which in normal weather would have been sold at the rate of two sous each. The French people, therefore, are finding, what British gardeners so long have known, that the weather rules their destinies. Give them a good season, and in all things of the garden they can compete with the best French growers, whilst the French growers find that, under bad weather conditions, they are no better off than their neighbours. Hard weather is a great leveller—it paralyses work in all kinds of gardens, and in the same way it makes the supply of vegetables everywhere difficult. Those who are so fond of sending their petty complaints about the scarcity of vegetables to the *Times* or other papers, know little of the difficulties that in hard weather surround growers, and render their work anything but enviable. There is so much energy and labour bestowed upon the production of vegetables for the London market, and the profit in past years has been so trivial, that market growers much more deserve sympathy than discredit.

—— CHINESE PRIMROSES AT CHISWICK.—Any one interested in the different types of these charming and useful winter flowering plants will find much to interest them at the Chiswick Gardens just now, as Mr. BARRON has flowered a large and interesting collection, including several of the newer Continental types, which are just now in good condition, and afford good tests of comparison. Some of the high-coloured varieties, originally of Continental origin, but which Mr. BARRON has materially impoved, are particularly striking in the great depth of red shown by some of the flowers.

—— THE LINNEAN SOCIETY.—Mr. N. E. BROWN, of the Herbarium, Kew, who has given much attention and study to the Aroideæ, was elected an Associate of the Linnean Society at their last meeting, December 18.

—— TOMATOS IN COLD FRAMES. — Of culinary vegetables there are some so little palatable to those who have not accustomed themselves to their use as to be absolutely nauseous. Amongst these are Tomatos, which notwithstanding the reputation they have ever had as being particularly wholesome, have only in recent years, in this country, become appreciated. And unfortunately, just as people began to rightly estimate them, they have become so subject to disease, like that which affects the Potato, that their cultivation in the open air is very precarious, and for the last two summers has resulted in almost total failure,—a disappointment much felt by those who for a considerable time each summer and autumn look forward to their sunny south walls affording a regular supply. Those who have heated houses, or pits, at command, of course are so far independent of adverse sunless seasons, and are also able to escape the disease, as it has shown itself little under glass. But there are many who like Tomatos whose garden appliances in the shape of artificially warmed houses, or pits, are too limited, or non-existent, to enable them to grow them in this way; yet any one who has an ordinary good-sized garden frame can grow Tomatos so as to have a good supply, even in such exceptionally sunless summers as the past. All that is needed is to sow the seeds sufficiently early, to get the plants on as forward as the solar warmth will admit of, to turn them out in moderate-sized hills of earth placed at the bottom of each light, and to train them on a trellis made of laths, oziers, or ordinary wire netting, supporting it at a distance of 9 inches or 10 inches from the glass, simply giving the plants air proportionate to the weather, and water as they need it, with the requisite thinning of the shoots, and plenty of well ripened Tomatos may be depended upon, as we can vouch from what we have this last summer seen accomplished with such simple means as this. The full flavour present in this vegetable when ripened on the plant, as compared with that which is possessed by the half-matured examples gathered in a semi-green state, and which attain their colour imperfectly afterwards, is such as to leave the latter far in the shade.

—— TROUBLESOME WEEDS IN CALIFORNIA.—Malva borealis is said to be the most persistent and troublesome weed in California. Mrs. BINGHAM states in COULTER'S *Botanical Gazette*, "It sometimes grows 10 feet high in cultivated ground. It dies during the dry season where the ground is not irrigated, but whenever the ground is moistened for a few hours the seeds will germinate. Solanum nigrum grows everywhere, blooming and bearing fruit the year round; it is very difficult to eradicate. Brassica nigra covers thousands of acres of pasture land, rendering it almost entirely useless. Among other common weeds are: Stellaria media, Matricaria discoidea, Hemizonia fascicularis, &c. Erodium moschatum and Medicago denticulata cover large areas, and are valuable for pasturage.

—— A TALKING PLANT.—In COULTER'S *Botanical Gazette* for November we observe that Sir JOSEPH HOOKER is made to say, respecting Epipactis latifolia, which has recently been discovered in America, "Another curious point is that your plant should talk with us of the European varieties of the species, that species being so variable a one, that, *à priori*, it would have been expected that the North American form should have differed from all the European ones." It would be curious indeed were the American plant to talk of its European or any other relations, but we believe "talk with us" should read "tally with one."

—— A DOUBLE-FLOWERED SEDGE. — In the *Abhandlungen des Naturwissenschaftlichen Vereins zu Bremen*, vi., p. 432, Dr. FRANZ BUCHENAU describes a double-flowered state of Scirpus cæspitosus, which he found in company with a friend last summer. Each flower was transformed into a dense tuft of bracts, and it is impossible to decide which answer to the stamens, perigonium, &c., as they are much more numerous than the normal floral organs. No traces of anthers or stigmas could be found. Mr. BUCHENAU regards this as an instance of real duplification, a phenomenon not previously observed by him in the Cyperaceæ, a family to which he has devoted much attention. In 1870 he described double flowers of Juncus squarrosus in the same publication, ii., p. 380. We doubt the correctness of the application of the term "double" to such growths, which are not uncommon in grasses, Rushes, Restiaceæ, &c.

—— ALLUVIAL SOIL.—By the Thames' side, near Kew, is a small market garden which has been reclaimed from the Thames by an embankment. We are afraid to quote the figures as communicated to us; suffice it to say that, large as the expense was, it was more than recouped in a comparatively very short time. The proprietor has the means, by the use of sluice-gates, of enriching his ground with a fresh layer of alluvial soil at pleasure. The Celery grown this season has been unusually fine.

—— HORTICULTURAL PURSUITS. — The paper on this subject, read at Manchester on December 3 by Mr. BRUCE FINDLAY, and of which we gave an epitome at p. 751 of our last volume, has been issued in pamphlet form, at the price of 1*d.*, by Mr. JOHN HEYWOOD of that city.

—— A NEW LÆLIA.—Mr. BULL is lucky, and no one deserves good luck better than he. Last year about the same time he was fortunate enough to flower a new Lælia, and now again we have to chronicle, on this 1st day of January, 1880, a new variety of Lælia anceps—a great beauty, with white sepals, blush petals, and rose-coloured labellum. Next week we shall be in a position to give a full description from the pen of the "arch-orchido-diagraphist," Professor REICHENBACH, to whom our readers are under so many obligations.

—— THE WEATHER.—General remarks on the weather during the week ending December 29, 1879, issued by the Meteorological Office:—The weather was moderately fine and dry generally until the 26th, after which date it became dull, squally, and very unsettled over the whole country. Fog, however, was experienced during the first three days in the S.E., and was very dense all over that district on Christmas Day. The temperature readings in Ireland and Scotland have been high during the whole period. In England, however, a very decided change has occurred, low readings having been reported until the 27th, when a very rapid rise occurred, and the thermometer continued high until the close of the week. The wind was generally south-westerly over the whole country, fresh to strong in force in the West and North on the first few days, and moderate or light in the South and East.

On the 28th a severe gale prevailed in nearly all parts of the kingdom, and on our north-westerly and north-easterly coasts blew with great violence in the evening. The rainfall was more than the average in Ireland and the greater part of Scotland, but again less in all other districts.

—— GARDENING APPOINTMENTS. — Mr. JAMES MORRISON, who for the last six years has been a foreman at Dalkeith, under Mr. DUNN, and proved himself to be an able and intelligent practitioner, has been appointed to succeed the late Mr. KETTLES as gardener to Lady MARY C. NESBIT HAMILTON, at Archerfield.

VEGETATION AND ARCHITECTURE.

THE Gothic arch, such as is represented in our Supplement, in the opinion of some, took origin in the forms presented by the overarching boughs of trees. The supposition is not an unnatural one, but we expect the architects would tell us that the intersection of two round-headed arches of Norman workmanship was more likely to have suggested the form in question. In any case the beautiful curves of the boughs and of the foliage, so admirable not only in their beauty but in their fitness for their varying purpose, afford lessons which the engineer and the architect can never study too deeply. If the pointed arch really did take origin in the way above mentioned, it might as readily be conceded that the upright mullions and pillars are the representatives of the trunks of trees. We do not think that any one who glances at the forms of vegetation drawn in our Supplement in connection with the lines of the conservatory in the background can doubt that in structural detail, where strength and adaptability to purpose are concerned, as well as in beauty, the conscientious architect is bound to study the contrivances and forms which Nature affords in the disposition of the leaves, the curve of the boughs, the direction and set of the veins, and in countless other matters which a trained eye speedily seizes on, but which are so numerous that not the keenest student can ever hope to exhaust them.

Our Supplement takes the form of an Almanac, and it speaks for itself: but as the postal regulations require us to speak of it also—a thing which otherwise we should be too modest to do—we may venture to call attention to its effectiveness and nicely balanced colour. The contrast between the architectural design and the foliage and flowers is also pleasing, but in reference to the details of the vegetation we shall not be surprised if our artist friends (such of them as are not pre-Raffaelites) are not better satisfied with it than the gardener and the botanist. Last year the artist's leading idea was Egypt, the recent arrival of the Obelisk having given birth to that suggestion; this year there was no Obelisk to commemorate, and our artist was left fancy-free; the consequence is that there are some peculiarities in the foliage and flowers in the upper part of the design which have not yet been observed by the botanist and the gardener to our knowledge.

The calendar matter contains the usual information given in similar publications, with perhaps this important addition, which may not be noticed elsewhere, that on the 2d inst. this journal completes its thirty-ninth year—a goodly age for a gardening journal; and we look to our readers to supply the usual compliments on our condition, only assuring them that we will do our best in the future, as in the past, to merit them.

The column devoted to the mean temperature gives the average mean temperature for each day in the year at Chiswick, near London, as deduced from the elaborate observations of the late Mr. Robert Thompson during forty years, reduced and corrected by Mr. Glaisher. They may be taken as fair representatives of the average temperature of London and its vicinity, and let us hope the weather in 1880 will conform more closely to its proper standard than it did in 1879.

The dates of meetings of the principal metropolitan horticultural and natural history societies are given, and as many of those referring to the provinces as are yet fixed. Among the latter appointments are two which are interesting and significant of the progress which gardening is making even in unpromising localities—we mean the artisan's show on the August Bank Holiday at South Kensington, and the cottagers' show on the same day at Manchester.

Home Correspondence.

Daphne Mezereon.—I observe that my friend, Mr. Harpur-Crewe, mentions this plant as not uncommon some years ago in woods in Bucks. Your correspondent, Mrs. Alfred Watney, a short time since appealed in your pages to "Liss," Hants, for similar testimony. I live a few miles from Liss, and not many years ago I dug plants of Daphne Mezereon out of my own woods, from seeds of which I raised a numerous progeny. Two of these I sent the other day to the poet, Matthew Arnold, as a native production. *J. H. Mangles, Valewood, Haslemere.*

Poisoning by Aconite Root.—Another of those sad catastrophes which, if they did not happen tolerably regularly, we should suppose to be almost beyond the range of possibility, is recorded from Malmesbury. The family of a farmer partook, on Christmas Day, of Aconite, or Monkshood roots, instead of Horse Radish. All were seriously affected, and the wife, in spite of medical aid, succumbed. When the two plants are in flower it would seem as if no mistake could be made, and even at this time of year it taxes one's faith to believe in such an utter want of observation as to lead any one to confuse the two roots. Size, colour, form, taste, smell, all are different; and even when scraped the yellowish colour, the taste and smell of the pungent Horse Radish are as different as possible from the pinkish hue, faint smell, and at first sweetish taste of Aconite. Terrible calamities such as these might be avoided if a knowledge of "common things"

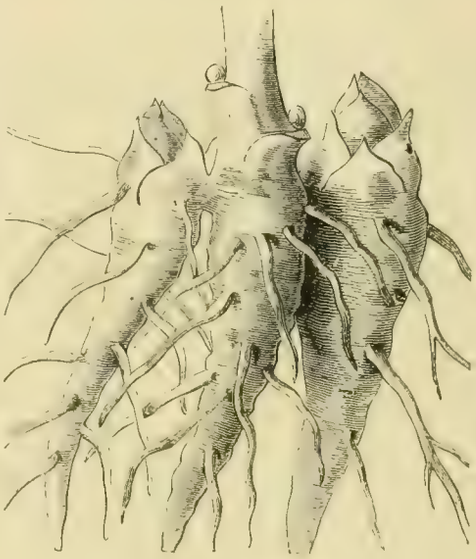

FIG. 5.—ACONITE ROOT, NAT. SIZE.

were insisted on in every school in the kingdom. Surely it ought to be possible to make people use their eyes and their other senses even if it be not possible to endow them with intelligence. We subjoin a cut of Aconite root (fig. 5), showing the central old root and the two new ones for the coming season's growth. The skin or rind is of a more or less deep brown colour, quite different from the pale, dirty yellow tint of the rind of Horse Radish. No Aconite—no poisonous plant of any description—should be allowed in the kitchen garden or the herb border. The slightest amount of ordinary observation and care should suffice to prevent such very unnecessary calamities. EDS.

Magnum Bonum Potato.—This variety appears to be getting very considerably "improved" since it was introduced by Messrs. Sutton & Sons of Reading, as we now have an "improved" from Messrs. Carter & Co., and Messrs. Webb & Sons announce their "improved." As an amateur cultivator I am getting fearfully perplexed anent Potatos, and if we continue to have such a host of improved varieties I must give up my small garden and take a farm, or cease to be a Potatoist. It would be an immense advantage to such growers as myself if Messrs. Carter & Co., and Messrs. Webb & Sons, would tell us in what respect their "Magnum-Bonums" are improvements, and in fact I call upon them to do so; and in the event of not getting a reply through your paper I think we may safely consider that they take to themselves honours not belonging to them, and that in common honesty the Potato should henceforth be known only as Sutton's [or Clarke's] Magnum Bonum. Not that I approve of any dealer taking to himself the honour of being the originator of the variety: for instance, Messrs. Sutton & Sons call the Woodstock Kidney theirs, and for what earthly reason? This excellent variety was raised by Mr. Robert Fenn, and was one of the results of careful hybridisation, and his name should be connected with it as the raiser, and henceforth it should be known as Fenn's Woodstock Kidney, and Messrs. Sutton should be the first to strike a blow at the pernicious example now so prevalent amongst the great seed firms. It is high time that a protest should be made against this system of appropriating spurious honours. I have before me a catalogue of a pushing seed firm in the Midland districts, who give us their "Improved Sangster's No. 1 Pea," an Improved Early Frame Radish! their selected Scarlet Runner, and a host of other things "too numerous to mention." The same firm has done wonders in Potatos—such a lot of "improvements;" but oh, you British public! who pays for such "improvements"? *Solanum.* [The fashion being now to charge no more for the "improvements" than for the original types, in what way are purchasers defrauded? EDS.]

Market Prices.—I have read with interest the discussion in your columns respecting salesmen and their charges, and enclose a bill received from one of my salesmen for your perusal, which salesman is one of the best we can find to sell too. As you will see, had my salesman taken his full commission there would have been very little left for me. The hampers of green stuff consisted of small Ulm Savoys, about sixty heads in a 2-bushel hamper—some hampers just the heads out of Brussels Sprouts, others were small Cabbages, somewhat like the Savoys; five or six heads would have made any family a nice dish of greens for dinner. I live about one mile from the station. Those seventy-two hampers cost me as empties about 1*d.* each. All the greens we cut without frost on them, and packed as cut. There were four 1-horse cartloads to take to the station, and every hamper was tied down with good string, and each directed. *X. X.*

"—— Market, Dec. 23, 1879.

"Dear Sir,—I have received from you as under:—

Dec. 20.—32 hampers of greenstuff, at 1*s.* 6*d.*		£2 8 0	
,, 23—40 ,, ,, at 1*s.* 3*d.*		2 10 0	
,, ,, —4 skips of Sprouts, at 3*s.* 6*d.*		0 14 0	
		£5 12 0	
Carriage	£1 3 10		
Commission	0 9 0		
		1 12 10	
By cheque		£3 19 2	

Green-stuff plentiful to-day. Your hampers were almost unsaleable. You will see that I have not charged you any commission on the last forty hampers, and only 3*d.* on the thirty-two. Yours obediently, ——."

Effects of Climate upon Fruit.—If the fruit-rooms throughout the country are not particularly attractive this year, there are but few of them it may be presumed, judging from our own, that do not afford some instructive and striking instances of the effects of climate upon fruit generally, and of the vagaries of Pears in particular. The lessons to be learnt in this way may be turned to profitable account by the answer they afford to the question of what to plant in any given locality, or for any particular purpose. Here we have small but ripe and presentable fruit of the following Pears:—Styrian, Flemish Beauty, Forelle, Louise Bonne of Jersey, Marie Louise, Jersey Gratioli, Beurré Diel, Beurré Superfin, and Doyenné du Comice all in together, and all later than usual, some of them being as much as two months beyond their usual time of ripening. Thompson's and Beurré d'Amanlis may be named among the sorts that are only just over, while Winter Nelis, Glou Morceau, Beurré Rance, and a number of other sorts look more likely to wither and be useless than to ripen. *F. Harrison, Knowsley.*

Pear Culture under Glass.—"J. J. M." asks, at p. 801 of your last volume, for information about growing Pears under glass. As I have so grown them for the last twenty years, I can assure him that no fruit is more easy to grow in cold glasshouses, and none repays the labour better. I grow them in both span-roof and lean-to houses, as pyramids and bushes, and also trained. They set only too well, for if there is much blossom the labour of thinning is considerable. If properly treated and not coddled, the flavour is excellent, and as to size and colour, no fruit grown in the open air even on walls can compare with them. In a warm summer they are apt to ripen rather before their time, but the very late sorts keep uncommonly well. My garden is situated in the centre of the island, and in latitude 55½°. I may here say that when people send you communications about the growth of fruits, much more information would be gained by your readers did they always state the latitude or name of the county. I append a list of the different varieties of Pears grown by me under glass:—Chaumontel, Beurré Superfin, Pitmaston Duchess, Glou Morceau, Bergamotte d'Esperen, Beurré Diel, Dr. Trousseau, Orphelin d'Enghien, Doyenné du Comice, Marie Louise, Josephine de Malines, Beurré

d'Aremberg, Passe Colmar, Beurré Clairgeau, Passe Crassane, Madame Milet, Grosse Calabasse, Catillac, Uvedale's St. Germain, Winter Nelis, General Todtleben, Fondante d'Automne, Duchesse d'Angoulême, Beurré Bachelier, Marie Benoist, Easter Beurré, Olivier des Serres, Marie de Guise, Iris Grégoire, Beurré de Ronde, Louise Bonne, Beurré de Jonghe, Conseiller à la Cour, Fortunée. *D.*

—— I now have about sixty pyramidal Pears under glass, and they succeed well. They require plenty of water and air in summer. I find the best sorts for house work are Winter Nelis, always good; Glou Morceau, good; and Beurré Rance, and Easter Beurré, have done well this year. The under-mentioned kinds have not ripened but have shrivelled—Knight's Monarch, Joséphine de Malines, and Bergamotte d'Esperen. *Wm. Smythe, The Gardens, Basing Park, Alton.*

Fertilisation of Yuccas (p. 822).—I have not seen Mr. Meehan's account of the fertilisation of Yuccas, but there can be no doubt that the Yucca can be fertilised by other means than by the agency of the Yucca moth (Pronuba yuccasella). I have more than once had well-formed fruit on Y. recurvifolia, but the seeds did not come to maturity. Dr. Engelmann, in his *Notes on the Genus Yucca*, says:—"In the Botanical Garden of Venice I gathered the pulpy pods from a large Yucca aloifolia, about 15 feet high. This was the only Yucca fruit seen by me in Europe, though I have since learned that in other instances also, though only exceptionally, fruit and good seed have been produced there, principally by the same species, and very rarely by others." As Dr. Engelmann and Prof. Riley are both positive that the Yucca is incapable of self-fertilisation, it follows that the specimens at Venice and Bitton must have been fertilised by some European and British insect, and it is then not easy to understand why the fruit should not be more frequently produced. *Henry N. Ellacombe, Bitton Vicarage.*

Mistleto.—I have been very successful in getting Mistleto to take upon Apple trees. My plan is to rub the berry upon the young wood on the top side of the Apple till it sticks well, in January. I believe that failures are attributable to putting the berries upon the old wood, the roots not being able to get to the alburnum for a support; hence in hot and dry weather the young plant shrivels up and falls off. *John Bolton, Grantham.*

Vegetables Killed by the Frost.—When I sent you the letter published at p. 765 of your last volume I expected that a great deal of damage would be done by the frost, and now that it has broken the tale is told. When the frost set in we had a fine lot of Veitch's Autumn Giant Cauliflower sown in, and every one has been killed. Of Snow's Winter White Broccoli hardly any escaped. Carter's Champion and Adams' Early White are also killed; and the Osborns and Backhouses have suffered to some extent, but I think will come round, but will be late. Savoys are completely rotten through; but Borecole and Scotch Kale have stood better. Seakale Beet has stood the severe weather, and the crowns look well. As the spring advances it will come in as a substitute for Spinach, and I think more of it should be grown, as the midrib makes a good Seakale—the green part as Spinach, and where warm pits could be had it can be taken up and planted, and give some first-rate crops through the winter. Spinach Beet has stood well: I find that in some gardens which stand higher than this it has not suffered to any extent. *H. Little, Rusland Hall, Ulverston.*

Seedling Pelargonium, The Major.—In an article about a fortnight ago, "On Growing Pelargoniums for the London Market," it was mentioned, if I remember rightly, that they were obliged to be grown at a temperature of not less than 60° at night and 10° more for the day. I enclose you a bloom of a seedling that I have raised and named The Major, that I think will be invaluable for market purposes, as it flowers well at a temperature of 45° for the day and 35° for night. What I send was grown at even less than that. All my other seedlings and also named varieties will not grow out even, much less open, in the same house. I may mention the habit of the plant is good, and it flowers freely. *Harrison Weir, Weirleigh, Brenchley, Kent.* [This quality, if permanent, will give The Major a high position. It is a good flower, of bold character; the colour a cerise-scarlet. EDS.]

Vick's Criterion Tomato.—I send herewith a few fruits of Vick's Criterion Tomato, cut to-day (December 28), from plants that were fruiting in July last. I grow them in pots on the single stem system. They were in a Peach-house till October, when they were transferred to a stove. They now have stems 18 feet long running up the roof. *A. Hopkins, Gr., Ashstead Park, Epsom.* [A nice sample. EDS.]

The Yellow Amaryllis (Sternbergia lutea).—This autumn flowering bulbous plant has special attractions for the plant lover. In the first instance it may put in a good claim to be one of the "Lilies of the field" whose growth we are enjoined to consider. In the next place its burnished dark green leaves, contrasted with the clear yellow flowers, give it a title to regard which no lover of flowers will dispute. Next, it is quite hardy, its leaves being evergreen, or at least surviving the winter; next, the best way of cultivating it is to let it alone, which saves trouble. Any common garden soil suits it, so that it may be grown in clumps in the border by itself, or in association with autumn Crocus and Colchicums. Stagnant moisture does not suit it in the open ground, nevertheless it is a good plant to grow in glasses like Hyacinths, as we

FIG. 6.—STERNBERGIA LUTEA.

can testify. The plant is a native of Southern Europe and the Levant. The pollen grains, as drawn by Mr. W. G. Smith, seem curiously marked. EDS.

Poinsettias at Hawkstone.—At the present time these are in excellent condition, and well worthy of special notice. The plants are in 4, 5, and 6-inch pots, and from 12 to 18 inches high, many of their floral bracts measure 18 inches across. It is something wonderful the effect produced by this beautiful winter decorative plant when well grown and in quantity, "both single and the double variety," as at Hawkstone. The brilliancy of the bracts is also striking when we consider the sunless weather they have had to develope in. They are arranged amongst a quantity of Zonal Pelargoniums, intermixed with Calanthe Veitchii, vestita and vestita lutea, which are really magnificent. It is evident from the immense size of the bulbs that Mr. Pratt is thoroughly conversant with the wants and requirements of this beautiful class of Orchids. We have never had the opportunity of seeing bulbs of larger size, nor blooming more profusely. Mr. Pratt is certainly to be congratulated upon his success with this class of plants as well as the Poinsettias. *Visitor.*

Early Peas.—During the last eight years we have invariably gathered our first dish of Peas on or between May 20 or 24, excepting last year (1879), when, notwithstanding that the same variety of Peas were sown at the same time, and planted out in the same aspect as heretofore, and in every other respect received the same treatment, they were, like everything else in the vegetable world, a month later. Although our mode of treatment is not new, it may not, however, be so well known as it should be, therefore I will briefly detail our *modus operandi* for the information of those of your readers who, like myself, may be anxious to obtain young Peas as early as possible without having recourse to forcing them. About the end of December or beginning of January we make our first sowing in large 60-pots, which are crocked, and three-parts filled with leaf-mould, and about a dozen Peas put in each pot, which is then covered with the same material, and put into an early vinery near the glass to prevent their becoming drawn. When they have made a couple of inches of growth they are gradually hardened off, and finally planted out about January 20, or as soon after as circumstances may permit of its being done, in a south or south-west border, in rows 4 feet apart and 1 foot apart in the row. The Peas are simply turned out of the pots and planted, with the balls of mould and roots undisturbed, in ground previously and suitably prepared for their reception. This done, a little soil is drawn up to the plants on either side, and then a line of soot and lime follows in the same direction, after which some short sticks are put to them *pro tem.*, and then some short Spruce boughs are placed on either side the rows sufficiently close to shield the haulms from the chilling effects of frost, snow, and biting wind. As the Peas progress in growth, and become inured to the weather, the boughs should be gradually removed, which will prevent their making a weakly growth, and so soon as the weather becomes favourable enough for the purpose (about the end of February) the boughs should be removed altogether and the Peas finally sticked. In conclusion I may remark that we stop the haulms of our early Peas when they come into flower, with the obvious object of causing them to pod quicker than they would under ordinary treatment. The kinds we grow for early crops are Sutton's Ringleader, Sutton's Emerald Gem, and Laxton's William I., in the earliness of which there is little, if any, difference. We depend most upon Ringleader, it being a well tested, good constitutioned, and prolific Pea. However, William I., in point of size, beats the former, and I have no doubt as it becomes better known it will be grown extensively as an early Pea; but, nevertheless, until it has been fairly tested on a small scale in different districts and soils, it will be advisable to stick to whatever variety has been found to succeed best in each individual district. About the same time that we make our sowing in pots we make a sowing of the same kind, and a row, or rows, according to the length of the same, of Dickson's Favourite out-of-doors, which make a good succession. Our early Beans we treat in a similar way, but in this case we sow a quantity in a box, which, after being properly hardened off with the Peas, are transplanted individually in rows 2 feet apart and about 4 inches in the row. In every other respect, minus the sticks, are treated the same as the Peas. *H. W. Ward.*

Pelargoniums and Geraniums.—I think it would be as well to settle by authority the exact names of those flowers that seem to be indiscriminately called Pelargoniums and Geraniums. Botany has been described as the "science of giving polysyllabic barbarian Greek names to foreign weeds," but while some plants, Abies Mariesii, for instance, are most carefully described, others, as Geraniums, seem to be called by names that do not belong to them, but to quite a different flower. I notice, both in your letterpress and advertisements, mention made of Zonal Pelargoniums: now I should certainly decline to receive Zonal Geraniums if I ordered Pelargoniums. I am old enough to remember that we had a parti-coloured greenhouse flower of a violet shape that was called a "Geranium;" then came a lot of hardy bedding-out stuff with a truss of red flowers all of one colour, followed by "Tom Thumbs" and "horseshoes," which grew nicely out-of-doors. Then we were told that we must no longer call those greenhouse plants "Geraniums," that their right and proper name was Pelargonium, and that those bedding-out plants were strictly speaking Geraniums. [No, no!] Now, however, the old name Geranium seems to be

dropped for both, and the new name Pelargonium given to both, surely erroneously? [No!] Let us, however, have it fairly settled which is which, so that we may clearly and distinctly know what we are talking about, and not make mistakes either in writing or talking, in sending to shows, or in ordering plants. *James Richard Haig, Blair Hill, Stirling.* [All the so-called Geraniums are really Pelargoniums. The wild Cranesbills of the fields are Geraniums. EDS.]

The Pioneers of the Bedding-out System.—In your last volume (p. 489) Mr. Fish states that the late Mr. Caie was the first person who commenced the bedding-out system, but this I beg to correct, as I helped to fill the beds here in the spring of 1823, long before Mr. Caie had charge of the Campden Hill gardens. It was Lady Grenville who began the bedding system in the first place, but she quite abhorred both ribbon and carpet bedding. The Dowager Duchess of Bedford used to visit the grounds here, and much admired the garden, and when she went to Campden Hill to live she sent Mr. Caie here to see the place, and very probably to take notes of what he saw. I had never seen Mr. Caie before, and never met him afterwards. *Philip Frost, Dropmore.*

Orchids at the York Nurseries.—A considerable amount of care and attention has for many years past been given to these highly interesting, singular, and beautiful class of plants. They are mostly grown in low span-roofed houses, where the plants can be placed in such positions as to be near the glass, to obtain the greatest amount of light—a position which evidently suits them, as the large, vigorous masses of Pescatoreas, and the rare Bolleas, &c., abundantly prove. In passing through house after house filled almost to overflowing with the very choicest and rarest species and varieties, one feels no little difficulty which to notice amongst so many. Entering one of the ranges of the before-mentioned houses, the first sight which attracts the eye of the visitor is a splendid collection of the very chaste and captivating Orchid, Lælia albida, with its numerous varieties, varying as they do in colour from snow-white to those heavily suffused with purple. The blossoms of the typical form of L. albida are about an inch in diameter, pure white, waxy, and very firm in texture. They are borne on stout, nearly erect stems, with from five to twelve blossoms. The varieties bella and grandiflora are charming forms, the sepals and petals are more or less suffused with clear purple near the apex, while the lips are clear purple throughout, ornamented with a bright orange centre. Another gorgeous sight here rivets our attention. We are all well acquainted with the beauty of Lælia anceps, with its large, warm, rosy-purple flowers. However beautiful that may be, it is quite eclipsed both in size and colour by the very rare variety Barkeriana, which has blossoms fully 4½ inches in diameter, with sepals and petals of the most charming, brilliant rosy-purple, while the lip is of the richest velvet-crimson—which reminds me of a very old favourite, the double crimson Primrose, now so scarce. It is indeed an exquisite kind, and a valuable acquisition, and will, I feel sure, be much sought after by lovers of these plants. Advancing a few steps further, we are almost surrounded by splendid specimens of Cattleya maxima, with its enormous flowers, which are produced in considerable quantity, varying in colour and slightly in form from every shade of deep rosy-purple to almost white. My attention was drawn, while passing through another house, to a very interesting, singular, and very pleasing species of Oncidium with deliciously fragrant flowers. The individual blossoms are by no means large, but they are borne in considerable profusion on a dense branching spike about 12 inches long and half that across. The singularly pleasing feature in the appearance of the plant may possibly arise from the fact that the branchlets of the spike all stand off at right angles to the main stem, and the flowers are placed so close to each other upon two opposite sides of the stems as to form two distinct rows or lines. The blossoms are in colour a pleasing yellow more or less tinged with chocolate, and are about an inch across, with recurved sepals and petals. Altogether the plant is a very pleasing and attractive object. Messrs. Backhouse have not yet ascertained its specific name. It has all the appearance of proving a vigorous and free-growing kind. Odontoglossum cirrosum is another very fine species, with immense branching spikes bearing a profusion of beautiful white blossoms, irregularly but prettily spotted with brownish-purple; the sepals, petals, and lip have long accuminated twisted points, which give the flower a spider-like appearance. Another Odontoglot was also conspicuous — O. maculatum, which is very distinct, having deep-green leaves with parallel longitudinal veins, and with large showy blossoms. The outer half of the sepals and petals is of a clear sulphur-yellow, while the inner half, that is the centre of the flower, is a similar colour, but heavily spotted or blotched with brownish-purple; the lip is triangular in form and deeply jagged or toothed on the margin. It would occupy too much time and space to speak of the numerous other species now in, or showing flower of Odontoglots, Cypripediums, Dendrobiums, &c.; but the large and magnificent specimens of Odontoglossum Londesboroughianum I cannot pass over without a remark. It throws up majestic arching stems bearing a dense spike of from eight to twenty handsome blossoms, each blossom being about 1½ inch in diameter, with a clear bright yellow lip, and with sepals and petals barred and spotted with brownish-purple. Amongst these there are several distinct and pleasing varieties, which are more or less spotted on the lips. Oncidium tigrinum v. unguiculatum is another vigorous and free-growing Orchid with branching stems 3 to 4 feet long, and bearing upwards of fifty yellow and brown flowers, which are very pleasing and conspicuous. A few paces from where this was growing I saw a nice batch of the true Barkeria Lindleyana, which was one of the most beautiful sights I have seen for a long time. It has short spikes of brilliant rosy-purple blossoms borne on slender stems 9 to 18 inches high, with six to twelve flowers on each stem. *P.*

Plant Names.—The Rev. C. W. Dod (see *Gardeners' Chronicle*, December 13, 1879, p. 767) is quite right in complaining about long names being given to garden plants. I agree with him that garden varieties ought to receive short names, if possible. It would seem preferable too to avoid Latin names for them, and if once a name is given to keep it, and not to translate it into another tongue; much confusion is caused sometimes by not doing so. I agree also with Mr. Dod when he wishes to avoid long Latin names for new Daffodils. It seems to me preferable to give to these new hybrids English short names, as in former years the large number of varieties of Polyanthus Narcissus were given vernacular names by the Dutch raisers. But when Mr. Dod, coming to Lilies, takes as example the Schrymækersi Lily, I think his example is not quite good. Allow me to say that this Lily is no new one, and not a Dutch variety, as far as I know; it has been cultivated here for years, and can now be supplied annually by thousands. This name therefore cannot be altered or shortened much. For Lilies till lately the rule was adopted generally to give them Latin names too, to indicate by Latin names varieties and sub-varieties. The reason of it is that only in later times has the number of varieties increased so much as to require common names. However, in Holland a hundred years ago the varieties of Lilium Martagon, chalcedonicum, &c., are found in Dutch catalogues with common names (these varieties are now lost for the greater part), so I have given recently to my new varieties of Lilium umbellatum the names of Dutch artists. Now for the Lilium Schrymækersi. This name being generally known, it would not be advisable to alter it. Perhaps Lilium speciosum Schrymækersi would have been sufficient, but as the name of rubrum is usually added, it seems to be preferable to write Lilium speciosum rubrum Schrymækersi. There seems no reason to say atropurpureum Schrymækersi, as the Lily belongs to the rubrum form, and atropurpureum being only a description of the flower. I mention this point to explain that if there has been an error in naming varieties with long Latin names the fault is not with Dutch gardeners. I suppose they were among those who first introduced Dutch and other common names for naming varieties, and in the old lists of Tulips of 1634, or of Hyacinths of 1734, in general only such names are to be found. For examples of long Latin names which had been better avoided one can find plenty in the list of flower seeds of late years. *J. H. Krelage, Haarlem, Holland, Dec. 24.*

Orchids at Messrs. Veitch's, Chelsea.—In looking through the collections of Orchids from time to time in these nurseries I have been struck with the numerous and beautiful examples of garden hybrids. Within the recollection of most of us some of the principal Orchid growers and fanciers persistently set their faces against hybridising Orchids, and I think the late Dr. Lindley and also Mr. Bateman may be mentioned as the most prominent names. But whatever ideas may have possessed growers, fanciers, and others, in the early days of this science, antagonistic to it, must have been expelled many years ago. The same feeling prevails to a certain extent in reference to crossing different species of herbaceous plants. An instance may be given in the case of the two hybrid Aquilegias raised at Loxford Hall—A. cœrulea and A. californica hybrida. Ominous whispers were heard about the impropriety of crossing different species of Aquilegia, and that the scientific experiment was quite wrong in principle could be proved to a demonstration. [How? why?] But a demonstration was proved on the other side, when a group of these hybrids was exhibited in London last June, and hundreds of admirers crowded round them testifying to their beauty. The practical value of hybrid Orchids has been demonstrated in the same way. Mr. Dominy, Messrs. Veitch's foreman, did not waste words or shed inky streams to prove that certain learned expositors were wrong; he produced Cattleya exoniensis ×, by crossing C. Mossiæ and Lælia purpurata. "There!" he says, "look at that Orchid. Its two parents are amongst the most beautiful and splendid of Orchids. They flower in June. I show you a distinct Orchid (species of Orchid it ought to be, for it is quite as distinct, specifically, as many imported species), quite as beautiful and splendid as its parents, but it gives you its wealth of magnificent flowers in September." Certainly there is no possibility of confuting a practical demonstration of that kind. At the time of my visit to Chelsea (December 22) Dendrobium endocharis × was in flower; this is a cross between D. japonicum, female, and D. heterocarpum as the male parent. Its sweetly-scented flowers, with pure white sepals and petals, are very pretty. The lip is brownish-purple, with rosy-purple lines at the base. It was exhibited last February before the Floral Committee, but was passed over as not worthy of a First-class Certificate. Only quite recently the very elegant Oncidium ornithorhyncum albiflorum, which also is very sweet, was passed over. Notwithstanding this, it is quite certain that both these Orchids deserve some mark of recognition. They will be sought after by many Orchid fanciers, and will be grown for their perfume, although their beauty is not so striking as a Cattleya or the more richly coloured Dendrobiums. Lælia Schilleriana major is a very splendid Orchid; it has the long, two-leaved growths of L. elegans or L. Devoniana. The flowers are large, pure white, with a broad purplish-crimson lip. Mr. Dominy believes that L. elegans is a natural hybrid, as it is so much like L. Devoniana. The Orchids alluded to a week or two ago are many of them still in flower, and the Masdevallia tovarensis had much improved; Dendrochilum glumaceum had in the interim expanded some graceful spikes of its delicately scented white flowers. Being a native of the Philippines, it requires heat when making its growth, but was flowering freely in a moderately cool house. *J. Douglas.*

Fir-tree Oil.—Pear and Plum trees are not unfrequently troubled with scale of different sorts which can only be effectually dealt with when the trees are in a leafless state. Various remedies for this and other tree pests have been put forth from time to time, some of which are decidedly unsafe in ordinary hands, and uncertain in their action at all times. In this category may be placed spirits of turpentine, every form of petroleum, and oils in general. The preparation called "Fir-tree oil," recently introduced to public notice by Mr. Griffith Hughes of Manchester, appears, however, to be an exception to this rule, as it mixes readily with water, and though it is very deadly in its effect upon insect life, it seems to be quite harmless to all but the most tender vegetation when used at a strength of half a pint to two gallons of water. It is a safe plan to try new remedies on a small scale at first—better make their acquaintance by degrees than bring about a disaster through misplaced confidence. *F. Harrison, Knowsley.*

Horticultural Boilers.—One of your correspondents suggests that "horticultural builders possessing no special boiler of their own" should give their opinion on the various boilers used. Our experience is very like Mr. Lascelles' in this matter. We have no boiler of our own. We buy in the open market those boilers which we find give most satisfaction to our customers. As showing how the matter stands from this standpoint we cannot do better than give the number of the various boilers used by us during this year. We find from our books that from Jan. 1, 1879, to the present date (Dec. 23) we have fitted up altogether ninety-three boilers, consisting of forty-one terminal saddles (including two Gold Medal boilers), of the value £683 7*s.* 9*d.*; fifty plain saddles (including nine having cross tubes), of the value of £278 13*s.* 4*d.*; and two independent upright boilers (one of them a patent), of the value of £14 4*s.* We may state, in explanation of the great difference between the value of the forty-one terminals and fifty plain saddles, that for large quantities of piping we prefer the terminal, but for small quantities, 500 feet (4-inch) and under, we prefer the plain saddle. We find a long boiler, even though a plain saddle, more satisfactory than a short terminal. Your readers may depend upon it the whole secret of successful heating lies in a large long boiler and plenty of piping. We may state that we tested for our own satisfaction a terminal saddle against a patent boiler—which cost 33 per cent. more than the terminal, and which has been lauded to the skies for its economy and power—by joining both to the same system of piping, with valves to shut off the one while the other was being used. Each boiler was fired on alternate days, the coal used being weighed to a pound, the firing carried on as nearly as possible at set intervals by an experienced stoker, and the temperature taken every quarter of an hour, each boiler treated exactly alike—three thermometers inserted in the 4-inch pipe, the bulb

being about 1 inch down amongst the water; and the result of four days' trial of each that the highest temperature the patent boiler raised the water was to 129°—the highest with the terminal 175°. Exactly the same number of pounds of coal were used in each trial. Our opinion is that patent boilers are like patent medicines—99 per cent. quackery, 1 per cent. genuine. *Mackenzie & Moncur, Edinburgh.*

Foreign Correspondence.

ANTIBES: *Dec.* 24, 1879.—*Frost in the South of France.*—You may perhaps be interested in receiving an account of our garden of the Villa Thuret after the severe frosts of the month of December. The ill effects of the cold are always instructive, and prudent people know how to profit by them. On Dec. 2 the thermometer had already fallen to —4° Cent. (23° F.) in the lowest, and consequently the coldest part of the garden, and many of the plants suffered severely. Amongst others I may mention Dahlia imperialis, then in bloom; all the Mexican Salvias, the Tecomas and Bignonias of South Africa, the Pithecoctenium, Pisonia hirtella, Helinus ovata of Port Natal, with a number of Stapelias, and other fleshy plants. Diospyros Kaki had all its leaves injured by the frost as well as the fruit, which had not arrived at maturity. Nevertheless, this first frost was slight compared with that of Dec. 10, when the thermometer fell to —8° and —9° (15—17° F.) in the coldest part of the garden, and this time great harm was done even in the higher situation, where the cold did not exceed —4° or —5° (23°—24° F.). Jacaranda mimosæfolia had all its leaves frozen; Bougainvillea spectabilis, on the southern side of the house, and consequently very sheltered, was terribly injured: all the young shoots are destroyed, and probably it will not flower next summer. The damage has not been less among the plants of the Canaries—the Sempervivums, in particular, are ruined, and will scarcely recover. I pass over in silence many other less remarkable plants, but all have been equally ill-treated.

Side by side with these dead and wounded I am surprised to see other plants which one would have believed equally liable to injury, but which have not been damaged in the least. Most of the cactiform Euphorbias (E. canariensis, E. resinifera, &c.), the Opuntias, Echinocacti, Cereus, Mamillarias, many Aloes, amongst these the beautiful Aloe Hanburyana (or roseo-cincta) nearly all the Agaves, &c., have been spared. Not less surprising is the fact that one side of some plants has been completely killed, while the other has escaped altogether. Also of two specimens of the same species, almost side by side, one has perished while the other has not lost a leaf. These phenomena seem to be explained by the supposition that the various currents of air to which the plants are exposed are not all of the same temperature, so that two currents, one cold, the other comparatively warm, travel side by side without mingling, and thus it follows that the one must be injurious, the other harmless. If the draughts of air of different temperatures could be coloured in any way one would be able to see at a glance the cause of these anomalies.

The Palms have, as a rule, resisted the cold well. One of the most hardy, and therefore it must be noticed, is Cocos australis, of South America, which in all exposures has retained unhurt its beautiful glaucous verdure. This Palm seems to me as hardy as Jubæa and more so than Pritchardia filamentosa, of which the leaves have suffered slightly. The large Eucalyptus globulus has not suffered, but E. melliodora and some others have lost a part of their leaves. According to news I have received, the cold has been terrible in Paris: they speak of —25° (—13° F.)—a cold equal to that of Russia. The Jardin des Plantes has had some cruel losses, and they will count them by hundreds. Even the native plants have felt it, and some are seen that have been split by the cold the entire length of their stems. *Ch. Naudin.*

THE URARI POISON.—Dr. Schomburgk has lately published in pamphlet form a *resumé* of all that is known concerning the deadly arrow-poison used by certain tribes in British Guiana. Dr. Schomburgk gives the personal experience of his brother and himself, and adds a summary of the information obtained by other travellers, as well as by chemists and physicians. The essential ingredient consists in the bark of various species of Strychnos, nevertheless the presence of strychnin has not been detected, neither are the effects produced those that are characteristic of that drug. In fact, urari has been used as an antidote to strychnin, and as a sedative in cases of tetanus and rabies; but the uncertain and varying composition of the drug, and the difficulty of procuring it, must for a time prevent its successful use on a large scale.

Obituary.

WE have to record—we can scarcely say with sorrow—the death of Mr. GEORGE ROLLISSON, in his eightieth year. His decease took place at Grove Villas, Balham, on December 15, and may be said to have been a happy release from a state of paralysis and unconsciousness in which he had been lying for the long period of fourteen years—long enough, fortunately, for him to have been in ignorance of the recent break-up of the world-famed establishment, of which he had once been one of the chiefs. Mr. G. Rollisson was the the elder of the two sons of the founder of the Tooting Nursery, by whom the business was carried on for very many years after their father's death, and under whose auspices it acquired a great reputation for the successful cultivation, as well as the raising, of new and valuable varieties of Heaths, also for the introduction and cultivation of Orchids, and the importation and dissemination of new plants. In the days to which we allude, the Tooting nursery—Tooting is but a suburb of London—ranked as one of the most important plant nurseries of the metropolis; but now both it and the aged members of the firm have passed away, the younger of the two, Mr. W. Rollisson, having predeceased his brother in 1875. The gentleman whose decease we now record was esteemed for his amiable, kind-hearted, and generous disposition, and his memory will be feelingly cherished by all those who knew him.

—— Of Mr. JOHN HALLY, formerly of Blackheath, whose death was briefly noted last week, we may mention that he was for many years proprietor of the Blackheath Nursery, and was well known as a grower of Camellias, Pelargoniums, &c. He was a member of the National Floricultural Society, an active floral body whose business it was to afford florists and the raisers of novelties an opportunity to bring them before the public, and out of the ashes of which the Royal Horticultural Society's Floral Committee may be said to have sprung. We find that in 1861-62 he was amongst the earlier contributors of new Zonal Pelargoniums to the trial collections at Chiswick; in the former year Blackheath Beauty, a salmon-pink of his raising, was amongst the kinds selected for approval, and in 1862 another of his novelties, Adonis, a zonate scarlet, was selected for a First-class Certificate. Mr. Hally died at Arundel on December 21, in the eighty-first year of his age.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE SIX DAYS ENDING TUESDAY, DECEMBER 23, 1879.

Month and Day	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
Dec.	In.	In.	°	°	°	°	°	°			In.
18	30.42	+0.60	37.4	22.2	15.2	31.7	— 8.5	28.4	86	E.	0.00
19	30.44	+0.61	34.8	27.6	7.2	32.0	— 8.0	30.0	92	E.N.E.	0.00
20	30.30	+0.46	34.8	29.0	5.8	31.7	— 8.0	29.4	91	E.S.E.	0.00
21	30.19	+0.34	32.0	25.0	7.0	28.6	—10.7	26.4	92	S.S.W. Calm	0.00
22	30.44	+0.60	32.0	28.0	4.0	35.9	— 2.9	34.5	96	W.N.W. E.N.E.	0.02
23	30.57	+0.72	35.9	27.3	8.6	33.0	— 5.4	31.8	95	S.W. S.S.W.	0.00
Mean	30.39	+0.56	36.1	26.5	9.6	32.2	— 7.3	30.1	92	Variable	sum 0.02

Dec. 18.—Overcast till 2 P.M., fine after. Cold day. Cloudless, but a little fog at night. Hoar frost.
— 19.—Fine till 11 A.M., overcast afterwards. Much hoar frost in morning. Slight rain in evening.
— 20.—A dull cold damp day. Overcast throughout. Frosty at night.
— 21.—A fine, cold morning. No mist. Fog after 3 P.M. Overcast at night. The minimum temperature of the day, viz., 25°, took place at about 10 A.M.
— 22.—Overcast till 1 P.M.; fine, cloudy after. A thaw. Frosty at night. Slight rain in morning. A very dense fog prevailed after 6 P.M. Very dark. Traffic impeded.
— 23.—Overcast, dull, cold day. Fog in morning.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, DECEMBER 31, 1879.

Month and Day	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
Dec.	In.	In.	°	°	°	°	°	°			In.
24	30.28	+0.42	40.2	22.2	18.0	32.5	— 5.7	29.7	89	WSW	0.00
25	30.41	+0.54	35.0	29.0	6.0	32.4	— 5.6	32.1	93	Calm	0.03
26	30.33	+0.45	32.1	27.0	5.1	29.5	— 8.3	28.2	95	E.	0.00
27	30.17	+0.28	39.0	25.5	13.5	32.2	— 5.4	28.4	85	S.E.	0.00
28	29.89	—0.01	52.0	39.0	13.0	46.3	+ 8.8	44.4	94	S.W. S.S.W.	0.03
29	29.80	—0.10	51.4	30.0	12.4	44.9	+ 7.5	39.3	81	W.S.W. S.W.	0.00
30	29.58	—0.32	43.9	34.7	9.2	39.1	+ 1.8	33.6	81	S.W. W.	0.28
31	29.55	—0.33	52.0	32.6	19.4	44.2	+ 7.0	41.6	91	W.S.W. S.W.	0.11
Mean	30.00	+0.11	43.2	31.1	12.1	37.6	0.0	34.7	89	S.W.	sum 0.42

Dec. 24.—A fine bright day. Frosty in morning and evening. Hoar frost. Cold. Fog in morning.
— 25.—A very miserable damp day. Thick black fog throughout. Very dark. Artificial light required nearly the whole of the day.
— 26.—A cold dull day. Sharp frost at night. No fog.
— 27. Dull in morning, then fine till evening; dull at night. Hoar frost. Cold. The temperature rose at night.
— 28.—A rapid and decided thaw. Quite warm. Damp. Mizzling rain. A very strong wind. The maximum temperature occurred at midnight(=52°).
— 29.—A fine bright day. Thaw continued. A very strong wind. Cloudless at night.
— 30.—Frequent heavy showers of rain in morning and afternoon. Cloudless at night. Thunder and lightning with hail at 1 P.M. A strong gale of wind. Cool day.
— 31.—Overcast, dull, and wet throughout. Mild. Strong wind. The maximum temperature—viz., 52°—occurred at midnight.

NOTE.—The severe cold weather which set in on November 20 continued until December 27—a period of thirty-eight days. The mean temperature of the air for these thirty-eight days was 31°.1, being 9°.7 below the average from sixty years' observations.

LONDON: *Barometer.*—During the week ending Saturday, December 27, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.45 inches at the beginning of the week to 30.35 inches by the evening of the 21st, increased rapidly to 30.80 inches by the morning of the 23d, decreased to 30.42 inches by the afternoon of the 24th, increased to 30.60 inches by the morning of the 25th, and decreased to 30.27 inches by the end of the week. The mean reading for the week at sea level was 30.52 inches, being 0.02 inch below that of the preceding week, and 0.47 inch above the average. The mean daily readings were above their averages throughout the week; the greatest departures in excess were 0.60 inch on the 22d, and 0.67 inch on the 23d.

Temperature.—The highest temperatures of the air observed by day varied from 42° on the 22d to 32° both on the 21st and 26th; the mean value for the week was 36½°. The lowest temperatures of the air observed by night varied from 22¾° on the 24th to 29° on the 25th; the mean value for the week was 26¼°. The mean daily range of temperature in the week was 10½°; the greatest range in the day being 18°, on the 24th, and the least 5°, on the 26th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Dec. 21, 28°.6, — 10°.7; 22d, 35°.9, — 2°.9; 23d, 31°.8, — 6°.6; 24th, 32°.5, — 5°.7; 25th, 32°.4, — 5°.6; 26th, 29°.5, — 8°.3; 27th, 32°.2, — 5°.4. The mean temperature of the air for the week was 31°.8, being 6°.5 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 64° on the 24th, and 49° on the 22d; on the 21st and 26th the readings did not rise above 35°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 21° on the 24th, and 23° on the 21st; the mean of the seven lowest readings was 24°.

Wind.—The direction of the wind was variable, and its motion almost calm. The weather during the week was very dull, dark, and the sky cloudy. The air was very still, very cold, and sharp frosts were experienced. Fog and hoar frosts were prevalent throughout the week, the fog being unusually dense on the 22d and 25th.

ENGLAND: *Temperature.*—During the week ending Saturday, December 27, the highest temperatures of the air observed by day were above 50° at Truro,

Liverpool, and Sunderland; and below 41° at both Norwich and Wolverhampton; the mean value from all places was 45½°. The lowest temperatures of the air observed by night were below 25½° at Truro, Brighton, Bristol, Blackheath (London), Cambridge, Norwich, Nottingham, Sheffield, Hull, Bradford, and Leeds; and above 27° at Liverpool and Sunderland. The general mean from all stations was 25°. The extreme range of temperature in the week was above 25° at Truro and Liverpool, and below 18° at Norwich, Wolverhampton, and Hull; the mean range of temperature from all stations was 20½°.

The mean of the seven high day temperatures was above 45° at Truro and Plymouth, and below 37° at Blackheath (London), Cambridge, Norwich, Wolverhampton, and Hull; the mean from all places was 40¼°. The mean of the seven low night temperatures was below 28° at Blackheath (London), Cambridge, Norwich, Wolverhampton, and Nottingham; and above 32½° at Truro, Plymouth, and Sunderland; the mean from all stations was 29¾°. The mean daily range of temperature in the week was above 12° at Truro, Plymouth, Bristol, and Liverpool, and below 9° at Cambridge, Norwich, and Hull; the mean daily range from all places was 10½°.

The mean temperature of the air for the week from all stations was 35°, being 3¾° higher than the value for the corresponding week in 1878. The mean temperature was above 30° at Truro, Plymouth, and Sunderland; and below 32° at Blackheath, Cambridge, Norwich, and Wolverhampton.

Rain.—The amounts of rain measured were small everywhere. The greatest falls were three-tenths of an inch at Truro and Hull, and the least falls were one-hundredth of an inch at Nottingham and Sunderland; at Norwich, Bradford, and Leeds no rain was measured; the average fall over the country was one-tenth of an inch.

The weather during the week was still very cold and dry. The sky was generally cloudy, and very dense fogs were frequently prevalent.

SCOTLAND: *Temperature.*—During the week ending Saturday, December 27, the highest temperatures of the air observed by day varied from 55¼° at Aberdeen, to 49¾° at Edinburgh; the mean value from all stations was 51½°. The lowest temperatures of the air observed by night varied from 25° at Edinburgh, to 31° at Paisley; the mean value from all places was 28½°. The mean range of temperature in the week from all places was 23°.

The mean temperature of the air for the week from all stations was 39¾°, being 10° higher than the value for the corresponding week in 1878. The mean temperature was the highest at Paisley and Leith, 40¼°, and the lowest at Aberdeen and Perth, 39°.

Rain.—The amount of rain measured at Greenock was 1¾ inch, whilst at Aberdeen only four-hundredths of an inch fell, and at Perth no rain was measured; the average amount over the country was half an inch nearly.

DUBLIN.—The highest temperature of the air was 52¼°, the lowest 23¾°, the extreme range 28½°, the mean 43°, and the fall of rain 0.39 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

BAROMETRICAL REGISTERS.—I am anxious to obtain the name and address of a printer who supplies monthly sheets for registering the barometer, &c. The sheets I mean are similar to those in use for the self-registering barometers. Will some of your correspondents kindly give the desired information? *R. R.*

COMPENSATION.—*A Correspondent* writes:—A Railway Company proposes to extend its line through one of my best fields which I have taken on a lease of twenty-one years, and I am bound by covenants to plant the same as a plantation within two years. Can I charge the company my profits for the whole twenty-one years as a plantation, or what would be a fair claim? I am paying £5 per acre for the land besides tithe and rates, &c., and am bound to find the trees myself. The land is under fruit and vegetable cultivation for market.

MARKET GARDENING.—Having a small piece of ground to be used for market gardening purposes, I should like to know how best to utilise it as regards kitchen garden crops, so as to obtain the best results. What would be the best varieties of Cabbage, or other vegetables, that might be planted at once, or within a few weeks' time? *A Subscriber.*

ROSES FOR MARKET.—I have a Maréchal Niel house, half-span, south aspect, 100 feet by 12 feet; apex 10 feet high; front wall, 2 feet; heated with 2 pipes; Roses planted against back wall and two-thirds up front rafters; the back and front borders are free. What can be grown under the Roses for market, to pay? Would any other Roses pay better than Maréchal Niel? *C. G.*

THE PINE BEETLE.—Can you tell me whether there is any known cure for the grub that destroys the tips of the shoots of Pinus insignis? *C. Halford Thompson.* [We believe not. Encourage the birds. EDS.]

Answers to Correspondents.

DISEASED PEAR TREES: *S. M. & A.* Without an examination of the trees themselves, it is scarcely possible to give a good opinion. Young shoots are often exactly in this condition where either the lower portions are cankered or the soil does not suit. There is no appearance of fungi on the shoots. We have Pear trees almost in the same condition from the cause above stated. *M. J. B.*

GARDENERS' BENEFIT SOCIETIES: *E. Heep.* We do not know of any besides the Gardeners' Royal Benevolent Institution (Secretary, Mr. E. R. Cutler, 14, Tavistock Street, Covent Garden, W.C.), and the United Gardeners' Benefit Society (Secretary, Mr. McElroy, Moray Lodge, Campden Hill, Kensington).

GRAFTED VINES: *F. A.* The precise influence of the stock upon the scion amongst Grapes is very imperfectly ascertained or understood as yet. There is no evidence of one variety succeeding better than another. It must be purely a matter of experiment for yourself. The Mill Hill Hamburgh and Muscat Hamburgh are both good, but tastes differs—*Chacun à son goût.*

HERACLEUM GIGANTEUM: *W. B.* The seeds of this free-growing, hardy plant, may be sown as soon as the seed ripens, or in spring. It grows from 6 feet to 10 feet or more in height; the flowers are white.

IVY ON WALLS: *Hedera.* If your wall is sound, and in good order, the Ivy will do no harm, but rather good. If the wall is dilapidated, it is another matter.

MUSHROOMS: *W. L.* Send us a sample of the Mushrooms and vermin.

NAMES OF FRUIT: *W. M., Romford.* The Pears are shrivelled and unripe, and so much out of character that we can do nothing with them.—*Middlesex.* Your Grape is the Buckland Sweetwater.—*W. L. Pear:* Uvedale's St. Germain. *App'es* not recognised.

NAMES OF PLANTS: *W. Potton.* Your plants are probably—1, Juniperus Bedfordiana; 2, Cupressus funebris; 3, Cupressus lusitanica.—*Dinne tuathach.* The leguminous plant is Parochætus communis; the other Senecio mikanoides.—*Geo. Wall.* The specimen was smashed when it arrived in indeterminable bits; send another, and pack it better.—*A. B.* 1, Strelitzia regina; 2, send again; 3, indeterminable without flowers; 4, Scutellaria Mociniana.—*G. C.* Baccharis trinervis, male plant.—*W. H. Poynter.* Browallia demissa, a native of tropical America, not of Zululand. See *Bot. Mag.*, t. 1136.

PEAT: *Anon.* The sample of peat you send appears to be sound and wholesome, containing a large proportion of vegetable matter. If mixed with turfy loam and plenty of coarse grit we should suppose that Lapagerias would grow well in it, and so would Ixoras, Gardenias, or Ferns; but the drainage must be effectual. Azaleas require a harder kind of peat.

PLANTS FOR CONSERVATORY: *W. E.* You cannot do better than plant climbing Devoniensis Rose, which should do very well in the position indicated. Give it good loamy soil, and keep it well fed. For the other subject we should recommend Jasminum azoricum or grandiflorum, Tacsonia Van Volxemi, Passiflora Impératrice Eugènie.

PRIMULAS: *W. Tait & Co.* The flowers arrived in a wretched condition, through being badly packed in cotton-wool. They appear to be of an average good strain.

STEPHANOTIS: *C. F. O.* No wonder the plant is sick. The leaves received are in a filthy condition with scale, mealy-bug, and dirt. The plant wants a thorough washing to commence with; perhaps fresh potting, or top-dressing if planted out, and a stronger heat than is applied to an ordinary conservatory.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—Downie & Laird (17, South Frederick Street, Edinburgh), Descriptive Catalogue of Garden, Flower, and Agricultural Seeds, Gladioli Roots, Implements, &c.—Messrs. J. Veitch & Sons (Royal Exotic Nursery, King's Road, Chelsea), Catalogue of Garden and Flower Seeds, Implements, &c.—B. S. Williams (Upper Holloway, London, N.), Descriptive Catalogue of Flower, Vegetable, and Agricultural Seeds, &c.—Messrs. Osborn & Sons (The Fulham Nurseries, London, S.W.), Catalogue of Kitchen Garden and Flower Seeds, &c.—Messrs. Dickson & Robinson (12, Old Millgate, Manchester), Priced Descriptive Catalogue of Select Vegetable and Flower Seeds.

COMMUNICATIONS RECEIVED.—A. B.—L. Dow—J. Wood.—G. R.—W. D P.—C. Sims.—A. O.—R. A.—M. D.—J. Pine.—P. & H.—W. Jamieson—H. J. van H.—W. G S.—J. Peed.—Ch. Joly—J. H. K W. M.—H. E.—New Plant & Bulb Co.—W. W.—T. C—W. H.—C. G.—W. P.—G. Bramham.—J. C.—W. Bud.—North Country.—T. B.—W. F. R.—G. S.—G. H.—C. S. S.—G. E.—C. N.—B. E.—H. G. Rchb. f.—W. B.—The Publisher of the *Garden.*—A. S.—J. G.—J. v. V.—A. B. L.—W. B. H.—E. B—J. R.—J. C.—B. F.—A. J. M.—J. P.—M. J. B.—I. D.—R. S. N.

DIED, on the 1st inst., at The Nurseries, Wandsworth Common, ROBERT NEAL, Sen., aged seventy-eight.

Markets.

COVENT GARDEN, January 1.

We are now at a complete standstill, and all classes of goods are much depreciated in value by the present thaw. A large consignment of American Apples reached us during the week, but in inferior condition. Good samples of Grapes are in better demand. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Lemons, per 100	3 0–10 0
— American, barrl.	10 0–30 0	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– ..	Pears, per dozen	3 6– 6 0
Grapes, per lb.	1 6– 6 0	Pine-apples, per lb.	2 0– 3 0
— Muscat, per lb	3 6– 8 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	4 0–10 0	Horse Radish, p bun.	4 0– ..
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz	1 6– ..
Beans, French, p. lb	1 6– ..	Mint, green, bunch	0 4– ..
Beet, per doz.	1 0– 2 0	Onions, new, p. bun.	0 6– ..
Brussels Sprouts, lb.	0 6– ..	Parsley, per bunch	0 6– ..
Cabbages, per doz.	1 0– 2 0	Peas, per lb.	1 0– ..
Carrots, per bunch	0 8– ..	Potatos (new), per lb	0 9– 2 0
— New Fr., p. bun.	1 0– ..	Rhubarb (Leeds), per bundle	0 9– ..
Cauliflowers, per doz.	2 0– 5 0	Seakale, per punnet	3 0– ..
Celery, per bundle	1 6– 2 0	Shallots, per lb	0 6– ..
Chilis, per 100	3 0– ..	Spinach, per bushel	8 0–10 0
Cucumbers, each	0 6– 1 0	Tomatos, per dozen	3 0– ..
Endive, per score	1 6– ..	Turnips, new, bunch	0 6– ..
Garlic, per lb.	0 6– ..		
Herbs, per bunch	0 2– 0 4		

Potatos:—Regents, 100s. to 145s.; Flukes, 120s. to 150s.; and Champions, 130s to 150s. per ton. The large supplies received from Germany are making from 4s. to 7s. per bag.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 0	Lily of Val., 12 spr.	3 0– 9 0
Arum Lilies, p. doz.	9 0 24 0	Mignonette, 12 bun	6 0– 9 0
Azalea, 12 sprays	1 6– 4 0	Narcissus, Paper-white, 12 spikes	2 6– 6 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	1 0– 2 0
Camellias, per doz.	4 0–18 0	— zonal, 12 sprays	0 9– 2 0
Carnations, per dozen	1 0– 3 0	Poinsettia, 12 b'ms	6 0–12 0
Chrysanthem., large flowers, per doz.	1 6– 6 0	Primula, double, per bunch	1 6– 3 0
— per doz. bundles	12 0–24 0	— single, per bunch	0 6– 1 6
Cyclamen, 12 blms.	0 4– 1 6	Roses (indoor), doz.	2 0– 9 0
Epiphyllum, 12 blms.	1 0– 3 0	Spiræa, 12 sprays	3 0– 6 0
Eucharis, per doz.	6 0–18 0	Tropæolum, 12 bun.	1 0– 3 0
Gardenias, 12 blms.	9 0–24 0	Tuberoses, per dozen	2 0– 4 0
Heliotropes, 12 sp.	0 6– 1 0	Violets, per bunch	6 0– 9 0
Hyacinths, Roman, 12 spikes	2 0– 6 0	White Lilac, Fr., per bundle	10 0–15 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	24 0–36 0	Ferns, in var., doz.	4 0–18 0
Azaleas, per dozen	30 0–60 0	Ficus elastica, each	2 6–15 0
Begonias, per doz.	6 0–18 0	Foliage Plants, various, each	2 0–10 6
Bouvardias, per doz.	12 0–24 0	Fuchsias, per dozen	6 0–18 0
Chrysanthemums, p. dozen	9 0–30 0	Hyacinths, per doz.	10 0–18 0
Cinerarias, per doz.	12 0–18 0	Myrtles, per doz.	6 0–12 0
Cyclamen, per dozen	12 0–30 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	4 0– 9 0
Dracæna terminalis	30 0–60 0	Poinsettia, per dozen	12 0–24 0
— viridis, per doz.	18 0–24 0	Primula, single, per dozen	6 0–12 0
Erica gracilis, per dozen	9 0–18 0	Solanum, per dozen	9 0–24 0
— hyemalis, p. doz.	12 0–30 0	Tulips, 12 pots	9 0–15 0
Euonymus, various, per dozen	6 0–18 0		

SEEDS.

LONDON: *Dec. 31.*—To-day, being the last market of the year, the attendance of buyers, as was to be expected, was very limited, and the business doing was as nearly *nil* as possible. Notwithstanding, however, the quiet feeling which has recently prevailed, the seed trade maintains a firm position, and a fair amount of activity early next month may reasonably be expected. As regards red Clover seed the situation is unchanged: of new English there is absolutely none, whilst choice foreign continues scarce. The total shipments from New York since August 15, 1879, until December 19, 1879, have been as follows:—To the United Kingdom, 25,391 bags; to the Continent of Europe, 42,588 bags. White Clover has lately been in greater favour; and, as the wretched yield of the German crop has become more apparent, values have in consequence materially advanced. Alsike also at current rates is regarded as thorough good value. Compared with the average of former years Trefoil is undoubtedly now very dear; but against this is its extreme scarcity, and also the important facts that no overwhelming importations can come from America, and that the small quantity on hand is strongly held. The inquiry which has sprung up during the last few weeks for Italian Rye-grass has revealed a surprising shortness of stocks, and as a result of this a steady upward movement has been in progress: in spite, however, of the rise which has been established, to-day's quotation for fine seed, say, about a guinea per cwt., is moderate. Perennials are unchanged. In the absence of transactions there is nothing to be said concerning Hemp, Canary, Millet, or Rape seed. The extremely low rates at which Tares are now obtainable have stimulated some business therein. Haricots, Lentils, and Peas maintain last week's currencies. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

Government Stock.—On Monday the closing price for Consols was 97½ to 97⅝, for both the account and delivery. There was no alteration in the final figures of Tuesday. Wednesday's closing price was 97⅝ to 97¾, for delivery and account. Thursday being New Year's Day, the Stock Exchange was closed.

THE OLDEST HOUSE IN THE TRADE.

JARED T. HUNT & SON'S

PHOSPHO GUANO, DISSOLVED GUANO, WHEAT, BARLEY, and POTATO MANURES,

RICH IN PHOSPHORIC ACID and SOLUBLE PHOSPHATES.

PERUVIAN GUANO, NITRATE OF SODA, &c.

Delivered at any Railway Station.

BONE-SUPERPHOSPHATE AND DISSOLVED BONES

FROM RAW LONDON BONES ONLY.

Also the LARGEST STOCK of CRUSHED BONES IN THE UNITED KINGDOM, consisting of half-inch, quarter-inch, Pulverised for Grass Lands, and Bones specially assorted for Vines.

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CHIEF OFFICES and WORKS: Bow Bridge Bone Mills and Chemical Manure Works, STRATFORD, LONDON, E.

Branch: Downham Market, Norfolk.

N.B.—RESPONSIBLE AGENTS REQUIRED FOR DISTRICTS UNREPRESENTED.

BY ROYAL APPOINTMENT,

TO HER MAJESTY, By Special Warrant, dated December 27, 1865.

TO THE PRINCE OF WALES, By Special Warrant, dated February 10, 1866.

DAY, SON, & HEWITT,

Inventors and Sole Proprietors of the "ORIGINAL"

STOCK-BREEDERS' MEDICINE CHESTS,

FOR ALL DISORDERS IN HORSES, CATTLE, CALVES, SHEEP, AND LAMBS,

And Inventors of the First Animal Medicines ever known as "Day's."

The No. 2 MEDICINE CHEST contains the following matchless remedies :—

"THE CHEMICAL EXTRACT," for Cuts, Bruises, Sore Udders, and Ewes Lambing.
"THE GASEOUS FLUID," for Colic in Horses, and Scour and Debility in Cattle and Sheep.
"THE RED DRENCH," for Cleansing after Calving and Lambing, Fevers, &c.
"THE RED PASTE BALLS," for Conditioning Horses.
"THE GASEODYNE," for Parturition in Mares, Ewes, &c.
"THE BRONCHOLINE," for Husk, Hoose, or Cough in Sheep or Calves.
"THE ALCOHOLIC ETHER," for Colds and Chills.
"THE CARMINATIVE CHALK," for Diarrhœa in Lambs and Calves.

PRICE OF CHEST, with GUIDE to FARRIERY .. .. £2 16s. 6d.

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FOR HORSES, COWS, OXEN, SHEEP, AND CALVES.

Its saline and ferruginous elements prevent langour, exhaustion, want of energy, and loss of appetite. All animals should have an ounce or two of the KOSSOLIAN or BLOOD SALT mixed with their food once or twice a week, from the hunter down to the carriage horse and hack. All young animals, whether colt, calf, or lamb, should have half an ounce of the KOSSOLIAN or BLOOD SALT mixed with their food, for it is a safeguard against contagious diseases, and it is destructive to the parasites in the bronchial tubes, causing that distressing malady the Hoose or Husk. It converts the food, while in the stomach, rapidly into flesh and bone making elements, and gives a firmness to the flesh to resist all poisonous effluvia; and it also renders all animals capable of enduring with safety the heat of summer, and the cold rains and sleet of winter.

Sold in Boxes, containing one dozen packets, price 12s. Beware of Imitations.

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The fact that One Hundred of the most celebrated Plant Growers in the world have allowed their names to be published as references, should be sufficient to convince the most sceptical.

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Is the Best Manure for FRUIT TREES in Pots.

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Is the Best Manure for all KITCHEN GARDEN CROPS.

CLAY'S FERTILISER
Is the Best Manure for Lawns.

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¼ Cwt.	½ Cwt.	1 Cwt.
7s. 6d.	12s. 6d.	20s.

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CLAY & LEVESLEY,

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3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags. 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
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10, Castle Street, Endell Street, Long Acre, London, W.C.

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COCOA-NUT FIBRE REFUSE.—Useful at all seasons. Largest makers in the Kingdom. 1*s.* per bag, 30 bags £1 (bags included), truck 25*s.* free to rail; 5*s.* van-load, at Works, Janet Street, Millwall, E. P.O.O. payable at General Post Office, London. Orders to be addressed to A. FOULON, Fibre Merchant, 32, St. Mary Axe, London, E.C.

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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per bag.
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SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1*s.* 6*d.*, 2*s.* 6*d.* and 12*s.* 6*d.* each. Special quotations for large quantities.
London Agents: HOOPER AND SONS, Covent Garden; and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
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Two Fumes in quick succession will annihilate the
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ALSO THE IMPROVED AND ONLY GENUINE

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Who will be pleased to send, post-free, on application, Circular containing Testimonials and all particulars.

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EXCELLENT CATTLE FOOD—extract of Vegetables; on board at Rouen or Dunkirk. Address, Mr. PETITHUGUENIN, Genlis, France (Côte d'Or), in French Language, and forward Testimonials.

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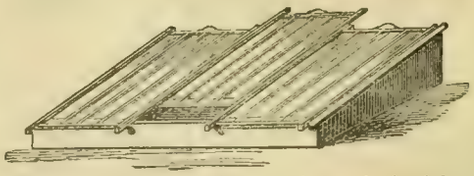

These Frames are glazed with 21-oz. glass, and painted three coats best paint. The frame is 24 inches high at the back and 13 inches at front; sides are 1¼ inch thick, and the bars of the lights 2 inches deep. The wood used is best selected red deal. Each light has an iron strengthening rod and handle. No brickwork is required for these Frames.

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WITH **IMPROVED REGISTERED SELVAGE,** making the Netting stronger more rigid, and much more durable.

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GARDEN POTS, from 2 to 30 inches diameter.
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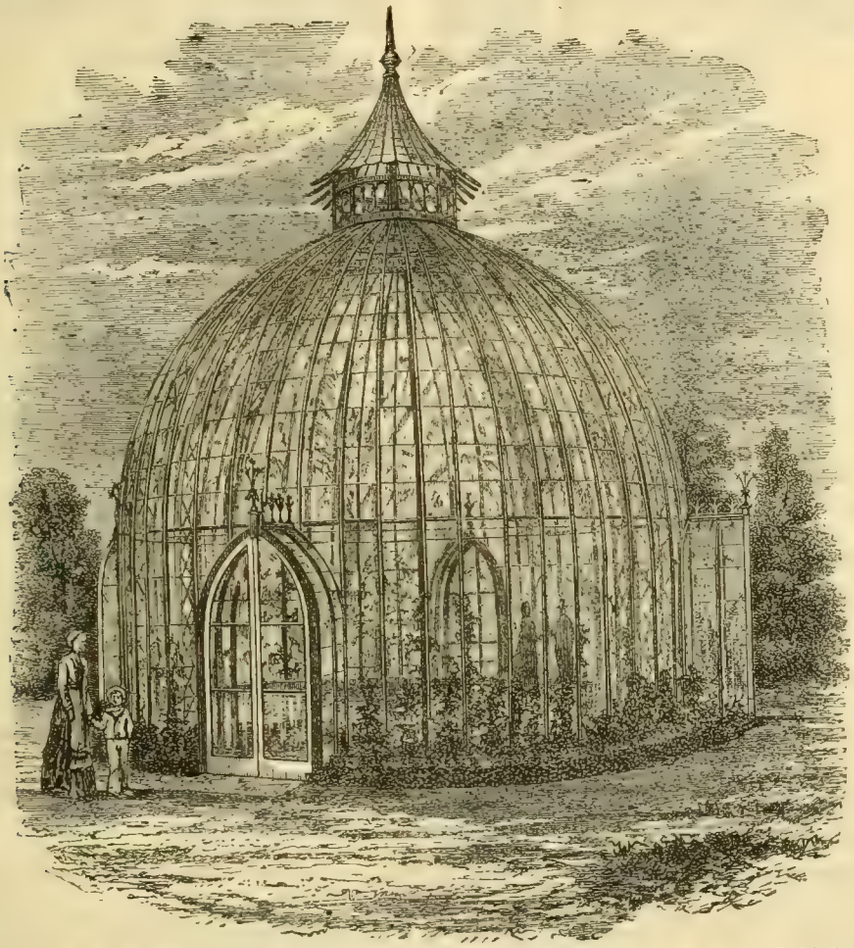

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Will prevent disease to sound seedlings, and will double the yield.

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WOOD AND CO. deliver in truckloads to any Railway Station, prices for which can be had on application, or can be delivered by Wood & Co.'s Vans (in the Metropolis).
WOOD AND CO. append a testimonial given to them by Messrs. Beckwith & Sons, a firm of great experience, and who have kindly allowed them to make whatever use of it they may think fit.
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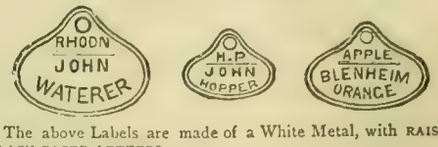

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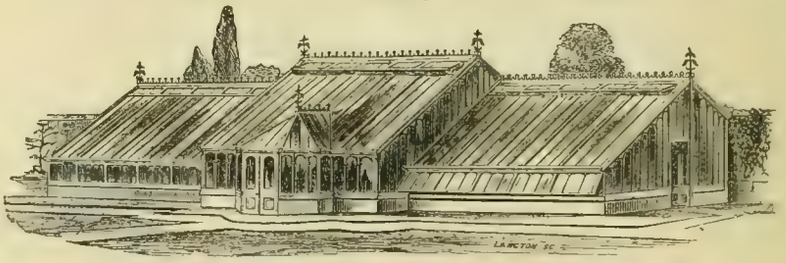

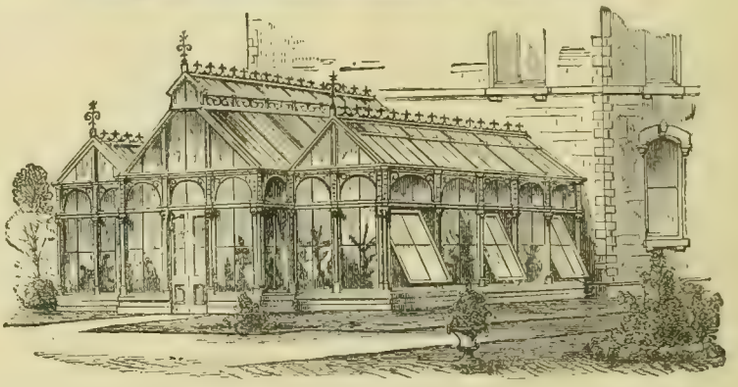

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T. H. P. DENNIS & CO.,
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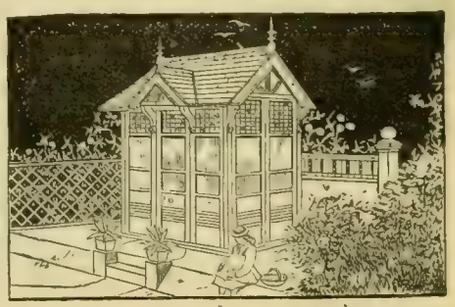
WORKS: CHELMSFORD.



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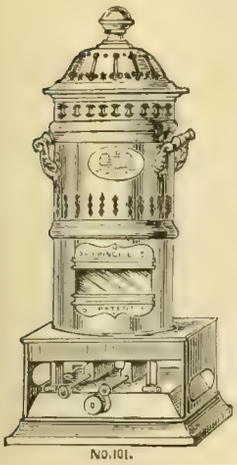

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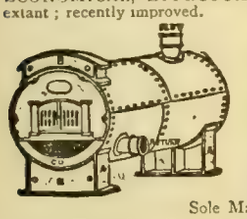

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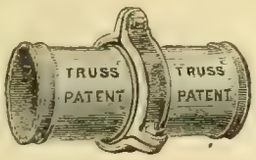

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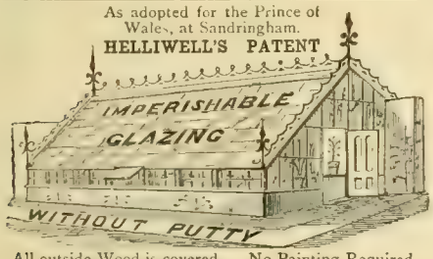

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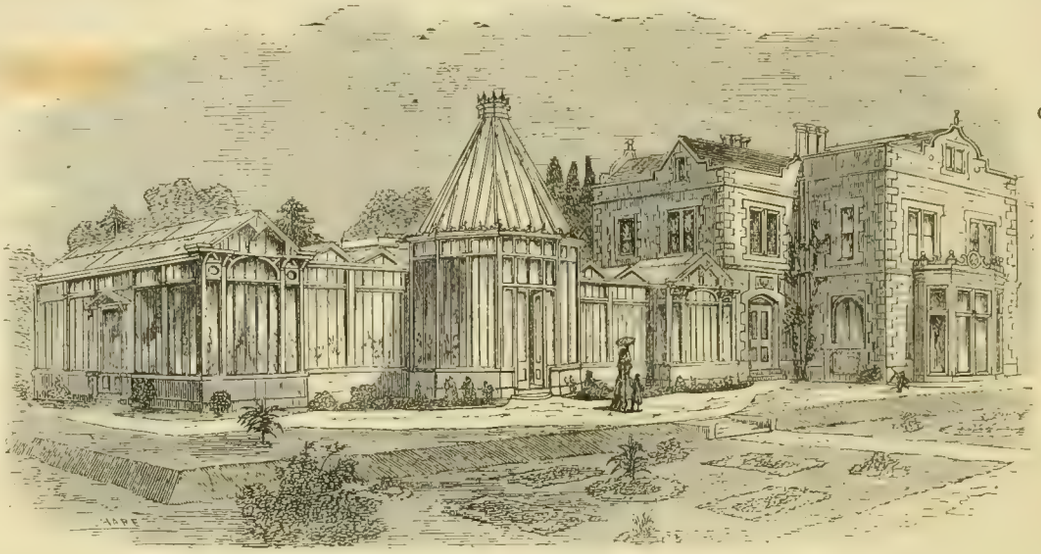

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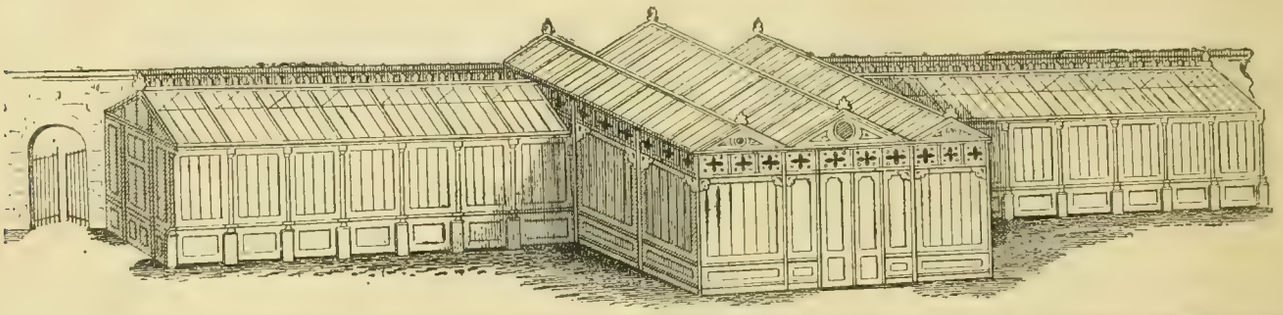

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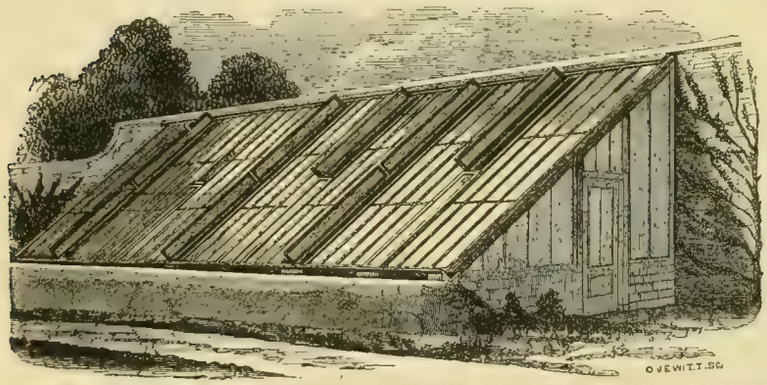

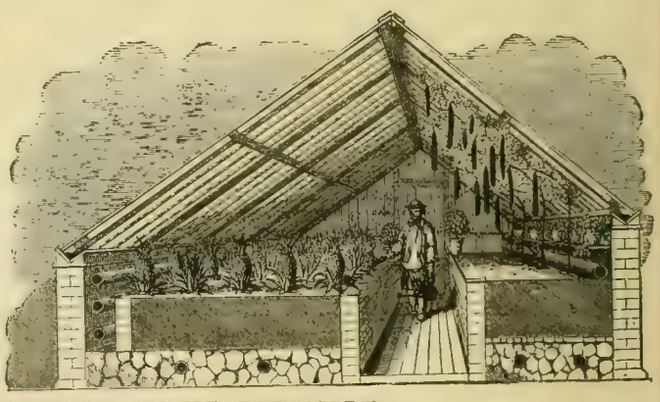

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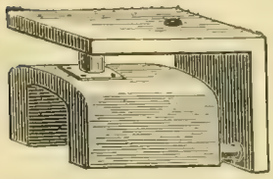

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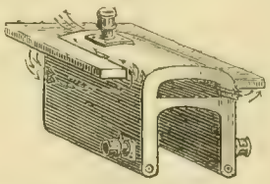

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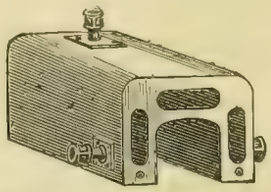

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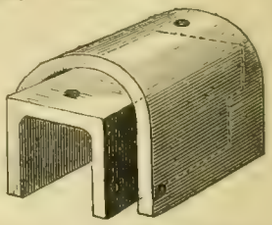

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Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 315.—Vol. XIII. {New Series.} SATURDAY, JANUARY 10, 1880. {Registered at the General Post-office as a Newspaper.} Price 5d. Post Free, 5½d.

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THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE. — COMMITTEES' MEETINGS, Fruit and Floral at 11 A.M., and Scientific, on TUESDAY NEXT, January 13. Admission, 1s.

SHROPSHIRE HORTICULTURAL SOCIETY.

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Further particulars next week.

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8000 Splendid Bulbs of Lilium auratum, &c.

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Grazing Lands Suitable for Dairymen, Horse and CATTLE DEALERS, AND OTHERS.

TO BE LET, about 94 Acres of MEADOW and PASTURE LANDS adjoining the Lake in Wimbledon Park, only six miles from Town; also 40 acres of Pasture with Cottages and Buildings nearer Wandsworth. Some of the fields would be let separately; the rents vary from £3 10s. to £5 per acre. Immediate possession.
Apply to Mr. ALFRED W. OBORNE, Resident Agent, Wimbledon Park, S.W.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

To the Trade.
MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.
Seed Growing Establishment, Wisbech.

Oak, English, 4 to 8 feet, 1000 to 1500 for Sale.

GROWN in a PRIVATE NURSERY, and all transplanted two years ago. Price on application to W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

CYCLAMEN PERSICUM, showing large quantities of bloom, 30s. per 100; sample dozen, 5s.
WHITE VESUVIUS, 20s. per 100; 3s. per dozen, package free.
GEORGE GUMMOW, 114, Loughborough Road, Brixton, S.W.

Special Offer.

PEACH and NECTARINE TREES, in POTS, ripened under glass, well-shaped trees, 3s. each.
VINES, leading sorts, extra strong Canes for fruiting in pots this season, 5s. and 6s. each. Very fine planting Canes, 3s. each.
JAS. GARAWAY AND CO., Durdham Down, Clifton, Bristol.

TRUE ARGENTEUIL ASPARAGUS.—Strong Roots of this splendid variety are offered in three sizes, at 7s. 6d., 10s. 6d., and 15s. per 100 respectively.
HOOPER AND CO., Covent Garden, London, W.C.

To the Trade.

NUTTING AND SONS have now posted their Annual Wholesale Garden, Agricultural and Flower Seed CATALOGUE to all their friends; if not to hand, on application another shall be immediately forwarded.
NUTTING AND SONS, Seed Merchants, 60, Barbican, London, E.C.

Gold Medal Begonias.

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is now harvested from their unequalled collection, which was again awarded the Royal Horticultural Society's Medal in August. Sealed packets, free by post, 1s. and 2s. 6d. each. The Trade supplied.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

Strong Pear and Crab Stocks.

EDWD. HOLMES, Whittington Nursery, Lichfield, offers the above to the Trade.
Price on application, and Sample if desired.

To Clear the Ground,
Preparatory to a change of Residence, specially low quotations will be given for

CHOICE CONIFERS, EVERGREENS, and DECIDUOUS TREES and SHRUBS. Gentlemen about to plant are invited to apply for particulars.
J. J. MARRIOTT, Highfield Nurseries, Matlock, Derbyshire.

To the Trade.

FOREST TREES, extra strong and well-rooted, 4, 5, 6, and 7 feet, consisting of

ALDER	BIRCH
ASH	HORNBEAM
SYCAMORE	ELM
OAK	HAZEL
BEECH	CHESTNUT.

Special Prices, to clear ground, on application.
JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

New Cucumber, Sir Garnet Wolseley.

JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, Post-free for 30 stamps.
"The points in which Cucumber Sir Garnet Wolseley surpasses all other long-fruited varieties are the symmetry of its fruit, and the abundance with which they are produced; there being no shank or handle to Sir Garnet."—*Gardeners' Chronicle*, September 27, 1879.

Standard Apples and Pears.

EDWD. HOLMES offers the above to the Trade, cheap. Sorts and Prices on application.
Whittington Nursery, Lichfield.

To the Trade.
HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are prepared to make special offers of their choice stocks of HOME-GROWN GARDEN and FIELD SEEDS to those who have not yet completed their supplies for the coming season.
Seed Growing Establishment, Wisbech.

NEW ZONAL GERANIUMS of 1879. PEARSON'S SET of thirteen splendid varieties, 8d. each; the set for 6s., post-free.
Selected varieties:—Jeanne d'Arc, finest single white; Candidissima plena, double white; Zonal Tricolor H. M. Pollett, Mr. Parker, Lord Gifford, Arnobius, Brennus, Laverna, Numitor, Syressa, Tereus, 8d. each, 12 for 6s., post-free.
Executors of H. WALTON, Edge End Nursery, Brierfield, near Burnley.

Potatos—Potatos—Potatos.

SPECIAL OFFER for CASH, subject to being unsold on receipt of order.
MYATT'S ASHLEAF, 2s. per stone
OLD ditto, 2s 6d. per stone
RIVERS' ROYAL ditto, 2s. 6d. per stone
VEITCH'S IMPROVED ditto, 2s. 6d. per stone
MONA'S PRIDE, 2s. 6d. per stone
ALMA KIDNEY, 2s. per stone
MAGNUM BONUM, 2s. per stone
RECTOR of WOODSTOCK, 3s. per stone
PATERSON'S VICTORIA, 1s. 9d. per stone
SCOTCH REGENT, 1s. 6d. per stone
JOHN HOUSE, Eastgate Nursery, Peterborough.

To the Trade.
"PRIDE OF ONTARIO" POTATO.

H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.
Seed Growing Establishment, Wisbech.

LEICESTER RED CELERY has again proved itself to be the hardiest, sweetest, most solid, and best Celery this unfavourable season; when most kinds have been soft and watery this has been good in every way. Those wishing to obtain the true article should have it in printed packets, price 1s.; post free on receipt of 13 stamps.
BROCCOLI, Harrison's new Dwarf Hardy; a late valuable kind, 1s. per packet.
SAVOY, Harrison's King Coffee Garden, 1s. per packet.
TURNIP, Harrison's Exhibition; a perfect round white variety, from 6d. per packet.
CARROT, Harrison's Early Market, 6d. per packet.

HARRISON'S "LEICESTER SEEDS," of choicest quality, are supplied in collections of 21s. and upwards, sent carriage free. Trade Prices and full particulars on application to
HARRISON AND SONS, Seed Growers, Leicester.

SPANISH CHESTNUT, ASH, BIRCH, HAZEL and ALDER, stout, well-rooted, transplanted. Also a large quantity of 1 and 2-yr. Seedling SPANISH CHESTNUT, at 6s. and 8s. per 1000.
GEORGE CHORLEY, Costers' Nursery, Midhurst.

LARCH.—Part of our Land being required for Fencing purposes, we beg to offer 1-yr. Seedling LARCH from £4 10s. to £6 10s. per 100,000, as per samples.
R. AND A. MORRISON, The Nurseries, Elgin.

THE BEST PLANTING SEASON. THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.
Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

R. H. POYNTER can offer to the Trade Surplus Stock as follows:—
PEAS, Knight's Excelsior Marrow.
PETUNIA, one of the finest prize strains.
CLOVER, Somerset red, or Marlgrass.
GOOSEBERRIES, 1-yr., to name.
APPLE STOCKS, 2-yr., 2-yr.
PRIVET, Evergreen and ovalifolium, 1-yr.
LIMES in various sizes.
LARCH, transplanted, in sizes, 1½ to 3½ feet.
ALDER, SPRUCE, &c.
Taunton Nurseries, Somerset.

To the Trade.

JOHN PERKINS AND SON offer the following:—
ROSES, strong, on Manetti, 30s. per 100
APPLES, Pyramids, 50s. per 100
APRICOTS, Moor Park, dwarf, cut back, 50s. per 100
CURRANTS, Black, strong, 10s. per 100, 80s. per 1000
" Red, ditto, 10s. per 100, 80s. per 1000
ELMS, Wych, 3 to 4 feet, 20s. per 1000
HAZEL, 2 to 3 feet, 18s. per 1000; 3 to 3½ feet, 20s. per 1000; 3½ to 4½ feet, 30s. per 1000
PRIVET, Evergreen, 2 to 3 feet, 20s. per 1000
LAURELS, Common, 2 to 2½ feet, 12s. per 100
" Portugal, 1½ to 2 feet, 20s. per 100
YEWS, English, 2½ to 3 feet, 30s. per 100; 3 to 4 feet, 60s. per 100
52, Market Square, Northampton.

To the Trade.
STANDARD and HALF-STANDARD ROSES.

EDWD. HOLMES offers the above, all good, well-rooted plants.
LIST of Sorts, with Prices (moderate) on application.
Whittington Nursery, Lichfield.

SPECIAL OFFER.
ALNUS CORDATA, 12 to 16 feet, 2s. each
BIRCH, Silver, 12 to 16 feet, 1s. 6d. each
CHESTNUT, Scarlet, 8 to 10 feet, 1s. each
ELM, Chichester, 8 to 10 feet, 8s. per dozen, 50s. per 100; 10 to 12 feet, 10s. per dozen, 65s. per 100
" English, very fine, 8 to 12 feet, 15s. per dozen
ORNUS EUROPÆUS, flowering Ash, 8 to 10 feet, 1s 6d. each
THORNS, with good heads, single Pink, 9s. per dozen
" with good heads, double Crimson, 10s. per dozen
CURRANTS, Black and Red, 10s. per 100
FILBERTS, best named, transplanted layers, 20s. per 100
GOOSEBERRIES, all leading kinds, 15s. per 100
WALNUTS, 6 to 8 feet, 12s. per dozen.
JAS. GARAWAY AND CO., Durdham Down Nurseries, Clifton, Bristol.

Important Notice.

CHRISTMAS QUINCEY begs to inform the Trade and Potato Growers that he has Imported a very large quantity of that invaluable Early Potato, THE BEAUTY OF HEBRON, which he now offers at 3d. per lb., 2s. 9d. per stone of 14 lb., 20s. per cwt. Special quotations for large quantities. Wholesale prices on receipt of Trade Card. Peck Bags 3d. each; Cwt. ditto 4d.; new Sacks, 1s. each. Remittances to accompany all orders.
From the many Testimonials received, C. Q. has selected the two following as agreeing with his own experience last season, when he grew over 10 acres:—

"*Leverington Road, Wisbech, November* 29, 1879.
"DEAR SIR,—The twelve varieties of Potatos which I purchased from you last spring I planted with five varieties I had raised from Berries, selected during a period of five years, and which sorts I considered as disease-resisters; but this season the whole seventeen varieties were scarcely worth the digging, except 'The Beauty of Hebron,' which came up fifteen to twenty tubers to the root, entirely sound, handsome shaped, and were good cookers. I have been a Potato grower for twenty years, but never found such a marked superiority as in 'The Beauty of Hebron' over the other sixteen varieties. A Potato which will resist the blight in a season like the last should be tried by all growers.—I remain, yours truly, "J. T. SMITH.
"Mr. C. QUINCEY, *Potato Grower, Peterborough.*"

"*St. Mary's, Ramsey, December* 18, 1879.
"DEAR SIR,—The 10 cwt. of 'Beauty of Hebron' Potatos which I bought of you last spring, I planted on 2 roods and 30 poles of land. They produced 6 tons of very fine Potatos, and there were but very few diseased ones, surpassing all my other crops this season, and were fit for digging about the same time as the 'Myatt's Prolific.'—I am, dear sir, faithfully yours,
"DAVID CORNEY.
"*To* Mr. C. QUINCEY *Potato Grower, Peterborough.*"

W. BALL AND CO. have many thousands of WINTER and SPRING BEDDING PLANTS; also a large quantity of HERBACEOUS and ALPINE PLANTS, at very low Prices to the Trade and large Buyers.
Price LISTS forwarded on application.
Bedford Road Nursery, Northampton.

WILLIAM FLETCHER, Ottershaw Nurseries, Chertsey, will be glad to quote prices to the Trade, as named :—
BIRCH, 2 to 3 feet, 3 to 5 feet, and 5 to 8 feet.
HAZEL, 2 to 3½ feet.
ASH, Common, 2 to 4 feet.
ALDER, 2 to 3 feet, 3 to 5 feet.
QUICKS, MANETTI STOCKS, &c.

Vines—Vines—Vines.

WM. CUTBUSH AND SON have a very fine stock of the above, both of Fruiting and Planting Canes, of most of the leading sorts. Prices and sorts on application.
Highgate, London, N.; and Barnet, Herts.

WHOLESALE SEED CATALOGUE.—We have now posted our Wholesale CATALOGUE of Agricultural, Vegetable and Flower Seeds to all our Customers. Any one not having received it will oblige by letting us know. Free by Post on application.
WATKINS AND SIMPSON, 1, Savoy Hill, Strand, W.C.

Pilton and Callendarfield Nurseries, Falkirk, N.B.

ROBERT STEUART, NURSERYMAN, is now offering Transplanted Scotch FIR, strong true Highland PINE, SPRUCE, Norway LARCH, extra fine, to 3½ feet; PINUS AUSTRIACA, often and removed last season, extra strong. Prices and samples on application. THORNS, &c.

To the Trade.

G. J. ALBERTS AND CO. (Successors to J. W. Ottolander & Son), Boskoop, Holland, beg to offer :—LIMES (splendid trees), 12 to 15 feet, girthing 4 to 5 inches, per 100, 100*s.*; girthing 5 to 6 inches, per 100, 135*s.*; girthing 6 to 7 inches, per 100, 170*s.* Carriage free to Rotterdam.

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 3, and 3 to 4 feet.
SCOTCH, 1½ to 2, and 2 to 2½ feet.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 4 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

DICKSONS AND CO., NURSERYMEN and SEEDSMEN, 1, Waterloo Place, Edinburgh, are now Booking Orders for the beautiful DOUBLE MATRICARIA, figured in the *Gardeners' Chronicle* of Dec. 13, 1879, at 1*s.* 6*d.* each, 12*s.* per dozen, or 75*s.* per 100—all free by post; and are now sending out well-established Plants of their lovely new SAXIFRAGA WALLACEI, at 1*s.* 6*d.* each, 12*s.* per dozen, or 75*s.* per 100, free by post. Usual discount to the Trade.
D. & Co. have the largest stock of BEDDING VIOLAS in the country.
Descriptive CATALOGUE free on application.

New Rose Trees.
New Sorts obtained by
MARGOTTIN PÈRE (Prize of Honour Exhibition of 1878, Paris).—22, Grande Rue, Bourg-la-Reine (Seine), France.
Hybrides Remontantes.
GLOIRE de BOURG-LA-REINE.
HENRIETTE PETIT.
Very vigorous plants; large flowers, most beautiful red-scarlet colouring, surpassing in brilliancy all sorts in existence. Price £1 per plant. Shipments upon orders.

To the Trade and Large Buyers.

ISAAC MATTHEWS AND SON'S
Special offer :—
200,000 ASH, Mountain, 3 to 4 and 4 to 5 feet.
100,000 ,, Common, 3 to 4 feet.
50,000 ALDER, 3 to 4 and 4 to 5 feet.
150,000 FIR, Scotch, 15 to 18 inches and 1½ to 2 feet.
50,000 ,, Spruce, 1½ to 2 feet and 2 to 2½ feet.
50,000 PRIVET, Evergreen, 2 to 3 feet.
50,000 WILLOWS, Osier, 3 to 4 feet.
20,000 RHODODENDRON, splendidum, white.
20,000 ,, Jacksoni.
50,000 ,, Ponticum, 1½ to 2 feet and 2 to 2½ feet.
50,000 ,, Hybrid Ponticum, seedlings, 1½ to 2 feet.
20,000 ,, named varieties, 2 feet.
50,000 YEWS, English, 1½ to 2 feet.
For prices and particulars apply to
The Nurseries, Milton, Stoke-on-Trent.

Kent, the Garden of England.

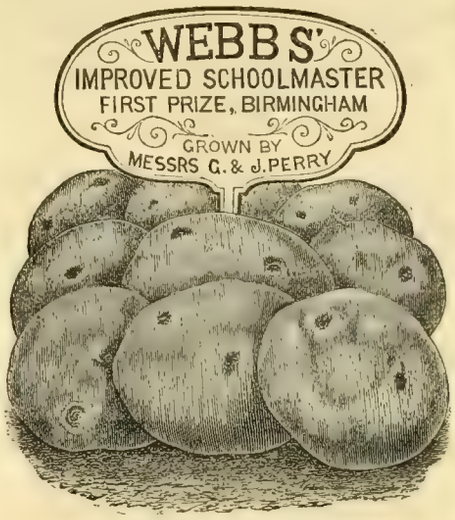
COB NUTS, fine Kentish; Kentish PLUMS, CHERRIES, PEARS, DAMSONS and APPLES; specimen MULBERRIES, large AUCUBAS, large LIMES, YUCCAS, and the finest general stock of FRUIT TREES in the Kingdom, some 200,000 to choose from.
General Descriptive FRUIT LIST on application. The Trade supplied.
THOS. BUNYARD AND SONS, Old Nurseries, Maidstone.

Wandsworth Common and Garret Lane Nurseries.

R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.
All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
CATALOGUES free by post on application.

Gros Guillaume Grape.—Roberts' Variety.

W. TAIT AND CO. are offering strong well-grown CANES of this wonderful variety, at 5*s.*, 7*s.* 6*d.*, and 10*s.* 6*d.* each, grown from eyes taken from the parent Vine. See *Gardeners' Chronicle*, Dec. 20, 1879, page 794. Orders from strangers should be accompanied with remittance.
The Old Established Nursery and Seed Warehouses, 119 and 120, Capel Street, Dublin.



WEBBS'
IMPROVED SCHOOLMASTER POTATO.
(Disease Resisting.)

This splendid new round variety has become deservedly popular, being the acme of perfection in quality and flavour. It is an immense cropper, producing tubers of large size, uniformly round and handsome, with shallow eyes; flesh, snowy white, and very mealy—undoubtedly the best Potato for table use ever introduced. STOCK LIMITED.

Price 5s. 6d. per peck of 14 lb., or 20s. per bushel of 56 lb.

WEBBS'
IMPROVED MAGNUM BONUM POTATO.
The Great Disease-Resister.

This remarkably late Kidney Potato is of grand quality. The tubers are of very large size, symmetrical in shape, with a few small eyes, and of exceedingly fine flavour; the flesh is firm, very white and mealy. It is an enormous cropper on all soils, and fit for use when got up, also an excellent late keeping Potato, as it resists the disease to an extraordinary degree.

Price 3s. 6d. per peck of 14 lb.; 11s. per bushel of 56 lb.; 30s. per sack of 168 lb. Much cheaper by the half ton or ton.

WEBB AND SONS being probably the largest growers of Seed Potatos in the kingdom, can offer other excellent varieties in large quantities on very advantageous terms.

Potatos of 20s. value carriage free; 5 per cent. discount for cash.

WEBB AND SONS,
THE QUEEN'S SEEDSMEN, WORDSLEY,
STOURBRIDGE.

NEW SEED CATALOGUE.

Spring, 1880.

Now ready, price 1s., post-free, or gratis to Customers,

THE ILLUSTRATED GUIDE
FOR
AMATEUR GARDENERS,

ENLARGED and IMPROVED EDITION,
With copious and Original Articles on

THE CULTIVATION of GARDEN CROPS,
THE DECORATION of the FLOWER GARDEN,
THE REARING of FLOWERS FROM SEED,
THE CULTIVATION of LILIES,
THE CULTIVATION of GLADIOLI, &c.

With One Hundred Pages of beautifully printed Letterpress, handsomely Illustrated with two magnificent Coloured Plates, and nearly 200 fine Wood Engravings. This is the most beautiful and comprehensive Seed Catalogue yet published, and *should* be in the hands of all interested in Horticulture.

DANIELS, BROS.,
THE ROYAL NORFOLK SEED ESTABLISHMENT,
NORWICH.

MANGEL SEED.

JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.
Bardney Manor, Lincoln.

GEE'S superior Bedfordshire-grown FARM and GARDEN SEEDS, SEED POTATOS, CABBAGE and other PLANTS and ROOTS, &c. For truthfulness of stocks, purity of growth, and general excellence, not to be surpassed.
FREDK. GEE'S selected stocks of Bedfordshire-grown Seeds and Plants have attained a world-wide celebrity. The rich soils in Mr. Gee's occupation are admirably adapted to the growth of seeds and plants, and offer facilities enjoyed at few places for bringing them away to perfection; and under his skill and perseverance they are turned to good account.—*Vide* "Opinions of the Press."
Select CATALOGUE for the coming Season may be had post-free on application. Also Special Trade LIST of Bedfordshire-grown Seeds, Plants, Roots, &c., may be had on application to
FREDK. GEE, Seed Grower, Seed Merchant, and Nurseryman, Biggleswade, Bedfordshire.

WILLIAM BARRON AND SON'S New CATALOGUE of FOREST TREES, ROSES, FRUIT TREES, and RHODODENDRONS, also STOVE and GREENHOUSE PLANTS, is now ready, and will be sent, post-free, on application.
Elvaston Nurseries, Borrowash, near Derby.

TREES for AVENUE, PARK, or STREET PLANTING.
ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
,, Horse, 14 to 16 feet, girting 8 to 10 inches.
,, Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
,, Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.
They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.
The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.
ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

Special Trade Offer.

W. BALL AND CO., Bedford Road Nursery, Northampton, have a very large stock of the undermentioned to offer to the Trade and large Buyers, in fine condition :—
APPLES, good Standards, best market varieties, our selection, 55*s.* to 65*s.* per 100.
PEARS, good Standards, best market varieties, our selection, 65*s.* to 70*s.* per 100.
PLUMS, good Standards, best market varieties, our selection, 65*s.* to 70*s.* per 100.
APRICOTS, Dwarf-trained Moorpark, 20*s.* to 24*s.* per dozen.
CURRANTS, Black, 3-yr., very strong, 12*s.* per 100.
LIMES, Standards, fine, 5 to 6 feet, 6 to 7 feet stems, 80*s.* to 100*s.* per 100.
CHESTNUTS, Common, 6 to 7 feet stems, fine heads, 75*s.* per 100.
ELMS, Standard Italian, 6 to 7 feet stems, fine heads, 90*s.* to 100*s.* per 100.
ASH, Common, 2 to 3 feet, 23*s.* per 1000.
BEECH, Common, strong, 5 to 7 feet, 25*s.* per 100.
HORNBEAM, strong, 3 to 5 feet, 25*s.* per 1000.
QUICK, very strong, 3-yr., 15*s.* per 1000.
BLACKTHORN, very strong, 3-yr., 15*s.* per 1000.
HOLLY, Green common, fine, 3 to 4 feet, 50*s.* to 60*s.* per 100.
LAUREL, Portugal, very fine, bushy, 3 to 3½ feet, 60*s.* to 70*s.* per 100.
YEWS, Common, fine Pyramids, 3 to 4 feet, and 4 to 5 feet, 90*s.* to 100*s.* per 100.
,, well rooted, 3 to 4 feet, 60*s.* to 70*s.* per 100.
ROSES, fine Standards, 4 feet stems, large heads, our selection, 70*s.* to 75*s.* per 100.

Special Offer of Hardy Conifers.

MORRISON BROTHERS, Aberdeen, having a large stock of the above, will be glad to send, carriage paid to any address, 6 1-yr. transplanted Plants of each of the following fine sorts for £4 10*s.*, or 12 of each for £8.

ABIES Douglasii	PINUS contorta
,, Douglasii glauca	,, Coulterii
,, Engelmanni	,, deflexa
,, Hookeriana	,, flexilis
,, Menziesii	,, insignis
,, Mertensiana	,, Jeffreyii
,, orientalis	,, Lambertiana
,, Schrenkiana	,, monticola
CEDRUS atlantica	,, muricata
,, Deodara	,, parviflora
,, Libani	,, ponderosa
CRYPTOMERIA elegans	,, tuberculata
CUPRESSUS Lawsoniana	RETINOSPORA filifera
,, ,, erecta viridis	,, obtusa
,, ,, lutea	,, pisifera
,, macrocapa	,, plumosa aurea
PICEA bifolia	,, squarosa
,, concolor violacea	THUJA gigantea
,, magnifica	,, Lobbii
,, nobilis	,, orientalis
,, Nordmanniana	,, Vervæniana
PINUS aristata	THUJOPSIS dolabrata
,, Benthamiana	,, lætevirens
,, Bolanderii	,, Standishii
,, Cembra	WELLINGTONIA gigantea

Being able to offer most of the above varieties by the 1000, will be glad to make special offers to large buyers.
Also a large stock of Seedling and Transplanted FOREST TREES.
Priced CATALOGUES may be had on application.
Forbesfield Nurseries, Aberdeen.

CHOICE SEEDS.—Carriage free.
CUCUMBER, Rollisson's Telegraph, warranted true, 2*s.* 6*d.* per packet.
BEGONIAS, Gower's Superb Tuberous, saved from the best English and Continental Varieties, 1*s.* 6*d.* per packet.
PRIMULAS, White and Red, very choice, saved from all the best strains, 1*s.* 6*d.* and 2*s.* 6*d.* per packet.
CYCLAMEN PERSICUM, extra choice, 1*s.* 6*d.* and 2*s.* 6*d.* per packet.
WM. HUGH GOWER (late Manager to Wm. Rollisson & Son), Nurseryman and Seedsman, Tooting, London.

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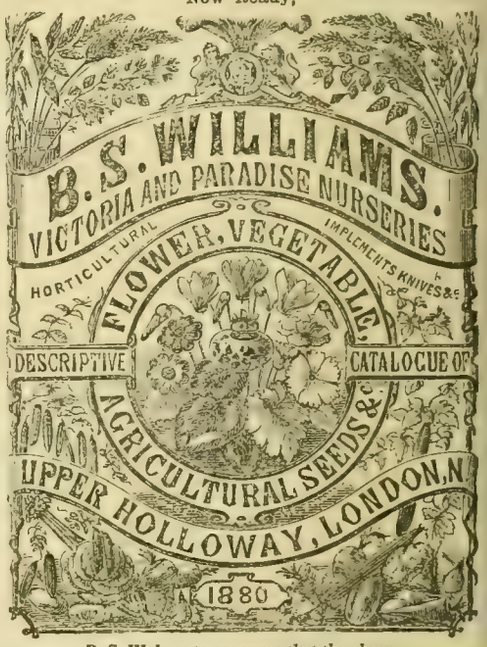

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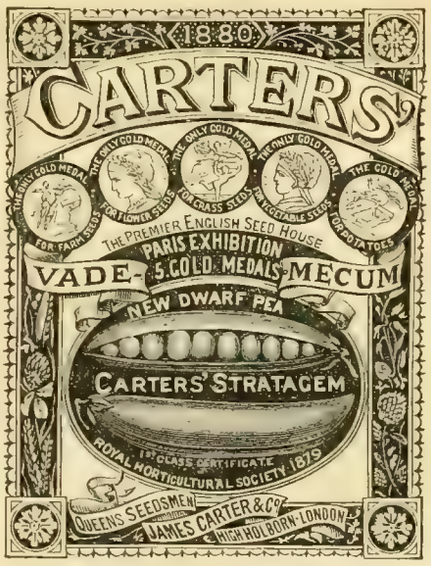

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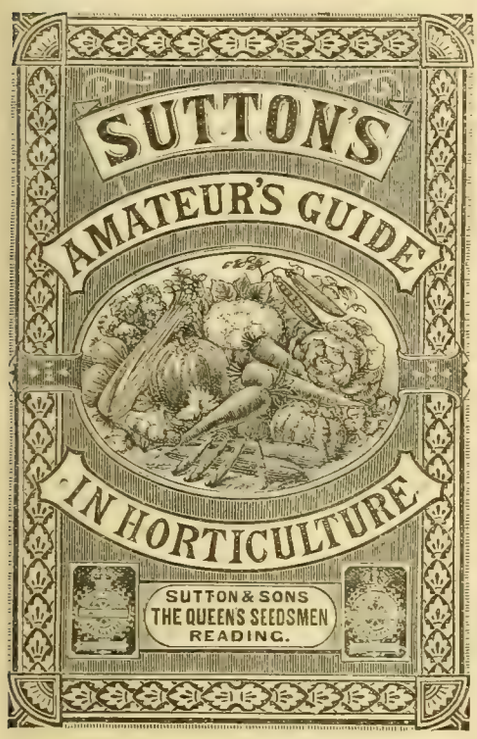

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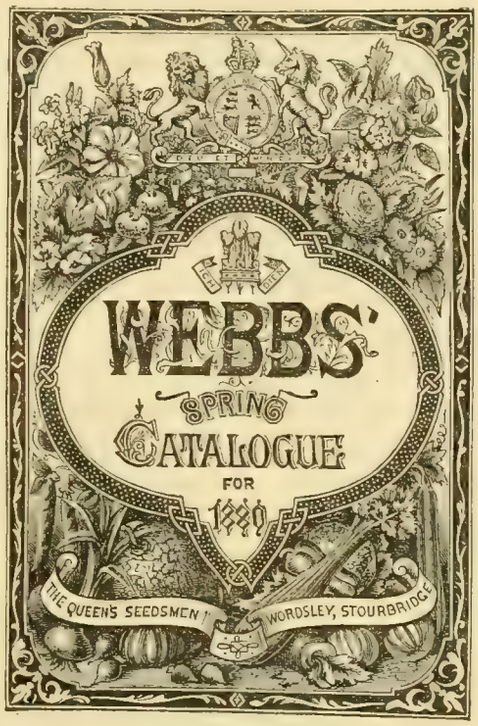

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THE
Gardeners' Chronicle.
SATURDAY, JANUARY 10, 1880.

THE NEW PLANTS OF 1879.

(*Concluded from p.* 8.)

GREENHOUSE PLANTS.

WE include here the half-hardy subjects which may be grown outdoors in summer, but which require to be housed during winter. The most striking plant we have to record is the Dahlia Juarezii (see *Gardeners' Chronicle*, 1879, vol. xii., p. 433, fig. 66), which, like some others, though only brought into notice during the past season, is not absolutely new. This Dahlia is a very remarkable one, its rich crimson colour, and its spreading, pointed florets giving it a striking aspect, which has suggested a comparison with the crimson Cereus, whence it has been called the Cactus Dahlia. The South-African Senecio speciosus, which was for awhile called S. concolor, is a plant of considerable promise; it has a good deal the aspect of a Cineraria, and, like that, may give rise to a distinct race of ornamental plants; the novelty has pinnatifidly-lobed, blunt, hairy leaves, and bears a succession of beautiful bright purple radiate flower-heads on a corymbosely-branched stem. Belonging to a very different order, but a suffrutescent plant of considerable merit, is the Lopezia grandiflora of Mexico, which has turned up in the French gardens; the almond-like foliage is elegant, and towards the ends of the vigorous stems the many subumbellate heads of flowers are collected into an irregular panicle, which is exceedingly showy, both calyx and corolla being of a lively cherry-red colour. The Blandfordia flava, with its golden-yellow flowers, will form a very nice contrast with the more familiar orange-coloured species and varieties, and will therefore prove a welcome addition to a family of great beauty and interest. In the Imantophyllum miniatum Lindeni (Clivia, *Ill. Hort.*) we have a grand variety of this beautiful plant, remarkable for the large size of its flowers and flower umbels. Here may be included, with the reservation that it requires an intermediate-house, the Coutarea Scherffiana, of New Granada, a fine shrubby evergreen Rubiaceous plant, with opposite ovate acuminate shining leaves (alternate in the figure in the *Illustration Horticole*) and largish funnel-bell-shaped white flowers in cymes at the end of the branches. Here, too, should be mentioned the Rockwood Lily of New Zealand, Ranunculus Lyallii, which requires special treatment for its successful cultivation.

In the group of greenhouse foliage plants the principal subject to refer to is the Meryta sonchifolia, a rather nice-looking evergreen shrub from New Caledonia, thriving in a cold house, and remarkable for its brown-spotted leaf-stalks, and its lyrately-pinnatisect leaves, resembling those of the Sow-thistle in form, but variegated with numerous yellow spots. Asparagus flexuosus and A. virgatus, both pretty feathery subjects, claim a notice here, as also do various novel Sarracenias, as S. formosa,

an interesting hybrid between S. psittacina and S. variolaris; S. atrosanguinea, a remarkably fine variety in the way of S. flava, but with a rich blood-crimson orifice to the pitchers; and S. flava ornata, a form in which the deep red venation of the lip of the pitchers is singularly prominent and conspicuous.

PALMS AND CYCADS.

Of Palms which have appeared prominently during the past year, we have to mention the bolder-habited pinnate species, Kentia McArthuri and Cyphokentia robusta, and the more elegant and finely divided Cocos elegantissimus, Astrocaryum decorum, and Calamus densus. The thick trunked Phœnix cycadifolia of the Athens garden, if not an altogether abnormal growth, is peculiar for its striking resemblance to a Cycad. Pritchardia macrocarpa and Trithrinax acanthocoma, are interesting Fan Palms, the latter especially remarkable for the spinescent sheaths which clothe the dwarfish trunk (see *Gardeners' Chronicle*, 1878, vol. ix., p. 661).

Of Cycads we may name the beautiful erect-growing Cycas pluma, the provisional name of which may need critical rectification; and the fine Mexican Ceratozamia fusco-viridis, a species of distinct and striking character, producing pinnate leaves with lanceolate acuminate leaflets, 6 or 7 inches long.

FERNS.

One of the most interesting which have lately appeared is the Adiantum Bausei (*Gardeners' Chronicle*, xii., p. 465), a Fern remarkable both for its distinct aspect and supposed hybrid origin. Its peculiarity is the pendent character of its pinnules, a feature which, in combination with its free and healthy growth, will give it much value for decorative purposes. The charming little Adiantum mundulum, which has sprung from A. cuneatum in Continental gardens, is another gem in its way, quite dissimilar to its parent. The South Sea Aspleniums horridum and neocalèdonicum, though very dissimilar, are both desirable kinds for ornamental purposes—the latter for the narrow elongated segments of its firm leathery fronds, the former for its bold habit and great arching pinnate shaggy-stiped fronds, requiring stove heat and a plentiful water supply for their full development. Polystichum viviparum and P. lentum, the first from Western the second from Eastern India, are Ferns of decorative merit and evergreen, viviparum having arching fronds, proliferous towards the tip, and lentum growing more erect and shuttlecock fashion. As a greenhouse evergreen Fern Lomaria fluviatilis multifida is likely to prove of some decorative value, as are most of the varietal forms which have the multifid or tasselled character. Finally, the Japanese Polypodium Krameri is a very pretty dwarf creeping hardy species, ranking beside P. Dryopteris, but perfectly distinct; and Davallia Mariesii (shown under this provisional name) seems to differ from the smaller species to which it is allied in being evergreen: its affinity is with D. bullata, which is deciduous, and with D. decora, which, so far as we know, is not hardy, while the present plant is evergreen, continuing to grow throughout the winter in a cold frame, and therefore nearly if not absolutely frost-proof.

The golden variety of the common garden Selaginella, S. Kraussiana aurea, which originated in the North of Scotland, and has been once or twice seen in public at the London shows, is a remarkably brilliant decorative plant, where the golden hue can be advantageously introduced.

STOVE PLANTS.

The first place here must be claimed for the Bornean Burbidgea nitida (*Gardeners' Chronicle*, xii., 400, fig. 63), on account of its combined botanical interest and floral beauty. Its tall clustered stems bear elliptic-lanceolate leaves, and are surmounted by panicles of from twelve to twenty rich orange-scarlet flowers, of which the three outer segments are broad and spreading, and the inner reduced to a small bifid yellow lip placed opposite to and folded round the anther, in which resides its botanical singularity. In its native country, Mr. Burbidge tells us, it grows and flowers for nine months out of the twelve. Dipladenia carissima, of garden origin, is a charming addition to this genus of Dogbanes, and on account of its very delicate blush colour will produce a fine contrast with the deeper-coloured species and varieties, which are now becoming plentiful. Another most striking plant is the Hibiscus rosa sinensis schizopetalus (*Gardeners' Chronicle*, xii., 273, fig. 45), whose flowers grow on long pendent stalks from the leaf-axils, and whose orange-red petals are reflexed and cut deeply into a multitude of fringed segments. Amongst flowering stove plants the Bromeliaceæ have come rather prominently to the front—not all new, but some of the species reintroduced. There is Tillandsia Balbisiana, with its sparkling bouquets of purple and orange; Tillandsia tricolor, with its red stem-bracts, and green distichous floral bracts, and narrow purple petals tipped with white; Tillandsia Gardneri—known also as T. argentea—with its sparkling foliage, as if made of frosted silver; Caraguata Van Volxemi, with its short spikelets of yellow flowers, compacted together on the axils of orange-red bracts to form a narrow compound spike; Bilbergia nutans, with its slender scape nodding at the top, its rosy-pink conspicuous bracts, and its pink-calyxed flowers having green recurved blue-edged petals; Æchmea Furstenbergii, with its dense cone-shaped rosy inflorescence seated in the heart of the leaf-tuft; Hohenbergia exudans, with its crimson stem-bracts, and compact roundish paniculate band of yellow flowers tipped with orange, and with a copious white ceraceous exudation in the interspaces; and finally Canistrum eburneum with its rosette of maculate green leaves, in the midst of which is set a tuft of short, broad, ivory-white floral leaves surrounding numerous small white clavate flowers which just fill out the opening—all interesting objects, and strikingly dissimilar for closely-allied family friends.

Of the foliage plants the Crotons or Codiæums are still unexhausted, newly introduced and hybrid forms continually cropping up. C. Evansianus, with dense subtrilobate leaves, the veins at first yellow then orange, is a distinct and pleasing form. C. Hawkeri with the middle of the plant and of the leaves yellow, the outsides and the border green, is also distinct and striking. C. Massangeanus, a long lance-leaved spreading foreign hybrid, is very showy in its yellow, green, and carmine-rosy colouring. C. roseo-pictus has the pretty rosy tint of Williamsii present in its older leaves, which are obovate and well displayed. C. Burtoni is another fine kind in the way of Veitchii as to coloration, but with the leaf margins wavy; while in C. Brageanus, the long inch-wide leaves are marked with a creamy variegation which turns to rose. Of another type of elegance is Aralia reginæ, a New Caledonian plant, of erect habit, with palmatifid leaves, divided down to the top of the mottled petiole into about six flat narrow pointed bright green leaflets. Some handsome Bertolonias, as B. Killickii, and B. Rodeckii, bronzy with silvery ribs and spots, and some charming Marantas, as M. Kerchoviana, which is of the Massangeana type, have also been added to our lists.

ORCHIDS.

Many interesting and ornamental additions have been made to this ever popular family—now more popular than ever—and some of these when they become established, so as to be seen in their true character, will probably take a very high rank in public estimation. Of those alluded to Cymbidium Lowianum may certainly be noted as an acquisition (see *Gardeners' Chronicle*, 1879, vol. xi., p. 405). Its handsomely spreading foliage, and its long drooping spikes of strikingly if not gorgeously coloured flowers—pale olivaceous green, with a yellowish lip, the terminal segment of which is a rich maroon—together with their large size and handsome insect-like form, all mark it out as a popular subject. Dendrobium cerinum, in the way of the old sanguinolentum, is a showy species from the Malayan Archipelago, with large ochraceous flowers, firm and strong, like wax, the lip marked with rich brown lines radiating from the base. We have also to note two fine hybrid Dendrobes: the one, Dendrobium micans, a cross between Wardianum and lituiflorum, with knotted stems and large pallid flowers with deep purple tips, the lip having also two dark Indian-purple spots, one on each side, near the base; the other, D. splendidissimum, which our orchidic friend, Reichenbach, describes as "a great beauty," and which has large flowers shining as if varnished, cream-coloured, with purple at the tip, while the disk of the lip is of a dark Indian-purple, with many radiating lines running out from its base, being moreover covered with velvety hairs, and having a broad hairy line running backwards to the base. We have to note sundry choice additions to the fine group of Pescatoreas, *e.g.*, P. Gairiana, with deep violet sepals and petals, and a broad rose-coloured lip having a radiating callus of some fifteen to seventeen lamellæ covering half its surface; P. Klabochorum, with white flowers tipped with chocolate, and an ochre-coloured lip with many small purple spots and a sulphur-yellow callus of nineteen lamellæ: and P. Lehmanni, in which the sepals and petals are white densely striped with purple, and the lip a deep violet-purple, covered with long bristle-like papillæ on the anterior part, and with a callus of eleven lamellæ at the base. Disa grandiflora psittacina is a new form of that wonderful plant, in which the lateral sepals appear to be of a crimson colour, from the number of crimson spots, and the upper sepal is striped with purple. In Pachystoma Thomsonianum (*Gardeners' Chronicle*, xii., 582, 624, figs. 102, 103) we have an interesting plant from tropical Africa, of a distinct type, with clustered roundish pseudobulbs, and two or more flowered scapes of shining white flowers, with a recurved lip of the brightest purple.

And what more shall we say, for time and space would fail us to tell of the lovely little Cœlogyne Hookeriana, of the broad-sepaled Cypripedium Lawrenceanum, of the wonderful Masdevallias Backhousiana and Parlatoreana, of Comparettia speciosa, of the mammoth Bolbophyllum Beccarii, of Odontoglossum elegans, of the violet-scented Oncidium Edwardi, of Miltonia Bluntii—all worthy of more extended record; to say nothing of the wondrous Orchid hybrids now so frequently startling us by their unexpected apparition, and of which Cattleya Mardellii×, Cattleya Marstersoniæ×, Lælia Dominiana×, Lælia Philbrickiana×, Cypripedium Ainsworthii×, and Cypripedium vernixum× are comparatively recent and meritorious illustrations. *T. Moore.*

CYPRIPEDIUM SPICERIANUM.

THIS species, which was exhibited before the Floral Committee on October 18, is one of the smaller flowered species, noted at the time of exhibition as having the upper sepal white with a central purple line, lateral sepals greenish, also with a central line, the lip greenish shining, and the top of the column white spotted with violet.

New Garden Plants.

ODONTOGLOSSUM HORSMANI, *n. sp.* (*potius hybrid*).*

This has been collected near Ocaña, in New Granada, by Mr. Fred. Horsman, for the New Plant and Bulb Company, Lion Walk, Colchester. About Ocaña grows, it is well known, Odontoglossum Pescatorei, and there can be scarcely a doubt left that the present plant is a mule between O. Pescatorei and luteopurpureum, represented in that neighbourhood by rather indifferent varieties. Thus our new Odontoglossum would appear to be the "pendent" of Odontoglossum Coradinei (obtained from Messrs. Veitch, Bockett, Day, Borwick), as that is no doubt the offspring of the cross-fertilisation of Odontoglossum crispum and luteopurpureum, or a similar species. This one has much longer flowers. The pseudobulb of our novelty is compressed, pear-shaped, with furrows and folds, 1 inch long by two-thirds over the base. The linear-lanceolate leaf is 5 inches long and ½ inch wide. The peduncle bears a flower as large as that of a middle-sized Odontoglossum Pescatorei, and nearly same shape. The ground colour is a very light whitish sulphur. The sepals bear a few cinnamon blotches. Lip broad, cuneate at base, obscurely pandurate, toothletted, with two bidentate ancipitous linear diverging keels before the disc, having enclosed a thick tumour and each outside, arching towards the base, thickened furrowed plates, showing small obscure teeth at the rounded outer border. The whole of this callus is orange-coloured, and there is a dark cinnamon blotch on the disk in front. Column wings nearly square, with very small crenulations and a row of brown spots. The plant is, of course, inscribed to its lucky discoverer. It is a grand thing to find now-a-days a new Odontoglossum in the hilly, much trodden environs of Ocaña, which in some time may be as famous for its destroyed Orchid flora as the bogs of Ireland are noted as the grave of the giant deer, extinct in historical times.

Mr. Horsman has seen few flowered inflorescences at the place. Unfortunately he did not dry any. The petals are said to have been white when flowering at Colchester. When they arrived at Hamburgh they had just the same white-sulphur tinge as the sepals and lip. *H. G. Rchb. f.*

ODONTOGLOSSUM CRISPUM (*Lindl.*) BLUNTII FLAVEOLUM.

It is well known that we were not aware of the immense richness of variation this splendid Orchid offers. The one set of varieties has usually smaller flowers, very often, nearly always, of a much stronger substance, always with a blunt lip. Those are the Bluntii, dedicated to Mr. Blunt, who is so famous for having sent that glorious stock of Lælia elegans which is one of the quite unique marvels of the Dayan collection, all those Cattleya Milleriana, that fresh collection of glorious Oncidium Gardneri that came under the hammer as much inferior O. curtum, so that there was a deception in favour of the purchaser—not a very common case. I have just now at hand two inflorescences of a very curious form of Bluntii, sent from Mr. Bull. They both deserve the name of flaveolum, though not in same degree. The one variety has pure white flowers, with only some red on wings, and those few red well known stripes on base of lip. The whole disk of the lip, as well as the crests, are good yellow. The other variety is rather distinct, having lip and petals very crisp, which is not so often the case in the herd of Bluntii, and sulphur in disk, odd sepal equally coloured, equal sepals totally sulphur-coloured. Sepals with few brown spots, which are chiefly marked inside, though they are translucent outside. Inflorescence very dense and rich. *H. G. Rchb. f.* [This plant has also flowered with the New Plant and Bulb Company, Colchester, whose stock of it was collected by Mr. William Wallace, near Bogota, in 1878. The New Plant Company therefore share with Mr. Bull the honour of its introduction. EDS.]

FIG. 7.—CYPRIPEDIUM SPICERIANUM. (SEE P. 40.)

CYMBIDIUM ELEGANS (*Lindl.*) OBCORDATUM, *nov. var.*

Mr. Stuart Low sent me the other day flowers of two Cymbidia, obtained from one of his acquaintances. The one belonged to Cymbidium affine, Griff., a plant the limits between which and Cymbidium Mastersii, Lindl., do not appear very decided, and which may be a local variety, though I am not sure now about it; the other was this great curiosity. Pallid honey colour flowers in a rich raceme: perhaps they are a little shorter—at least I had such an impression. The anterior lacinia of the lip, in lieu of being oblong and acute, is obcordate and emarginate at the top. Those small appendices, so highly characteristic of Cymbidium elegans, were also perfect, yet in lieu of being rose, pink, or mauve, they were white. As long as there are no richer materials at hand it appears safer to establish a variety only. The plant is in the collection of Arthur Potts, Esq., Hoole Hall, Chester. *H. G. Rchb. f.*

* *Odontoglossum Horsmani*, n. sp. (n. hybr. potius).—Pseudobulbo compresso pyriformi sulcato ac plicato; foliis lineari-ligulatis acuminatis; pedunculo unifloro ("nunc plurifloro"); sepalis triangulo-ligulatis; tepalis oblongis acutis, labello pandurato minute denticulato, callis ancipitibus ligulatis bidentatis geminis in medio, interposito callo rotundo multo breviore, callo utrinque humillimo depresso multisulcato extus minute denticulato; columnæ alis subquadratis, angulo utrinque extus in columnæ angulo antico sub fovea. Flores albo-sulphurei. Sepala cinnamomea maculata. Calli labelli aurantiaci. Macula cinnamomea in disco antico labelli. Alæ columnæ albo-sulphureæ cinnamomeo maculatæ. Macula furca antice sub fovea.—Ocanæ detexit dom. Horsman. *H. G. Rchb. f.*

EDWARD W. COOKE, R.A.

IT is with a sense of irretrievable loss and deep grief that we announce the death of this accomplished gentleman, at his residence, Glen Andred, Tunbridge Wells, on the 4th inst. Best known to the general public as an artist, he was still more widely known in scientific and literary circles by the catholicity of his sympathies. As a painter he is familiar to most of us by his numerous Venetian scenes, which bring before the spectator the light and air and colour of modern Venice with all its wealth of architectural detail. Equally faithful and sympathetic were his sea pieces. The long low sandy shores of Holland with their fringe of angry surf—the clouded skies—the quaint craft with their effective patches of colour, have never had a better illustrator. The artistic talent with him was hereditary. He was the son of a famous engraver, and himself practised the art in early life. But, as we have said, Cooke was many-sided. His genial earnest temperament was ever in full sympathy with what was beautiful, good, and true in all departments of knowledge. He seemed to be interested in everything, and, more, he made those who were with him share his interest. It was impossible to be in his company for any length of time without catching something of his zeal and enthusiasm: art, virtu, Venetian glass, fossils, mechanism, botany, geology, and we know not what beside, found in him an active lover. His zeal and enthusiasm often seemed too great for his feeble frame, but it may be that they supported him in trials which would have injured a stronger man not so endowed.

No wonder that such a man was a gardener. More than thirty years ago we knew him as one of those landscape gardeners who had, what few landscape gardeners have, such a knowledge of plants as to give him the choice of the wealth of material in the nurseries and to enable him to dispose them to the best advantage. The small gardens attached to his residences in Kensington were models of what small town gardens might be made by one who combined artistic power of grouping and genuine love of plants. Mr. Cooke's counsel was eagerly sought after by his acquaintances in the arrangement and planting of their grounds. But the boldest and most original of his work in this way may be seen at Glen Andred. Rocks and rock scenery were a *sine quâ non* with Mr. Cooke. Rocks were not to be had anywhere also so near London, hence the choice of a site for his house and garden. But even then the rocks were not always just where they were wanted. But they came at his command. If they would not show themselves above the surface he made them do so. With a long wire probe he probed the soil around and between the buried rocks, and then scooped away the sand with a diligence *proprio manu*, till bold bluffs, mountain gorges, wooded ravines, with limpid rivulets trickling between, rewarded his exertions. Here was fit resting place for Ferns, for alpines, for aquatics, for anything that would grow. What some would reject as weedy rubbish, Cooke, by putting into a suitable place, made attractive to those who had eyes to see.

Mr. Cooke married into the Loddige family, which may partially account for his knowledge of and good taste in plants. Many of the illustrations in Loddige's *Cabinet* were from the brush of his father—some were executed by himself, as also were some of the drawings for *Loudon's Encyclopædia of Plants*. Later on, by the marriage of his sister to one of the sons of the late N. B. Ward, he became intimately connected with that most amiable man. There was much in common in the two men, the same lovable character, the same appreciation of what was pure and good and beautiful—the same keen love of Nature in all her manifestations, the same sympathy with knowledge and progress, the same freedom from petty affectations and shams, the same generosity towards others.

In his pictures—to revert once more to the work

by which he achieved fame and fortune—his mental characteristics may be traced—his love of truth, his accurate observation and fidelity in reproducing them. Many of his pictures are scientific lesson-books: the dip of the strata, the grains of the sand, the shapes of the leaves, the curvatures of the trunks of the Palm trees, the form of the rain-clouds, the line of the waves, and hundreds of such instances betoken, not only the artist, but the man of science. There is an amount of absolute truth about them, apart from imagination, which will give his pictures a permanent value beyond that of many of his contemporaries.

If, humanly speaking, anything can lighten the sense of such a loss to the survivors it must be the remembrance of such a career and the manifold assurances of widely-spread deeply-felt sympathy.

GROSVENOR GALLERY.

BEFORE these notes are published the Winter Exhibition at the Grosvenor Gallery will be open to the public. There are no large and important pictures in oils in the gallery, the collection consists principally of water-colour drawings of moderate or small size, and a large number of artists' studies in ink, chalk, and pencil. The first fifty-five water-colour drawings are contributed by the Society of Painters in Water-colours of the Hague; many of these pictures are bold and sketchy productions, representing flat landscapes, such as one is familiar with in some parts of Norfolk, Suffolk, and Cambridgeshire. The first picture of horticultural interest is 9, and this is termed "Flowers," Madame Mesdag Van Houten; it is Whistlerian in its treatment, and the Roses are of the tea-tray variety: what the other "flowers" in the composition may be meant for we know not. 15, "Pears," by the same artist, shows the same want of knowledge as 9. In passing a pause may be made at 13, to admire the curious study termed "Amateurs," by L. Alma Tadema. 50, "Roses," Mdlle. G. J. Van de Sande Bakhuysen. This picture is of a very different class from 9 and 15: it represents a group of white Roses with grass in flower, and the drawing of the blooms and foreshortening of the foliage is everywhere carefully studied and well painted. 55, "Horse Chestnuts," by the same lady, is equally good, the spray of Oak and Bramble, and the ripe Horse Chestnuts, are excellently represented. No. 58, "Holywell, Connemara," W. Small, will repay study; and 73, "Llangharne Castle, South Wales," J. W. Whymper, one of this admirable artist's best productions. The building represented is probably the somewhat modern Llaugharne Castle, near Carmarthen. 92, "Roses," Miss Maud Naftel, is both well drawn and well painted, but the whole picture is in body colour. 100, "Chrysanthemums," J. J. Hardwicke, is at best a poor thing. 103, "A Morning for Mushrooms;" Mr. F. Smallfield—the artist—is probably right in his representation of the *morning* in this capital picture, but the painting certainly does not show the *place* for Mushrooms, viz., a wet grassy stream-traversed meadow. Although Mushrooms are generally termed "meadow Mushrooms," yet these esculents do not generally grow in meadows, but rather in pastures where the "ewes bite." 113, "Wild Cherry Blossom," J. M. Jopling. This is a carefully painted picture of a very realistic large glass jar with a few sprays of the wild Cherry inserted—the latter not remarkable for correct drawing. 126, "Daniel," Briton Riviere, A.R.A., is the fine study of hungry lions and lionesses, the extraordinary figure of Daniel, seen from behind, being quite subservient. 130, "Circe," by the same artist, is the still better study of swine in all imaginable attitudes, and with all imaginable expressions. "Circe" commends herself to one's pre-conceived notions better than does the back elevation of Daniel in 126. 162, "The Wars of the Roses," Lady Lindsay, is a pretty and carefully drawn and painted picture of red and white Roses, in which body colour is to a great extent used. To reach our next number we have to pass into the Sculpture and Water-colour Galleries. 222, "Iris and Rhododendron," Mrs. W. Duffield, is one of the best flower subjects in the exhibition, but it has a too marked inclination towards botanical stiffness; there is a spray of scarlet Begonia in the foreground, a plant seldom attempted by cautious flower-painters. 228, "Flowers," by the same artist, is better than the last, the unobtrusive pot, of simple form and low colour, greatly aids the varied outlines and brilliant colours of the flowers. Close by is 230, "Rhododendrons," Mrs. E. Taylor. This is a wretched representation of the blooms and foliage of the Rhododendron. We here pass many good landscapes and figure subjects, together with many pictures calling for no special comment from us, till we get to the East Gallery, where there is a large collection of artists' studies in chalk and pencil. Mr. E. Burne-Jones sends a considerable number of elaborate studies and sketches on paper, mostly of figures in this artist's well-known style. 379, "Study of Lilies," E. Burne-Jones, is one of the best pencil studies of the White Lily (Lilium candidum) that we have seen: it is small in size, and dated 1865, but the flowers, buds, and leaves, seen in all stages of growth and perspective, are worthy of careful attention. 384, "Studies of Flowers," Sir F. Leighton, P.R.A., are carefully drawn blossoms of the Pumpkin; there is nothing extraordinary in two small Pumpkin flowers, but the extreme accuracy and beauty of the drawing is worthy of attention. 395, "Studies of Thistles and Teazles," by the same artist, aims more at the general exact effect of form and colour in these plants than minute detail; the Knap-weed is included in the group. 418, "A Lemon Tree," by the same artist, is the most remarkable piece of botanical drawing in the exhibition: the exactitude and elaboration of detail in every leaf and twig through the complete tree, and the general beauty and excellence of the entire drawing, call for special remark. 417, "Poppy in Seed," also by Sir F. Leighton, is another good drawing, but, strange to say, the plant represented is not a Poppy at all. It is a Knap-weed (Centaurea Scabiosa), with the well-known globular involucres and the numerous bracts. 442, "Study of a Poppy in Seed," A. Moore, is a life-like drawing of the White Opium Poppy. In 452 we have one of a group of four drawings by L. Alma Tadema, R.A. This special drawing, termed "Studies of Architecture," is interesting as showing with what care this artist studies and sketches architectural details with a possibility of their introduction in some future picture. 454, "Studies of Flowers," A. Moore: these are remarkably well drawn and truthful scraps representing Marigolds in a tumbler of water, the wild Heartsease, and the red Poppy of our cornfields. 497, "Study of Thistle-heads and Leaves," Sir F. Leighton, is a faint but careful pencil study of these parts of Thistles. Sir Coutts Lindsay, Bart., contributes several drawings of merit, the decorative pictures being perhaps the best. In 535, "A Study," the perspective of the piano is uncommonly bad, and could hardly have been studied from the real object. If Sir Coutts will walk round his drawing-room and keep his piano in view he will find that wherever he places himself he will still be able to see the top of the piano: if Sir Coutts will now sit in a chair, first in one part of his drawing-room, then in another, he will find that the top-surface of the piano invariably appears as a horizontal line. In the drawing here referred to the back of the piano is shown to suddenly drop at an angle of 45°. No spectator could possibly see such an angle on a piano-top unless he first laid himself flat on the floor near the bottom of the piano, and there made his observation.

EXHIBITION OF WORKS OF OLD MASTERS.

THIS exhibition of pictures, which includes works by deceased masters of the British school and a special collection of works by Holbein and his school, is now open at the rooms of the Royal Academy at Burlington House. It does not contain a single work of horticultural or botanical interest, though there are many landscapes of great beauty, notably (11) "Somer Hill," near Tunbridge, Kent, by Turner, showing the house on a wooded slope with a lake in the foreground. It seems hardly credible that the painter of this picture could ever have painted 35, "The Grand Canal, Venice—Blessing the Adriatic;" the first is quiet and low in tone, whilst the latter is a harsh blaze of staring colour. Gallery No. I. contains four old paintings by George Morland, one by John Crome, and two by Hogarth. Gallery No. II. has four works by Albert Cuyp, and in the three first rooms there are nine works by Thomas Gainsborough. Reynolds, Vandyck, Nicholas Poussin, Salvator Rosa, Tintoretto, Guido, Sebastian del Piombo, Canaletto, Titian, Paulo Veronese, Ruysdael, Rubens, Teniers, Paul Potter, Etty, Romney and Sir Edwin Landseer, are represented in the first three galleries by one or more pictures (some of these being well known by steel engravings). Gallery No. IV. is set apart for examples of Holbein and his school, the room being full of prim but highly finished and life-like portraits. Many are of great historical interest, others are indefinite as to persons. "Portrait of a Man" frequently occurs—an old man being in one instance termed "a young man," the compiler of the catalogue possibly having his own views of "old" and "young" as applied to men. In Gallery No. V. and last is a curious collection of old paintings belonging to the Sienese, Italian, Umbrian, Venetian, Early Tuscan, Arragonese, Castilian, and Florentine schools. Some of the painters here (like the subjects) are unknown. The four illustrations of the story of Nastagio degli Onesti, 212, 213, 253, and 254, from the *Decameron*, are very amusing, as is 218, "The Marriage Feast of Peirithous," where the servants who bring in the viands are Centaurs. "Centaur Helps" might have answered in the times of Peirithous, but Mrs. Crawshay herself would hardly recommend such adjuncts for modern households. 219 is a "Battle Scene," a somewhat indefinite title, but the compiler of the catalogue makes up for any obscurity in the subject by kindly giving a full explanation of the letters S. P. Q. R. as seen on one of the banners—no one ought to be ignorant in these days. There are many illustrations of Christian and heathen subjects in this room, and no picture is more amusing than 245, "The Last Judgment," by an unknown artist of the Castilian school.

THE DRAGON TREE OF AJUDA.

THE Dracæna Draco, growing in the Royal Gardens of Ajuda, Portugal, is illustrated in a recent number of the *Revue Horticole*. It is a noble tree, coeval with the foundation of the garden by the Queen Dona Maria I., and at least is not younger than 120—150 years. The dimensions given are, 6 metres in height, 36 m. in circumference, the girth of the principal trunk being 4 m. 65 cm. This divides into eleven principal branches, and an infinitude of minor subdivisions, the ultimate extremities bearing tufts of sword-shaped leaves, which form an impenetrable shelter from the sun. The tree produces seeds annually to the extent of 3 alqueiries (1 alqueire = 13 litres 80 centilitres). In France, a packet containing fifteen seeds costs about 1 f. 25 c. When the French Sisters of Charity took up their residence at the asylum of Ajuda they obtained 30 alqueiries of the seeds, which they constructed into necklaces and rosaries, which were sent to France and sold for a good price. The tree, moreover, yields an abundance of resin, used for varnish making. It is a noble looking object, and strongly excites the attention of visitors. Our contemporary tells as a fact, for the authenticity of which he vouches, a story of a British Admiral commanding a fleet in the Tagus, who was so impressed with the grandeur of the tree that he wished to purchase it. "Unable to restrain his enthusiasm he walked up *tout ému* like the good Englishman that he was (*sic*) to one of the gardeners, and asked him, in the best Portuguese that he could command, if this magnificent tree were for sale. The gardener, smiling, replied in the negative, but this did not satisfy the Admiral, who gave the gardener no peace until he had communicated his wishes to his (the gardener's) superiors. The enthusiastic Englishman said that he would give £1000 sterling, and would come with his sailors and dig up the tree with the greatest care and transport it to England. But in truth the enterprise was impossible, even for an Englishman. . . . The episode is on the faith of eye-witnesses worthy of credence, absolutely authentic." We suspect our Portuguese friend did not understand the Admiral's little joke, especially as his Portuguese was somewhat defective.

BURIED OAK TIMBER.—In deepening a river in the neighbourhood of Norrköping, in order to make it accessible for ships of heavier draught, amongst several objects of interest brought up from the bottom, eight oak trees were found at a depth of about 7 feet under the old bottom. The bark is almost decayed, and when it was taken off the wood was found to be hard and black, resembling ebony. The trees are supposed to have been lying 900 years in the earth. The trees have been sold to a firm of joiners, who intend using them for cabinet work. *Timber Trades Journal.*

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116, 189, '55 (fig.)
GAMOCHLAMYS—
heterandra, Baker, 164, vi., '76
GARCINIA— [(fig.)
Mangostana, 657, iv., '75
GARDENER—
bird, the, 333, ix., '78
GARDENIA—
Devoniana, 663, '46
florida, var. Fortuneana, 447, '46
longistyla, 671, '47
malleifera, 223, '43
nitida, 855, '47; 7, '48
radicans fol. variegatis, 715, '61
Rothmanni, 436, '55 (fig.)
Stanleyana, 611, '45
Whitfieldii, 452, '48
GARRYA—
elliptica, 169, ix., '78 (fig.)
GASTERIA—
colubrina, N. E. Br., 38, viii., '77
dicta, N. E. Br., 68, ii., '76 (fig.)
GASTRONEMA—
sanguineum flammeum, 646, '73
GASTROLOBIUM—
spinosum, 654, '44
villosum, 639, '47
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insipida, 419, ii., '74
GAYLUSSACIA—
pseudovaccinium, 834, '44
GEISSORHIZA—
grandis, 646, '73
GENETYLLIS—
(*see* Darwinia: Hedaroma)
GENISTA—
Everestiana, 419, ii., '74
virgata, 151, '44
GENTIANA—
Andrewsii, 402, x., '78
double-flowered, 628, '43
GEONOMA—
arundinacea, 78, '72 (fig.)
corallifera, 68, '55
Ghiesbreghtiana, 1158, '69

Forestry.

THINNING SCOTCH FIR PLANTATIONS.—A letter appeared in your last number for 1879 from Mr. C. Y. Michie, forester on the Cullen estates of the Earl of Seafield, in which he disputes the authenticity of some figures in a circular written by me for Messrs. Little & Ballantyne, to show the possible returns realised from the sale of young Scotch Fir trees during fifty years' growth. Will you kindly allow me part of your valuable space to reply to Mr. Michie's strictures, which are, I think, likely to mislead landed proprietors who are at present preparing to plant their poor lands with trees?

In regard to the figures referred to by Mr. Michie in my paper "On Our Timber Supplies," they were certainly authentic, and not "purely imaginary and speculative," as Mr. Michie somewhat hastily calls them. They are extracted from a very interesting report on the "Woods and Plantations of Highclere," by Mr. Andrew Peebles, a practical forester of great experience, and which was printed by the Scottish Arboricultural Society in their *Transactions*. In this report Mr. Peebles gives his opinion very distinctly as follows:—"From this it appears that land not adapted for agricultural purposes, if planted with Scotch Fir, judiciously managed, will pay something like £2 per acre at the end of fifty years, and that, too, in a locality where there is little demand for such produce."

In case, however, Mr. Michie should still adhere to his rather strong assertion that the value of thinnings is in all cases simply "a self-imposed deception," let me remind him that his opinion is not sufficient by itself to settle such an important question; and that as his experience has been probably confined to the northern locality in which he has so long worked, we must claim the right to summon witnesses from other districts, whose evidence will be entitled to equal weight with Mr. Michie's. For this purpose I have made the following extracts from authentic reports published by a few well-known foresters, and who it will be seen confirm the estimate made by Mr. Peebles of the results of well-managed plantations of Scotch Firs.

The late Mr. William Thomson, Deputy Surveyor of H.M. Chopwell Woods, Durham, in a paper published in the Scottish Arboricultural Society's *Transactions*, states:—

"Let us, however, leave a margin for contingencies, and assume that in a space of fifty years the value of plantations will be—not £300, not £150 (according to some estimates)—but say £100 per acre, just one-third. Woodlands of ordinary capabilities ought to yield this sum, and unless they do so we submit that their management must be, not only indifferent, but unskilful in the highest degree. This, it will be observed, is a return of £2 per acre per annum, exclusive of thinnings which have been taken out during the whole period of the plantation's growth. But as we are now computing in round numbers, we may allocate these to the liquidation of the rent of the land," &c. "We wish no one may be able to say that our statements are of a merely theoretical character, which cannot be carried out practically."

Mr. D. F. Mackenzie, forester, Meldrum House, Aberdeenshire, in a report on "Felling Timber Trees," published in the Scottish Arboricultural Society's *Transactions*, says:—

"None of our timber trees are more extensively cultivated than the Scotch Fir, its timber being applied to almost all purposes to which common wood is applicable. This tree is not particular as regards soil or situation, and can be cut down with profit at the age of thirty-five years and upwards. I felled a large wood of Scotch Fir on an estate in the North on land worth less than 2*s*. 6*d*. per acre. The age of this plantation was thirty-five years, and the nett return, after manufacture, was £33 per acre.'

This wood was cut down too young.

Mr. James Wood, wood-manager, Bayham Abbey, Tunbridge Wells, in a paper on "The Arboriculture of the County of Kent," in the Scottish Arboricultural Society's *Transactions* (1877), writes:—

"There are several hundred acres of moorish soil, part of which is covered with a healthy thriving crop of Scotch Fir; but much is still lying waste, which if it were planted would realise 20*s*. per acre for the time it occupied the ground, although small Scotch Fir only sells at present at 6*d*. per foot, and trees 8 inches through at 9*d*. per foot. It is principally used for barrel staves, and who can tell but it may yet realise 1*s*. 8*d*. to 2*s*.; in all probability it will do so; and if the thousands of acres of waste land throughout Britain, worth in many cases only 2*s*. 6*d*. per acre, were planted, much money would be secured to posterity, and the humidity of our island maintained."

Mr. John Grigor, of Forres, N.B., the author of an excellent *Treatise on Arboriculture*, gives the following instance, among others:—

"On an adjoining moorland on the estate of Dalvey, about four miles from Forres, there is a plantation of native Highland Fir, about forty-five years old, and which has been carefully thinned. The value of the thinnings cannot be now ascertained, but the trees as they stand are worth £50 per acre on land which under any other circumstances would not have fetched nearly £1 per acre per annum."

I could give many similar quotations. There are also many interesting reports on the value of Larch plantations, showing much greater returns per acre than any I have given from Scotch Fir.

Mr. Michie's remarks on the thinning of Scotch Fir I must leave to practical foresters, whose opinions will carry equal weight with his. I would merely remind him that Scotch Fir requires less space for its growth than any other trees, and that the value of thinnings differs greatly in different localities; in some even the smallest are readily disposed of, while in others they are unsaleable.

There is also a wide divergence of opinion as to the proper age at which woods should be cut down, and different localities and soils, and exposures, require different treatment. If Mr. Michie would give us authentic statements of the sums realised from time to time per acre from the plantations which have been cleared on the Seafield properties, he would do more service by giving us the use of such valuable experience than by calling in question the experience of other foresters, and thereby, it may be, checking the profitable occupation of the large extent of waste land which at present lies almost useless throughout the country. *Wm. Baxter Smith*, 4, *Salcombe Villas, Merton, Surrey, Jan.* 1.

Florists' Flowers.

SEASONABLE NOTES ON GREENHOUSE FLORISTS' FLOWERS.—BOUVARDIAS.—A few of these will still continue to produce flowers in a warm conservatory or greenhouse. Their flowers are very useful now, few things being better adapted for small vases or bouquets. It is very desirable to retain the plants in flower for as long a period as possible, and one way of doing this is to place the earliest plants that flowered in September or October in heat, say the first week in January or even earlier. Those who have not the convenience of a forcing-house, may place the plants in an early vinery: this would be started with a moist heat of 45° at night, rising a degree or two every week, which would do well for the Bouvardias, and the plants are generally grown sufficiently to produce cuttings before the roof is covered with leaves. Propagate and treat as advised last month.

CALCEOLARIAS.

Much the best place for Calceolarias at the present time is on a shelf or stage near the glass in a house or pit from which the frost can easily be excluded by means of hot-water pipes; no soft-wooded plants suffer more readily from the effects of over-heating the hot-water pipes than these: it will cause the oldest leaves to droop, and usually causes greenfly to appear on them. Many persons have only a greenhouse in which their plants must both be grown and flowered: such persons must scheme a little, and either raise the plants on pots near the glass, or place them on a shelf suspended over the path from the rafters overhead. Carefully look over the plants about once a fortnight, turn each round and look well under the leaves, and remove all those that are decayed, and if one solitary aphis is observed fumigate at once. Large plants should have their growths tied or pegged out, and any plants that require repotting should be attended to at once.

CHINESE PRIMULAS.

In dull damp weather Chinese Primulas have a great tendency to die off at the collar. When they are arranged amongst other flowering plants in the greenhouse at this season, it is always difficult to give each particular plant just the treatment it requires; but choice Primulas of this type well deserve to be placed in a light position near the glass, and also where they can have 5° higher temperature than Calceolarias at this season. Water with rain-water rather warmer than the temperature of the house, and with careful attention as to ventilation few or none will damp off. Should any decay appear near the collar of the plant remove it with the fingers, and rub the affected part with dusty quicklime.

CINERARIAS.

The earliest plants are now in full beauty, and very useful they are with their brilliant colours when the Chrysanthemums are over, and few of the forced flowers are yet in. These do not require any more attention at present than just to see that the plants do not suffer for want of water, that they are kept free from greenfly, and are not placed where there is a draught of air blowing directly upon them. In a cool moderately dry house they remain in perfection for a very long time; the different shades of blue furnish us with flowers for cutting at this season that are very valuable indeed, but nearly all of them are well adapted for bouquets or vases. Plants intended to flower later, if not yet potted into their flowering pots, should be seen to without any delay; the young growths must also be tied out as they require it. Decayed leaves must be carefully removed, mildew destroyed by dusting with flowers of sulphur, and aphis and thrips annihilated by fumigation. On no account let any plant suffer for want of water at the roots. Keep the foliage dry.

CYCLAMENS.

It is now a good time to sow the seeds of Cyclamens, using pots or pans according to the quantity to be sown. The pans may either be placed on a shelf near the glass in a temperature of 50° to 55°, or they may be plunged in a gentle bottom-heat; when the seeds vegetate it is best to place the pans near the glass, and when the small plants have formed one leaf they may be potted singly in thumb-pots, using light sandy soil, still keeping the plants near the glass and in the same temperature. Flowering plants succeed best in a warm greenhouse, where the attention will be the same as that advised last month. Some of our large plants, six or seven years old, produce a large quantity of flowers, but the leaves and flowers also are very small, and it is better to throw such plants away, and trust to younger ones to produce flowers.

HYACINTHS.

The whole stock of Hyacinths should now be taken from the plunging material and be placed under glass. Those intended for exhibition on any date from the middle to the end of March should be placed in a pit or house on shelves near the glass, from which frost can be excluded. They must never want for water, but it would be a mistake to give too much of it, on the supposition that plants that will grow in water cannot have too much of it when planted in soil. If it is intended to keep a portion back for exhibition or any other purpose, the pots should be plunged to the rims in some light, dry material in a cold frame facing the north. Cover the glass at nights with mats if severe frost is expected.

LARGE-FLOWERING PELARGONIUMS.

Where there is a large collection they are continually requiring attention as to tying-out the growths and forming the plants for the next season. Instructions as to how this is to be done were given last month. The plants intended to flower in May and June have of course been potted some time ago; those intended to flower in July may be repotted any time this month. By careful attention to watering and judicious ventilation, the plants are not likely to suffer from "spot;" this is brought on by watering with cold water, or giving too much of it, or from a too low damp atmosphere.

FANCY PELARGONIUMS.

The fancy Pelargoniums must be carefully trained into shape, and, as previously advised, keep the temperature rather warmer, besides placing the plants at the warm end of the house. The ventilators may be kept rather closer, as the shoots are not so liable to become drawn up weakly as the others. Now is the time to destroy greenfly, or prevent its appearance.

ZONAL PELARGONIUMS.

The plants intended to flower early in the summer should be placed in a house where the temperature is warmer than the greenhouse, say 50° at night. The difficulty with this class of Pelargonium is to get them well in flower for the early exhibitions, and they do not bear much forcing later in the year. Small plants at present in the pots they were placed into in the autumn must not be excited into growth; water very sparingly, and give plenty of air and light.

PETUNIAS.

If it is intended to produce good flowering specimens of Petunias in pots by the end of summer, the plants should now be potted into 5-inch pots from the 3-inch ones in which they have been wintered, that is, if they have started to grow and are forming roots. Immense specimens may be produced if the plants are strong and they are started at this time in a temperature of 50°, and this ought not to be exceeded until the season is well advanced and air can be freely admitted. If the plants have been stunted in the pots it is better to take cuttings now, strike them in a gentle bottom-heat, and make a fresh start.

VERBENAS.

These, like the Petunias, are easily grown, and require rather similar treatment. The plants will be now in store pots, and they should be encouraged to make growth; and as soon as the cuttings are ready they may be taken off and struck in bottom-heat. As soon as the plants are rooted they may be potted into small pots and placed on a shelf near the glass. Greenfly, red-spider, thrips, and mildew all attack the Verbena, and it is needless to say that the plants will do no good unless all these are kept from them. *J. Douglas, Loxford Hall.*

BROOMRAPES.—It appears from a communication made to the Horticultural Society of Paris, that in Persia Melons, Cotton plants, Cabbages, and other plants, suffer so severely from the presence of a parasitic plant allied to our Broomrapes or Orobanches, that popular riots have ensued in consequence of the scarcity thereby occasioned. M. Baillon has determined the plant to be Phelipæa ramosa.

A FEW MORE HOLLIES.

WE have to thank Messrs. Fisher, Son & Sibray, of the Handsworth Nurseries, Sheffield, for specimens of some very fine new Hollies, which have been raised by them from seed amongst many thousand others of crossed origin, and of two of which we have had the accompanying figures prepared.

ILEX AQUIFOLIUM PRINCEPS (fig. 8). — This remarkably grand Holly, one of the finest of which we have any knowledge, was raised at the Handsworth Nurseries, from seed of the Black Holly, I. A. nigrescens, crossed with a male seedling from balearica. It is a free berry-bearing variety. The wood is of a brownish green; the leaves are broadly oval, 4 to 4½ inches long, and 2½ to 3 inches broad, with strong distant spines standing out directly from the edge with a broad equal base, the edge of the leaf thus forming a series of wide even scollops or indentations, the points of the spines from half an inch to three-quarters of an inch asunder. The leaves are dark green, very stout in texture, with deeply sunk venation, which is very prominent on the lower surface, and which gives the upper surface an almost rugose appearance. In this form the principal veins run outwards at a very obtuse angle. The figure, though not representing the largest size of leaf which has been attained, will yet show that this is a noble Holly, of distinct and well-marked character.

FIG. 8.—ILEX AQUIFOLIUM PRINCEPS: UNDER-SURFACE OF LEAF.

FIG. 9.—ILEX AQUIFOLIUM CONSPICUA: UNDER-SURFACE OF LEAF.

I. AQUIFOLIUM CONSPICUA (fig. 9).—This is a distinct and striking form of Holly, with leaves almost as large as those of I. A. princeps, but the midrib is distinctly decurved, as in some of the small-leaved sorts, so that the leaves cannot be laid flat. This also is a Handsworth seedling from nigra, believed to be crossed with I. A. ciliata major. The wood is black or very dark coloured; and the curved leaves vary in shape from ovate to oval, the length being from 3½ to 4½ inches, and the breadth 2½ to 3 inches. The texture is thinner, the colour paler, and the surface more glossy than in the variety just mentioned; the veins are slightly sunk on the upper, prominent on the lower surface, and the teeth are rather more closely placed, seldom exceeding a distance of half an inch, and also directed forwards more towards the apex of the leaf. It is one of the bolder forms of green Holly, and will make a fine and striking addition to the varieties already in cultivation.

I. AQUIFOLIUM MAGNIFICA.—This is a grand form of the laurifolia type, slightly breaking into the spiny-edged. We understand it is very distinct in the plain-edged series, in consequence of the profusion of berries it produces, laurifolia being a sterile variety. The leaves are oval-oblong, dark green, glossy, leathery in texture, 4 inches long by 2 inches broad, with a rather long spiny point, but otherwise usually spineless, occasionally with one, two, or more spines variously placed on the edge. Detached leaves or twigs have somewhat the appearance of Messrs. Paul & Son's I. A. laurifolia latifolia, but it is quite distinct, being a berry-bearing form as well as being of a pendulous habit. Messrs. Fisher & Co. inform us that it bears raceme-like clusters of berries sometimes fully a yard long, and some samples they have sent fully bear out this character. Its rapid growth, loose and consequently somewhat pendent habit, and its extraordinarily free berrying property, together make it a very conspicuous variety.

I. AQUIFOLIUM LAURIFOLIA LATIFOLIA.—This is a large-leaved form of the laurifolia type, and makes a fine ornamental Holly. The leaves are elliptical, wider towards the base so as to become ovate-oblong, 4½ inches long, and nearly 2 inches wide towards the base, and 1½ inch towards the top, which is elongated and spiny. We have previously referred to this in noticing Messrs. Paul & Son's High Beech nursery, as a very fine form of the oblong spineless type, with the leaves of a very deep glossy green, and as one of the most striking of Hollies for ornamental purposes.

I. AQUIFOLIUM MADERENSIS MEDIO-PICTA.—A pretty variety, with lanceolate-elliptic leaves, and rather fine and numerous small sharp spines, four or five to the inch, and directed towards the apex, which is elongated. The disk of the leaf is variegated with yellow in large irregular blotches generally extending lengthways, sometimes reaching the margin, at other times confined to the centre, more or less freely associated with smaller patches of greyish-green, the margin sometimes wholly green, sometimes broken up by the colours of the variegation. Sometimes as much as three-fourths of the surface is yellow, rarely as little as one-fourth. The

average-sized leaves are 3 inches long, and barely 1¼ inch wide. This form originated with Messrs. Paul & Son of Cheshunt.

I. AQUIFOLIUM NOBILIS PICTA.—A fine Holly, received from Messrs. Paul & Son, of Cheshunt. It has the broad leaves and bold stout spreading spines of nobilis, and has in addition a slight median variegation of a creamy-yellow colour, much less developed, however, than the variegation in Lawsoniana. *T. Moore.*

Notices of Books.

Aroideæ Maximilianæ. By Dr. Peyritsch. Vienna, 1879. (Williams & Norgate.) Large folio, coloured plates.

This truly magnificent book, published so soon after Engler's monograph of the order, is devoted to the Brazilian Araceæ, collected and introduced into cultivation through the late Archduke Maximilian, the unfortunate Emperor of Mexico. It has rarely if ever before happened that a book containing so little matter has passed through the hands of so many independent editors as this one. The work was begun by Schott, the well known monographer of this order—by him almost all the descriptions were made, and most of the plates were prepared under his supervision. After his death it was placed in the hands of Dr. Wawra to complete, but owing to the warlike events of 1866 it was, at his proposal, entrusted to Dr. Kotschy, under whose superinendence a few more plates were drawn. At the death of Dr. Kotschy the work passed to the care of M. Reissek, who was the only one after Schott that did much; whilst under his charge the drawings were completed, and he drew up an explanation of the plates. The work was next entrusted to Dr. Fenzl, by whom the text and explanation of the plates were slightly modified. Finally the book was entrusted to the care of Dr. Peyritsch, and by him completed. It is printed in large clear type, on good stout paper, and is embellished with forty-two magnificent coloured plates, representing thirty out of the thirty-eight species described, besides a handsome frontispiece. The size of the book, and the beauty and excellence of the plates—which were drawn by M. Liepoldt—render it a fit companion to Schott's *Icones Aroidearum;* its only defect appears to be the use of a different language for the habitats and explanations of the plates—these being written in German, whilst the descriptions are in Latin. Of the species figured, Montrichardia linifera is the most remarkable; this plant is a marsh, or aquatic species, and has very stout, erect, tapering stems, 6—12 feet high, bearing distant, long petioled, large sagittate leaves; from the axils of the upper leaves arise the large yellowish inflorescences, followed by large, oblong, dark greenish heads of fruit: altogether the plant has a very striking appearance, quite different from everything else in cultivation. Philodendron imperiale is also a very ornamental foliage plant, especially in its young state, when the petioles are red and the leaves of a pale chalky-green, marked with small blotches of dark green along the course of the midrib and near the margins. Zomicarpa Steigeriana, Z. Pythonium, and Z. Riedeliana are also striking and interesting foliage plants. *N. E. Brown, Kew.*

Ceylon Coffee Soils and Manures. A Report to the Ceylon Planters' Association. By John Hughes, F.C.S.

This book, though somewhat late in its appearance, supplies a want which has long been felt by intelligent Coffee planters in Ceylon. Up to the date of Mr. Hughes' arrival in the island, under the auspices of the Planters' Association, scarcely any analyses had been made of the soils of the different Coffee districts, and all that the would-be proprietor of an estate did when examining the soil previous to purchase was to turn up a few spadefuls to see if heavy clay lay beneath. If none were found, and the climate and aspect were favourable, no further thought was bestowed on the soil until the Coffee trees ten or fifteen years afterwards showed signs of debility. As a consequence of this carelessness of inspection some of the Government lots that were passed over by clever planters as unsuited for Coffee turned out to be exceeedingly valuable, whilst others that were eagerly sought after proved failures. There is no doubt that climate and situation have as much to do with the production of Coffee in Ceylon as the nature of the soil, but at the same time it is quite true that enormous sums of money have been expended in opening Coffee estates that ought never to have been opened. The money has been thrown away because the proprietor would not be at the trouble to consult an analyst as to the suitability of the soil. There was a feeling prevalent amongst planters that if the climate was fairly good they could force the tree to produce good crops by means of manure, and no doubt with high prices and an absence of "leaf disease" such a plan might have succeeded.

In estimating the character of Ceylon soils it is well to remember that the whole island, with the exception of a fragment of secondary limestone on the north-west coast, is composed of metamorphic rocks and their *débris.* In some places there are bands of quartzite disintegrating into a very friable soil, in others isolated remnants of a highly crystalline and much disturbed stratified magnesian limestone. There are no secondary or tertiary strata, no large deposits of older disintegrated rocks accumulated under the action of water, but the primitive crystalline gneiss is found everywhere close to the surface, and almost everywhere it can be seen undergoing the process of disintegration; this disintegration being only slightly in advance of the denudation. With such an origin, and with a rainfall of 100 inches to 200 inches in the year, it is not surprising if the Ceylon soils proved on analysis to be somewhat poor in comparison with those of Europe, or that the application of thoroughly good manure should have been found a vital necessity after a few crops had been gathered. It is in this respect that Mr. Hughes' book is of such great value to Coffee planters. It shows them distinctly by numerous analyses what the Coffee tree requires to keep it in a vigorous crop-bearing condition, as well as in what necessary constituents their soils are naturally deficient. It gives them the relative values of the different manures that are most easy to be obtained on Coffee estates—*e.g.*, castor and cocoa-nut cake, Ceylon cattle and pig manures, Ceylon wood-ashes, Coffee-pulp, Ceylon burnt coral, and magnesian lime, &c., together with the foods that are most valuable for producing their favourite cattle manure. Where the manure applied to an estate may cost year by year £2000 or £3000, a knowledge of what the soil requires may effect an immense saving in outlay. It is much to be regretted that the presence of the dreaded "leaf disease" renders it all but impossible for planters to incur the double expense of fighting their fungoid enemy by means of disinfectants and restoring their exhausted soils to fertility by means of manures, and that it has become a question which of the two is most likely to repay expenditure. When it is remembered that new products, especially Cinchona and Cocoa, are coming very extensively into cultivation in the Coffee districts, and that in districts at a lower elevation Liberian Coffee is being largely planted, the Planters' Association is to be congratulated on the wisdom it has shown, though late in the day, in obtaining a thoroughly scientific opinion as to the nature and capabilities of the soils which its members are engaged in cultivating.

Garden Operations.

HARDY FRUIT GARDEN.

In writing the first Calendar of the year for this important department of fruit culture, one's first thought is naturally of the future; and yet however unpleasant the task may be, if still keeping in remembrance the experience of a year which has left sad records behind it, the practical horticulturist cannot afford to lose sight of anything which may serve as a lesson for the future, or which may enable him to grapple with difficulties which appear to grow in magnitude with every recurring season. We have, therefore, while arranging work for the present year, to keep constantly in mind the experience of its predecessor, and, if possible, to render a repetition of the same results less possible by adopting measures which will modify the conditions under which certain classes of fruit trees have been so unproductive, not to say absolutely barren. The first step, and the one that I think the most likely to succeed in the end with any degree of certainty, will be that of a re-adjustment of our present system of wall planting, by which the chosen and more tender kinds of hardy fruit trees will be condensed within a more limited area, and covered with glass. On the other hand, there is too much "copying" amongst the general body of gardeners, irrespective of soil, situation, and locality, and that our present system of cultivating hardy fruits is narrowed too much into one groove. Take, for example, the dwarf system of growing Apples and Pears, than which there is no form I admire more where it succeeds; the tops are being continually cut in order to squeeze the trees into the shape of a teacup or a balloon, while the roots are travelling with unbridled liberty. The borders, too, are frequently, and in many cases unavoidably, cropped with vegetables, so that such a thing as surface-fibre is rarely to be found. Thus we have trees restricted in branch-growth and sustained by roots which are continually pumping up crude aqueous matter from the earth much too far from the genial influence of the sun to be healthy; add to this an unprecedented rainfall, with hardly a clear sky for days and weeks, and I think it will be obvious that there is something manifestly wrong in the system, and that many cases of canker and decay may be fairly ascribed to some, if not all, the causes I have mentioned. All that I plead for is that the branches of a tree shall be allowed to extend themselves proportionately with its roots, and that the roots when once formed shall not be cut away to make room for other crops, but be fed and nourished on the surface.

That there will be many vacancies in the hardy fruit garden to be made up is admitted, and there might also be additions made where practicable by throwing an arch over one of the principal walks and growing the trees as cordons. The roots should be confined at first, in order to ensure fertility, and have a space entirely devoted to themselves. The same principle might be carried out on vacant spaces on walls, and the roots could be allowed to extend annually with the tops. With regard to Peaches, Plums, and Apricots that are growing in rich soils it is perfectly certain that, so long as they are allowed to ramble at pleasure through large masses of earth, so long will they cease to bear fruit unless our climate soon changes for the better. Perhaps the suggestion will be taken up, and that a few will act upon it according as circumstances will permit and report results, as I hope to do after a trial: Narrow borders for fruit trees, "all to themselves," and mulched both summer and winter, would at least produce wood more likely to get ripened than that which generally results from our present system. The planting of young trees, if not already done, should be completed whenever the earth is in a fit state for planting. It is always convenient to have a nursery, however small, in every garden where trees can be grown for a year before they are transferred to their permanent quarters. All such operations should be anticipated where weeding out is intended.

Young plantations of Raspberries, Gooseberries, Currants, &c., should also be made where old trees are showing signs of going back, or where a change of quarters will prove beneficial in other respects, and cuttings of approved kinds should be got in readiness and legibly named, so that they may be planted when the weather is favourable. The pruning and nailing of wall trees has fallen into arrears, owing to the severity of the weather; and all preliminary work, such as preparing shreds and nails, and other kindred operations of a routine description, will require to be pushed forward with vigour whenever opportunity presents itself. *W. Hinds, Canford Manor.*

FLOWER GARDEN, ETC.

Necessarily my notes can only be suggestive of what may be or of what requires to be done at certain seasons of the year, and they are intended to serve as suggestions rather than as models for strict imitation. Every garden has its own special requirements at certain seasons, leaving out of account the difference in weather in the various parts of the kingdom; so that after taking into account circumstances and conditions, each for himself must decide as to what extent the hints and directions here given should be carried out. It may be observed that the rule followed in giving these hints will be that only arising from work actually being done under the direction of the writer. During the prevalence of hard frosts, such as have prevailed now for several weeks past, all heavy carting or wheeling of soil and manure should be done, also grubbing-up of old tree stumps, dead shrubs, and the cutting away of dead boughs or those that intercept or interfere with the growth or appearance of neighbouring shrubs or trees. Shrubbery clumps may also be well cleared out, and the leaves carted to the soil-yard to be thrown together with a little salt or fresh lime to kill insects and render them the more quickly available for manurial purposes. Hedges of Beech, Thorn, and Privet can also be trimmed and ditches cleaned out. We have also been trimming off the straggling growths in clumps of common and Portugal Laurels and Rhododendrons, work that would have been best left till spring, but the pressure of work at that season is so great that we

have had it done now, and having done it for several years previously we do not anticipate any harm; but in parts of the country where the thermometer has receded to zero no such cutting should yet be done, as the probability is that common if not Portugal Laurels will be killed to the ground. As soon as weather permits let all alterations be pushed on, such as making new walks and roads, draining, excavating, or the forming of gardens for Ferns, alpine and herbaceous plants.

In preparing ground for the planting of trees and shrubs no labour should be thought too great; for the reason that when this is well done at first, the plants not only start off vigorously, but no other disturbance or addition of soil is required for years; therefore trench deeply, and manure liberally for even the commonest shrubs. The present is also a good time to render assistance to any favourite trees or shrubs that seem in waning health, by applying surface mulchings of fresh soil and manure. The roots of Coniferous plants soon find their way into dressings of fresh peaty or vegetable soil, and all kinds of deciduous trees are equally sensitive to dressings of a richer nature, such as the refuse soil from Vine and other fruit tree borders. Before applying such dressings it is generally advisable to remove as much of the old soil as possible without disturbing the roots.

In the flower garden proper there is as yet, beyond the maintenance of neatness and order, very little requiring attention. Bulb beds, however, may require some slight protection, such as that afforded by Laurel or Yew spray, and the depredations of mice and rats must be guarded against by keeping traps near the runs of those vermin constantly baited. It is to be feared that Roses have suffered from the severity of the frost. The Noisette and Tea classes that have had no protective mulching will certainly die back to the ground-line, but meanwhile all kinds should be heavily mulched, and those recently planted be securely staked, for without this attention all new roots made would be liable to be destroyed by wind-waving. The reserve stock of summer bedding plants should now be examined, and any that are required in quantity, and the stock of which is short, should have the most favourable positions available for the production of cuttings, that propagation may begin early. As a rule, none but the most tender kinds will yet need additional heat. There are also some few kinds of bedding plants that are generally raised from seed, and which, being of slow development, require to be sown thus early; amongst them are Acacia lophantha, Cannas in variety, Centaurea candidissima, Echeveria metallica and E. glauca metallica, Ferdinanda eminens, Grevillea robusta, Solanum pyracanthum, S. marginatum, Wigandia caracasana, W. urens, and W. Vigieri. *W. Wildsmith, Heckfield.*

FRUIT HOUSES.

VINES.—Under the favourable influence of mild, bright days since the breaking up of the frost, early started Vines have made good progress, and look very promising. As days increase in length they will, under judicious management, soon make up for the time apparently, though not really, lost while passing through the early stages of swelling and bursting their buds; for Vines started in this way invariably produce more compact shows and make better progress than when forced against Nature through the dark month of December. Vigorous young canes that have been suspended over fermenting material should be tied up to the wires as soon as the most backward buds have pushed freely from the rods. Proceed gradually with disbudding, and tie down the young growths before they touch the glass. Stopping, like forcing with or without bottom-heat for the roots, is a matter of great importance with some growers, while with others the first or fourth joint answers equally well. In my own practice, where the Vines break and grow away evenly, I prefer stopping to the third or fourth joint beyond the bunch, providing there is space at command. After this I allow the laterals to extend until I have sufficient wood to cover every available part of the trellis with fully developed foliage, when the strongest points are again stopped to prevent overcrowding. As the bunches become prominent the house may be kept a few degrees warmer—say 58° at night, with a rise of 10° to 15° by day from fire-heat, allowing it to run up to 80° under the invigorating influence of gleams of sunshine. If fermenting materials are used on inside or outside borders, and good Grapes can be secured by their use, the prudent grower will unwillingly depart from the route that has safely landed him across the stream, and in this case attention must be paid to the temperature, which will not vary much where the border has been kept well covered with dry Fern and shutters up to the time that a body of dry warm Oak leaves were substituted for the Fern. Succession houses from which ripe Grapes are to be cut in June will have been closed and well watered with water at a temperature of 90°. Syringe the rods twice a day with warm water, taking care to wet every part of the wood, and allow the night heat to range from 45° to 55° on mild nights, with 10° more by day. As a means of economising the use of fuel, introduce a good heap of Oak leaves, to which one-third of short stable manure has been added: turn it frequently, and make additions as the heat declines. If not already done late Grapes may now be cut and removed, that the Vines may be cleansed and allowed to rest. Although I have never perceived any difference in Grapes taken from Vines that have bled after pruning, the application of a little styptic to the fresh cuts is so simple that its use after the turn of the year is always advisable. When the Vines, glass and walls have been properly cleaned the inside borders should be cleared of all exhausted mulching, and top-dressed with a thin layer of turfy loam, crushed bones, and rotten manure over all. The outside borders that have been covered up all the winter may also be exposed to the influence of the weather, leaving a slight covering only of litter to keep out frost. Fruiting pot Vines placed in or over fermenting material may be kept warmer and drier as the bunches come into flower. Tie down and stop young growths, and afterwards allow them to grow until every part of the trellis is covered with foliage. Select thoroughly ripened wood for eyes, and insert in pots or sods at once; if for fruiting canes, no time should be lost in getting them into heat. *Wm. Coleman, Eastnor.*

MELONS.

From plants raised from seeds sown now, ripe Melons may be cut by the end of April or beginning of May, providing everything goes on satisfactorily with them, and that the weather continues favourable to their growth. The seeds should be sown singly in 60's in light fine loam and leaf-mould, leaving room in the pots for top-dressing when the plants require it, plunging them to the rims in a hotbed made of fermenting materials as recommended in our last Cucumber Calendar, and covering them with a piece of clean glass, which, however, should be removed as soon as the plants appear through the soil. When they have made 2 inches of growth they should be top-dressed, still keeping them as near the glass as possible without touching it, to prevent their becoming drawn. Should the frame upon looking into it in the morning be found rather full of steam, arising from the fermentation of the dung and leaves, it will be advisable to leave sufficient air on at night to allow of its escaping, otherwise probably the young plants would damp off; but where the young plants are raised under more favourable circumstances there need be no apprehension in this respect. If the pots are placed on a shelf near the glass in a fruiting Pine-stove or Cucumber-house, with a piece of glass, as above stated, placed over the pots, the object in view will be satisfactorily attained. However, should any one lack the accommodation referred to above the necessity of the case will in this, as in sundry others, suggest a means by which the difficulty may be surmounted. As to varieties most growers have their own well tested sorts; however, I may remark in conclusion, for the guidance of those who have not, that Eastnor Castle, Scarlet Gem, and Victory of Bath Improved are three excellent early varieties. *H. W. Ward, Longford Castle.*

CUCUMBERS.

Young Cucumber plants must be got ready now for the early spring supply of fruit. For this purpose there are none better than Rollisson's Telegraph, if any so good, notwithstanding the numerous varieties of recent introduction. The seeds should be sown singly in large 60-pots (which is better than sowing several in one pot, thus subjecting them to a check in potting off), in a rich light mould, leaving room for top-dressing the plants when they require it, and plunge in a brisk bottom-heat—which the hotbed recommended to be made in last Calendar will now be in a position to supply—near the glass, and cover with a clean piece of glass, which must be removed as soon as the plants come up. Maintain a genial atmosphere with a night temperature of from 65° to 70°, according to the nature of the weather—running up from 80° to 85° with sun, putting air on on all favourable occasions. Let the tying and arranging of the shoots, &c., be attended to as occasion may arise. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

FERNERY.—The fronds of Ferns being now in a mature condition, it will be a good time to go over the stock of plants and give them a thorough cleaning, as they will bear stronger doses of insecticide while at rest than it would be safe to apply at any other season. In the case of those infested with thrips, if they happen to be growing in pots, the most expeditious and best way to eradicate these pests is to dip the heads in strong tobacco-water, to each gallon of which an ounce or so of nicotine soap should be added—a mixture that will then be very potent and sufficiently strong to kill the eggs as well as the insects. The practice of removing the fronds with a view of getting rid of the insects is bad, as so long as there is life in them they are of great use to the plants, which require their aid till the young ones are in an advanced stage to replace them, and it is only then that they bear the loss without being injuriously affected. It often happens, however, that the tree kinds grow too robust for the positions assigned them, and in order to restrict these and check any undue luxuriance it is sometimes necessary to apply corrective measures, the simplest and most effective being to remove some of the soil around the stems and cut their roots close to the same, and then fill in with poorer stuff containing some soft porous brick broken small, or some cinders rammed in firmly, either of which will help to drain away the water and keep the mass in a sweet healthy state. In cases where plants may have become too tall for the houses they are in, it is a very easy matter to cut through the trunks and reduce them to the desired height by dropping them down, which, if done at once before they start, is a safe operation, especially in case of such kinds as Cyathea medullaris, C. dealbata, Dicksonia antarctica, Cibotium princeps, and such as are generally provided with plenty of young feeders up the entire length of their stems. After being treated in the way above-named and replanted it will be necessary to keep them frequently syringed in order to prevent the fronds from flagging, but in doing this the less water there is allowed to soak into the soil, till the bottom of the trunk is healed over a bit, the better, as otherwise there is a risk of that part rotting, to prevent which it is a good plan to stand it on some dry dusty charcoal and sand, as the absorbent properties of these assist the plant very materially in callusing over the wound. Where Ferns are grown on the natural system it will be found that there is much shrinkage of the soil from the sides of the pockets in the artificial rock, which requires seeing to at this season and the crevices filling, for if these are allowed to remain the water drains away at such a rate that the roots receive but little benefit from it. A stout stick made wedge-shaped is the best instrument to use to thrust in and search out these cavities, which can then be made good with fresh loam and peat, and a surface-dressing given to each plant, which will be a great assistance to them by-and-bye when they make a fresh start.

CONSERVATORIES.

For Conservatories to be really enjoyable and suitable for the many forced things that will soon be coming on, it will be necessary to maintain a temperature varying from 50° to 55°, in which most flowers will expand properly and last a long time in perfection. Camellias, however, object to such a degree of heat, and therefore if there happens to be many of these it will be better for them to be kept 5° or so lower, especially if the atmosphere is at all dry, which prevents the swelling of the buds, and is a frequent cause of their falling. To aid these in opening out fully, clarified soot-water is a fine thing to give, and is preferable to most kinds of liquid manure, as it is almost inodorous and has a safe stimulating effect, imparting at the same time a healthy deep green to the foliage. Roof climbers will now soon be on the move, and in cases where the border room is of too limited an extent it will be advisable to remove a portion of the old inert soil and give the roots some fresh turfy loam, after which a good soaking will settle it down and encourage the plants to feed on it at once. Such things as Passifloras and Tacsonias that bear their flowers on the young growth, may with advantage be thinned out considerably, as not only will they be benefited thereby and made to break back, but the pruning away of superfluous shoots will let in the light and air so much needed by the occupants beneath. Beautiful and desirable as are Tacsonias in all conservatories, they are about the worst thing possible for scale, and unless these pests are kept down it is surprising how soon they spread themselves over the bark. The quickest and best remedy to hold them in subjection that I have ever found, is to paint the stems with some of the insecticides, mixed at the usual strength, with the addition of a little clay to give it consistency, which smothers the enemy and holds the plants clear for the rest of the season. The white kind that infests Lapagerias is not so easily dealt with, and the only safe way is to hand-sponge the leaves, in doing which great care must be exercised, as owing to their hard brittle nature they are apt to break or become damaged near the stalk when turning them up or down to get at them. Camellias, too, are sometimes subject to this same species of scale, but more frequently the brown turtle scale, which gets on the wood, and by its excreta, so freely exuded, soon covers the foliage with a sticky black mass. If the plants are in pots they may be readily dealt with by laying them on their sides and syringing them with dilute nicotine soap, which, so far as I have had experience of it, seems the best of the various insecticides. When this or any other is used the great thing is to keep it out of the soil, where, if it soaks in, damage is done to the roots. *J. Sheppard, Woolverstone Park.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Jan 12	Sale of Orchids, at Stevens' Rooms.
TUESDAY,	Jan 13	Royal Horticultural Society—Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
WEDNESDAY,	Jan 14	Sale of Roses, Fruit Trees, Shrubs, &c., at Stevens' Rooms. Gardeners' Royal Benevolent Institution Annual Meeting.
THURSDAY,	Jan 15	Sale of Lilium auratum, &c., at Stevens' Rooms. Linnean Society's Meeting, at 8 P.M.
SATURDAY,	Jan 17	Sale of Hardy Plants, Roses, Bulbs, &c., at Stevens' Rooms.

IN this great country, where the arts and sciences flourish, not because of imperial patronage but rather in spite of it, it would doubtless seem incongruous were any illustrious worker in horticultural pursuits to receive any special notice at the hands of the powers that be, or any of those honours that are so eagerly sought for by the fighting services of the country and so freely bestowed, yet it is difficult to repress a feeling of humiliation that so little national recognition is given to the services rendered to the nation in general by other than Government servants, and to horticultural science and practice in particular, by such men, for instance, as ROBERT FORTUNE—a record of whose introductions from the far-off countries of China and Japan appeared in these pages last week. It is not possible to calculate the benefits the country has received from Mr. FORTUNE'S labours; they were quiet, plodding, and unpretentious, carried on too often perchance under great privation and possible danger to life. None of the clash and pomp of war shed a halo over his work; there was no wading through slaughter, or records of thousands and tens of thousands of dead defenders of their hearths and countries to chronicle. It is the men who can boast of these trophies of civilisation! that get the popular cheer, the national welcome, and the imperial honours, whilst the unpretentious seeker after good, like FORTUNE, finds his reward only in the almost utter forgetfulness of the nation that such a man ever was its benefactor. Yet FORTUNE'S testimonials, silent but impressive, are found amongst us in their thousands; they exist in abundance in every garden, and are found now almost throughout the whole civilised world. Wherever a love for flowers and trees is, there also are the abundant evidences of his labours. Not to carry into aboriginal homes death and desolation was his mission, but rather to give comfort, beauty, and life to all humanity. By-and-bye, perchance, when the grave has closed over his earthly career, the world will realise how much it owes to ROBERT FORTUNE.

—— A GARDEN VIEW IN GLOUCESTERSHIRE.—In our last volume (p. 725) we gave a view in the flower garden at Blaize Castle, Henbury, near Bristol, the seat of Mrs. HARFORD, the laying-out of which place, it will be remembered, was to some extent accomplished by REPTON. On the opposite page we give another illustration of a striking bit of scenery from the same place. Leaving the flower garden previously illustrated, the visitor passes the front of the Castle, and follows the guide along a winding walk through the grounds leading by a steep ascent to a hill, on which stands a tower, erected about 1768 on the site of an old chapel. From this point is obtained one of the finest views in the kingdom, extending over the Severn channel to the Glamorganshire hills, and over a vast extent of country in every direction. On the south side of the tower the ground terminates in a precipitous descent into a deep gorge some 200 feet below, and which forms the subject of our present engraving (fig. 10). On the opposite side of the gorge, which is almost as steep, there is a group of rocks known as the Giant's Arm-chair, to which, as usual with these mythical personages, a legend is attached. In the bottom there is a pool of water, and the sides of the gorge are thickly clothed with trees, rising tier upon tier above each other; and the view, as seen from the Castle side of the ravine, is far the most picturesque that we have seen in the West of England.

—— MR. SPENCER LE MARCHANT MOORE has resigned his appointment as Senior Second Assistant in the Herbarium of the Royal Gardens, Kew.

—— PROFESSOR ARCHANGELI, late of Florence, has assumed the direction of the Botanic Garden of Turin.

—— A PRESENTATION TO KEW.—Mr. B. DAYDON JACKSON, F.L.S., has presented to the Royal Gardens, as "some slight acknowledgment of the help which at various times I have received from Kew," a microscope by CROUCH of the most approved pattern, with 1 inch, $\frac{1}{8}$ inch, and $\frac{1}{10}$ inch object glasses. The instrument was offered in the first place for the use of the Jodrell Laboratory, "or if that is already supplied," of the herbarium. The Jodrell Laboratory being well equipped with microscopes, through the munificence of the founder, Mr. JACKSON'S microscope has been placed in the herbarium.

—— ABIES VEITCHII.—Messrs. VEITCH advise us that they have in cultivation the true A. Veitchii, and which is, as was originally stated, a very remarkable species. In reference to the subject of Japanese Conifers we may allude to a slip of the pen at p. 283, where the word nephrolepis is erroneously written for selenolepis.

—— BELGIAN NATIONAL EXHIBITION.—We learn that it is proposed to erect at Brussels, on the occasion of this exhibition, a large glazed structure, the interior of which will be arranged as a picturesque winter garden, with rockwork, grottos, &c., as at the exhibitions at Florence, Cologne, St. Petersburg, &c. Outside will be a picturesque garden for hardy plants, shrubs, &c. The exhibition will remain open from July 21 to July 28.

—— THE "JOURNAL OF BOTANY."—Owing to the appointment of Dr. TRIMEN to the post of superintendent of the Botanic Garden, Peradenyia, the editorship of this useful periodical has been confided to Mr. JAMES BRITTEN, of the British Museum.

—— HYBRID BROMELIAS.—At a recent meeting of the Central Horticultural Society of France M. DANZANVILLIERS exhibited a hybrid between Bilbergia amœna as seed parent and B. Leopoldi as pollen parent. The habit is described as that of the latter plant, while the seed parent shows itself in the coloured bracts.

—— "ON AND OFF DUTY."—Our wandering correspondent, Captain OLIVER, to whom these pages owe several illustrations of exotic vegetation, the last of which was the singular and beautiful Pandanus, figured at p. 820 in our last volume, intends to publish a work with the above title early in the present year. It will contain notes of travel in China, Japan, Madagascar, &c., with illustrations by the author.

—— PHILLYREA VILMOREANA is, according to M. LAVALLÉE, a dwarf hardy evergreen shrub, with large lanceolate leaves. The habit is globose. The form is not generally known in this country.

—— THE SOYA BEAN.—According to an analysis published in the *Bulletin of the Central Horticultural Society of France* the seeds of this plant, Soya hispida, are considerably richer in nitrogenous and fatty matters than other pulse. It would seem, therefore, to be well worth growing in warmer latitudes than ours.

—— THE REGISTRAR GENERAL.—Some explanation is surely required of the Government for their action in passing over the accomplished statistician, Dr. WILLIAM FARR, and in appointing a gentleman to the task whose qualifications have to be proven. Dr. FARR'S European fame and his brilliant services should have secured him from such an indignity.

—— ARTIFICIAL DIAMONDS.—Mr. NEVILL STORY MASKELYNE has rather summarily dispelled the notion that the crystals produced in the St. Rollox Works, Glasgow, were really diamonds, but he does not doubt that the ordinary opaque black condition of carbon may ultimately be permuted into the limpid crystal of the diamond, only it is not done yet.

—— "THE GARDEN ORACLE."—Oracles generally give dubious utterances, but such is not the case with Mr. SHIRLEY HIBBERD'S Oracle. It speaks plain. It tells us of the Creed of St. ATHANASIUS to begin with, and of WRIGHT'S Endless Flame Impact Hot-water Boilers to end with. What there is between may fairly be inferred to be varied in character. If we did not think it useful also we should not, as we do, recommend it to the notice of our readers. It may be had at 11, Ave Maria Lane, Paternoster Row.

—— HYBRID GEESE.—Mr. DARWIN communicates to *Nature* an interesting case, in which hybrid birds, the offspring of two distinct species, have proved quite fertile *inter se*. The common goose and the Chinese goose are so distinct that they have been placed in different genera or sub-genera: nevertheless they interbreed, and their offspring prove fertile. Mutual sterility is therefore shown to be no safe or immutable criterion of specific difference. We have, however, Mr. DARWIN remarks, much better evidence on this head, in the fact of two individuals of the same form of heterostyled plants (those in which the style varies in length in different flowers) which belong to the same species as certainly as do two individuals of any species, yielding, when crossed, fewer seeds than the normal number, and the plants raised from such seeds being, in the case of Lythrum Salicaria, as sterile as are the most sterile hybrids.

—— CHARLES FORTUNÉ WILLERMOZ.—French papers record the death of this gentleman, one of the founders and the General Secretary of the French Pomological Congress.

—— PORTRAIT OF MR. ROBERT MARNOCK—We regret to find that by a printer's error in our notice of the presentation of this portrait, at p. 16, Mr. MARNOCK'S name is misspelled MARNOCH. Fortunately, Mr. MARNOCK is so well and so widely known, that many of our readers will have made the correction for themselves.

—— CROSS FERTILISATION.—Dr. ERNST of Caraccas reports in *Nature* the result of some observations on Melochia parviflora, some plants of which have long, others short styles (heterostylism). Dr. ERNST grew plants of both kinds in his garden, and experimented on them with the view of ascertaining their relative degrees of fertility when intercrossed. When a long-styled form was fertilised by the pollen from a short-styled or long-stamened form, all the flowers produced capsules, each containing five seeds. Corresponding facts were observed when short-styled flowers were fertilised by pollen from long-styled forms. But when the long-styled or short-styled flowers were fertilised with their own pollen respectively, the number of capsules and seeds was observed to be less. The favourable influence of cross-fertilisation is evident, as in no other case did the average number of seeds per capsule reach the normal number.

—— LARGE ORANGES.—We have received from Mr. JAMES WOOD, seedsman and florist, of Newport, Isle of Wight, a couple of large Oranges, which together weighed 2 lb. 8 oz. The largest one weighed 1 lb. 7 oz., and measured 18 inches in circumference. Mr. WOOD states that they were grown with two others of about the same size on a tree about 3 feet high, and 2 feet in diameter of branches, standing in a cool house from which frost and damp are excluded by the use of fire-heat. They are very handsome as decorative objects, but quite useless for dessert.

—— THE LATE SEVERE WEATHER IN FRANCE.—The Paris correspondent of the *Times* quotes a paragraph from the *Temps* to the effect that the late frost has done great damage to trees and shrubs, especially Pines, Cedars, Planes, &c. In the forest of Montmorency several hundred hectares of Chestnuts have been killed. Laurels and other evergreens have been greatly damaged, the leaves wherever not

FIG. 10.—RAVINE IN THE GROUNDS AT BLAIZE CASTLE. (SEE P. 48.)

covered by the snow having turned brown, and many shrubs are not likely to recover. Game has also suffered. A gamekeeper in Sologny picked up in one day twenty-three dead partridges; in the north the partridges have all been destroyed. In a forest in the east four fine wild boars have been found dead from starvation, and in the forest of St. Germain roedeer quite exhausted have been killed with sticks by the peasants. Birds of prey have been unusually rapacious. At Ferrières a number of ravens pursued a hare which, when picked up half dead by a passer-by, had an eye plucked out and a large wound in the side.

—— THE INTERNATIONAL POTATO EXHIBITION.—With a desire to secure in the class for new varieties *bonâ fide* seedling sorts it is, we hear, purposed at the next show to create, in addition to a class for new varieties in commerce, one for new kinds not in commerce, the pedigrees of which must be shown in writing at the time of entry. This is, without doubt, a step in the right direction, as the great difficulty hitherto in adjudicating upon new kinds has been the lack of evidence—beyond in some cases clearly defined distinctiveness—that the kinds staged in competition really were what they were represented to be. Raisers will thus learn to record their crosses in future, just as a very few have done in the past; and then some few years hence we may be able to trace the ancestry of any new kind for several preceding generations.

—— CALANTHE VEITCHII.—A recent visitor at Londesborough Lodge, Norbiton, informs us that there is at present a wonderfully fine display of this grand Orchid in one of the houses at that place. The plants are suspended from the roof in a double row, and being intermixed with fine-foliaged plants they have a grand effect. There are upwards of one hundred plants with fine spikes, and the flowers of a good colour too. Where a supply of cut flowers is in demand through the dreary winter months nothing can suit better for this purpose than Calanthes as they are grown by Mr. DENNING.

—— THE WEATHER IN THE NORTH OF LONDON IN 1879.—Mr. DUFFIELD has sent us, from Winchmore Hill, nine miles north of London, a record of the temperature and rainfall registered there during the past year, from which it appears that the total rainfall was 32.65 inches, the greatest amount which fell in any one month being 5.03 inches in August, and the smallest 0.50 inch in November. The average mean temperatures for the different months were as follows:—Jan., 31°.7; Feb., 37°.6; March, 40°.7; April, 43°; May, 47°.8; June, 56°.8; July, 57°.8; Aug., 60°.1; Sept., 55°.5; Oct., 49°.8; Nov., 39°.6; Dec., 32°.1—in every case less than in the corresponding months of 1878.

—— SELAGINELLAS AND LYCOPODIUM FOR WINTER DECORATION.—At Combe Abbey Mr. MILLER is able to illustrate in a remarkable degree the great value of these plants, as most useful subjects for decoration and other purposes in winter. Availing himself of a somewhat narrow, unoccupied space between two houses, he covered this with a low glass roof, and warming it so that there should be no lack of a suitable temperature, he here grows an excellent collection of these plants, that are very interesting in addition to being serviceable at this season of the year. The greater part of the plants are on, or slightly raised above the ground level, and while all the green types were healthy and luxuriant, the variegated forms were particularly pleasing. Mr. MILLER asserts that the variegated forms take on their best character during the winter, and that all mosses ought to be so managed as that they should be at their best in the winter season. Selaginellas are in strong force at Combe Abbey, there being a large and varied collection; especially good were the variegated forms of S. Kraussiana. One, under the name of S. umbrosa, had the foliage tipped with white, and from the smallest to the largest plants, whether in large pans or small pots, they were most effective. S. inæqualifolia is a strong and graceful species, very handsome in the mass. S. Warscewiczii is a form that rests in summer, but in winter it comes handsomely tipped with gold, when it is very pretty. The variegated form of S. denticulata was very fine indeed, growing in large pans on mounds of soil, principally of peat, raised above the rims of the pans to the depth of 4 or 5 inches. For winter culture, the pans and pots of mosses are nearly filled with broken crocks and charcoal, with a surface of a free sandy soil. The plants are apt to be affected with damp in winter, but the maintenance of a brisk warmth and a constant oversight keeps this under. Their value for cutting from during winter cannot be too highly estimated.

—— THE VERBENA AS A GARDEN PLANT.—We sometimes hear the Verbena spoken of as a plant that is declining in cultivation, but the extent to which it is propagated by some firms who make it a speciality, shows that it is yet in very large demand. Messrs. KEYNES & Co., of Salisbury, grow during the season from 50,000 to 60,000 propagated plants of Verbenas. During the summer, plantations of the leading sorts are made in the open ground, and from these cuttings are taken in August, as soon as convenient, which are struck in heat, and put into small 60 pots. Later cuttings are put into store-pots, five or six in a pot, and the plants kept in frames, giving fire-heat when necessary. In spring plenty of cuttings are forthcoming, and plants are increased almost indefinitely. These are so managed that there are always supplies of fine young stocky plants ready for sale from March onwards. The demand for the Verbena for bedding purposes is said to be very large.

—— KNIGHT'S PYRAMIDAL LAURUSTINUS.—After a spell of severe frosty weather that has severely tried the endurance, and there is reason to believe irretrievably injured some at least of our hardy shrubs—the young late growths of the common Laurel having been sorely punished—it is well to notice something that can lay claim to rare hardihood of character. This Laurustinus is an illustration of the possession of this quality; it is hardier than the common form, which is a great recommendation; takes on a handsome pyramidal habit of growth, while the trusses of bloom, as well as the individual flowers, are larger than in the case of the common Laurustinus. It will be some time before we shall fully realise the damage wrought, not so much by the keen frosts, as by the cruel blasting winds of the first week in December, and especially on the 4th of that month. The walls at Chiswick show many traces of the deadly influence of these winds, the Escallonias in particular having been much damaged. The variegated Aucuba, even in the coldest and most exposed positions about London, shows no traces of the elemental strife, and is at the head of our hardy evergreen shrubs.

—— ABIES ALBERTIANA.—The last number of the *Journal of Forestry* contains the measurements of a fine specimen of this ornamental tree growing at Leslie House, Fife, which is stated to be a model of symmetry. Its height is 40 feet 6 inches; its girth at the base 3 feet 3 inches; and the circumference of its spread of branches 78 feet.

—— ORIGIN OF THE ADVENTITIOUS ROOTS AND BUDS ON LEAF-CUTTINGS OF PEPEROMIA.—The changes which take place in leaf-cuttings of Peperomia, and the processes of the formation of new plants, have been investigated by E. BEINLING, and published in COHN'S *Beiträge zur Biologie*. As in most cases, the cut surface is first covered with a callus, or corky tissue, through which the rootlets afterwards emerge. In about ten to fourteen days small whitish elevations appear on the cut surface; these are buds, or the beginnings of new plants. They originate in the fundamental tissue of the stalk and blade of the leaf, and are therefore exogenous; the origin of the first rootlets, on the contrary, is endogenous, as they proceed from the cambium region of the vascular bundles.

—— THE SHOW-HOUSE AT KEW.—A correspondent in another column calls attention to the poor cultivation exhibited in the decorative house at Kew. Those indeed who have but a short time to spend at Kew, or who have no other special object in view, generally make their way first to No. 4, "to see what is in bloom," and it rarely happens but that they find something of interest. The rafters, especially at some seasons, are noteworthy, as they are clothed with some of the rarer and more beautiful climbing plants. But as No. 4 is the show-house, where purely botanical considerations are set on one side in favour of what is more generally attractive, it is, as our correspondent justly points out, disappointing to find the "cultivation" of the plants so very inefficiently represented. The staple decorative plants lately have been some small plants of Azalea amœna, some straggly Chrysanthemums, wretched Poinsettias, and a host of scrubby Chinese Primroses, Mignonette, Lobelias, Pelargoniums, and such-like, which would not be tolerated in a small private establishment. While there are such multitudes of lovely Cape and New Holland plants, which are but little known to gardeners, we own that we should prefer to see them at Kew in preference to plants which one can see vastly better "done" in Covent Garden Market. But as the general public, who supply the funds, are not yet educated beyond Pelargonium point, it is requisite and right to provide for their delectation. To our thinking, it would be a waste of money, energy, and time to enter largely upon matters of pure decoration at Kew, where so many and more important matters have to be attended to; but if a show-house is maintained at all it should be thoroughly well maintained, and the cultivation of the plants in it should be such as to furnish a model and example to gardeners and amateurs. A well-grown specimen (even from an educational point of view—a matter always to be borne in mind at Kew) is far more instructive than an imperfectly developed or poorly cultivated scrub.

—— FURNITURE WOODS IN MILAN. — In a recent report on the industries of Milan some interesting details are given on the utilisation of timber for building, art, and domestic purposes. The manufacture of furniture is an important industry in the province. The common furniture is nearly all made in the villages of the Upper Milanese, in the district of Monza. The woods used for the outer surfaces are Walnut, Cherry, and Pear; for the linings, Poplar and Alder. In the town of Monza, tables, chairs, sofas, wardrobes, and other articles are made; and not only of common wood, as was formerly the case, but of finer kinds. In the surrounding villages makers confine themselves to some special articles—thus, in the village of Mede, chairs, sofas, and tusliks only are made; at Lessone, beds, tables, *cassettons*, &c. Excepting at Monza, where the furniture is entirely finished, the articles made in the other communes, on commission, for the Milan dealers, are always in the rough, being finished by the wholesale purchasers, by whom they are sent for sale in large quantities to the other cities and principal towns of Lombardy, as well as to Venice, Parma, Piacenza, and elsewhere. The furniture made is solid, of good appearance and cheap. This industry in the territory of the Upper Milanese gives employment to some 3500 operatives, of whom about 500 are boys. Furniture of superior quality is made only at Milan, where articles of all descriptions are manufactured, carving, *intarsiatura* and buhl work being largely used in ornamentation. The woods employed are Mahogany, Indian Walnut, Ebony, Rosewood, foreign Maple, Hungarian Ash, &c., with sometimes Walnut roots, and of late years Oak for dining-room furniture. The fine and finest Milan furniture enjoys considerable reputation. It is solid without being heavy in reality or in appearance; the work is good, well joined, well finished, and carefully polished; the woods are well seasoned, and put together with intelligence, so that they do not suffer from time or variations of climate. There are from 100 to 120 makers of first-class furniture in Milan, who give employment to not less than 2000 workmen, including boys. Much artistic furniture, carved or inlaid with tortoise-shell, or decorated with porcelain medallions after the French fashion, is also made, but for carved work it is acknowledged that Tuscany has the pre-eminence over Milan.

—— THE RAINFALL AT LEONARDSLEE.—Mr. SIDNEY FORD has sent us an account of the rainfall last year at Leonardslee, Horsham, Sussex, from which it appears that the total for the year was 36.50, an excess of 4.12 inches over the amount which fell in 1878. The heaviest falls occurred in June, 5.45, and August, 5.62; and the lowest in December, 0.81. The average rainfall at Leonardslee during the last ten years is 31.86 inches.

—— MENTZELIA ORNATA BEHEADING FLIES.—Some time ago Mr. J. POISSON published in the *Bulletin de la Société Botanique de France* an account of some observations on the behaviour of Mentzelia ornata towards flies and other insects, of which we are reminded by seeing an abstract, by Dr. A. GRAY, of the paper in question in COULTER'S *Botanical*

Gazette. We reproduce Dr. GRAY's abstract. It is well known that the roughness of Mentzelia ornata and other Loasaceæ is owing to the stiff bristles of the surface being provided with an armature, at certain points along their length, of retrorse barbs. There are three or four whorls of these barbs, and four or five barbs to a whorl, on the larger bristles; in the smaller there is only a terminal whorl of barbs, in the manner of a hooked bristle. Mixed with these harpoon-like bristles are some soft ones tipped with a capitate gland, and which secrete a viscid matter attractive to insects. It appears that flies so attracted thrust in their snouts between the thickly set hooked bristles to feed upon the secretion of the glands between and below. The retrorse barbs interpose no obstacle to this; but when the proboscis is withdrawn, its dilated and cushion-like tip catches in the barbs, and holds all fast. The harder the backward pull, the firmer and the more extensive the attachment to the sharp barbs: the wounded and impaled organ becomes congested and swollen; and the insect is seldom able to disengage itself. Especially is this the case with the larger flies. Some perish by exhaustion; but more of them, passing round and round in a circle and in one and the same direction, come to an end by twisting off their heads! Dried specimens of the plant in herbaria exhibit many small coleoptera and the remains of various other small insects, but these have been caught by their feet or mandibles or other parts. Insects too small to be impaled on the barbs are held fast by the viscid secretion of the glands, and likewise perish.

—— ARBUTUS UNEDO. — Some gardeners are found expressing the opinion that the Strawberry tree is not fruiting so freely this year as in previous seasons, and opinions are hazarded as to the causes which worked to bring this about. By one section it is attributed to the general infertility of the blossoms of fruit trees in 1879; by another to the cold and wet character of the summer. Perhaps the position of the trees and the character of the soil in which they were growing had something to do with the matter. It has been found in the experience of planters that if the Arbutus be planted in a common soil, with a wet and retentive subsoil, it will grow vigorously, and flower, and be in every respect healthy, though it will not bear its fruit until the tree is old; but if the shrub be planted upon a bed of gravel, or upon a sandy bottom and in an elevated situation, so as never to be subject to undue moisture at the roots, the gravel, or sand subsoil, carrying off the superfluous moisture and keeping the roots comparatively dry and warm, it will be found to bring its fruit to maturity when quite young, and by the time the tree attains a tolerable size—in five or six years or thereabouts—it will, in a favourable season, be entirely covered with a profusion of crimson berries, forming an object of great beauty. The effects wrought by the difference between a dry and warm and a cold and wet subsoil will, in all probability, account for what used to be a generally received opinion, that the Arbutus Unedo, when young, does not fruit, and that it is only in its older state that the bright coloured fruits attain to maturity.

—— NOTES ON THE VEGETABLE PRODUCTS OF THE ISLAND OF CEBU.—Cebu is described, in a report on the trade and commerce of the place, as the commercial centre for the eastern group of the Visayas Islands, which have a total population of 982,000 souls, 32,473 comprising the population of the town and suburbs, and 417,543 that of the entire island. The island belongs to the Spanish Government, and the principal staple of trade is sugar. Most of the land adjoining the capital suitable for the cultivation of the sugar-cane has been taken up; and as the soil never receives any manure, little increase can be expected in the yield in the island of Cebu; but the natives are extending the cultivation of the cane in Bohol, and that coast is becoming an important feeder to Cebu.

Manilla Hemp (Musa textilis).—The cultivation of this plant received an impetus during the past year from the high prices ruling from 1869 to 1872, when as much as 11 dols. per picul was at one time paid for Cebu Hemp. Many plantations were opened in districts better suited to other crops, and as the stimulus of high prices has since subsided, these have been gradually abandoned. The port is, however, a convenient one as an *entrepôt* for the Leyté producers of Hemp; and the whole of the production of that island is likely in time to be diverted to this market, instead of part of it going to Manila, as is now the case. It is stated that the plant is proof against the ravages of locusts, but some damage was done to the plantations last year from drought.

Coffee.—Patches of Coffee-trees have been planted by the natives in the islands of Cebu and Bohol, and small parcels of Coffee in the husk are offered for sale in the market, but the quantity procurable is too small to form an article of direct export. The quality of this Coffee is excellent, and the price at the early part of last year ranged from 14 to 16 dols. per picul. Small quantities of an inferior quality of Coffee are also brought from Yligan in Mindanao, which realised at the time mentioned above from 12 to 13 dols. per picul.

Tobacco.—This is a state monopoly, the growers can sell only to Government; and as the natives are not paid in cash but in paper which cannot be collected probably in less than a year after the Tobacco has been delivered, the production has lately fallen off considerably. Unless the Government should alter the mode of payment, the cultivation of leaf Tobacco in the Visayas districts promises to become extinct. These southern islands possess a soil and climate well adapted to the growth of Tobacco, and under a free system of cultivation and export the yield would be very large. If the Government would only leave the Visayas natives free to sell their Tobacco to the highest bidders, the trade would vastly increase, and be lucrative to all concerned in it, while the state might impose a scale of duties on the export of raw and manufactured Tobaccos which would speedily compensate for the loss of the monopoly. The total yield of leaf Tobacco for the Cebu district during the past year was 8780 quintals, of the value of 70,000 dols., the whole of which was shipped to the cigar factories of Cadiz and Alicante.

—— ORCHIDS IN FLOWER AT THE FIRS, LAURIE PARK.—A correspondent favours us with the following list of Orchids which are now in flower in the beautiful collection of C. DORMAN, Esq., The Firs, Laurie Park, Sydenham, and which make a splendid show at this dull season of the year:—

Angræcum sesquipedale
Barkeria elegans
Calanthe Veitchii
Cœlogyne cristata
Cattleya superba
,, Harrisoniæ
,, candida
,, maxima
Cypripedium Boxalli
,, insigne
,, ,, Maulei
,, longifolium
,, Roezlii
,, Schlimii
,, Sedeni
Dendrobium Ainsworthii
,, bigibbum
,, eburneum
,, formosum
,, Goldieanum
,, heterocarpum, very finely flowered
,, infundibulum
,, Wardianum, also very fine
Læliа albida
,, anceps
,, ,, Barkeri
,, Dayi
Lycaste Skinneri
Masdevallia Chimæra
,, bella
,, tovarense
,, polysticta
Mesospinidium vulcanicum
Odontoglossum grande
,, Insleayi leopardinum
,, maculatum
,, nebulosum candidum
,, pardinum
,, pulchellum
,, Roezlii
,, roseum
,, Rossii
,, ,, majus
Oncidium cheirophorum
Sophronites grandiflora
Vanda cœrulea
Zygopetalum Mackayi

The collection is in fine condition, and bids fair to become, for its size, one of the best in cultivation. At present the plants certainly reflect great credit upon Mr. CONINGSBY's abilities as a cultivator.

—— CROTONS AT THE FIRS, LAURIE PARK.—The same correspondent writes:—"In addition to the Orchids Mr. DORMAN has a very fine collection of Crotons, and the plants are superbly coloured. They are not large specimens, averaging from 18 inches to 2½ feet, and as seen here, beautifully arranged, they form one of the prettiest features it has been my pleasure to see. The following are very noticeable and perfectly distinct—there are in all about forty sorts:—The old angustifolius, not yet beaten; aureo-maculatus Disraeli, Earl of Derby, Evansianus, good; Hawkeri, Macarthuri, maculatus Katoni, majesticus, Mooreanus, Mortii, nobilis, ovalifolius, picturatus, well named; the old pictus, still one of the best; Prince of Wales, well worthy of the name it bears; Queen Victoria, Williams' beautiful hybrid, the best of all the hybrids; reginæ, undulatus, fine; Weismanni, so well known for its beautiful and graceful habit; lancifolius, mutabilis, Chelsoni, grand; volutus, Andreanus, chrysophyllus, spiralis, Rex, roseo-pictus, splendidus, triumphans, albicans, Williamsii, &c. These are splendidly coloured, and any on fond of seeing a good neat collection should pay Mr. DORMAN's garden a visit."

—— PRODUCE OF MALAGA.—The importation into this country of Muscatel Grapes from Malaga seems to have been effected recently with loss to those who speculated in the packing of this fruit as an experiment. Notwithstanding this, as many as 26,377 barrels were sent from the above port to England during the past year. The result, we are informed, has shown that such parcels as reached their destination in a sound condition have yielded such large profits as to entirely justify risks incurred by the shippers. The Grapes thus sent are packed in cork sawdust in small barrels, containing 46 lb. of fruit. The first cost and expenses on each barrel of Grapes at the port of Malaga is given as follows:—

	Reals.
First cost of 46 lb. of Grapes..	42 00
Expenses:—	
Town dues	1.12
Brokerage	1 00
Sorting and marking	4 00
Cost of barrel	6 00
Corkdust	12.00
Cartage and lighterage	1.87
Port dues..	0.22
	69.00

—equal to about 14*s.* 1*d.* per barrel, free on board. Regarding the suitability of the soil and climate of the country for the introduction of foreign plants of economic value, Consul WILKINSON says, "A more enterprising people than the Andalusians would have availed themselves of the great advantages offered to them by their fine climate and fertile soil to cultivate many a tropical fruit and valuable tree, the produce of which would compensate them for any losses sustained through the failure of their other crops. The following may be mentioned amongst the tropical fruits which grow in the open air, namely, the Custard-apple, Banana, Date, Guava, and in some sheltered spots Pine-apple. With the exception of the Custard-apple and Banana, which although not abundant are common, the other tropical fruits above enumerated are not cultivated, though specimens of each may be seen flourishing in the open air in many a private garden, where also grow several valuable trees, such, for instance, as Mahogany, Rosewood, Cinchona, Mulberry, &c."

—— PINE-APPLES.—About the finest Pines now in the market are those from Madeira, which average from 6 lb. to 8 lb. each. While on the subject of Pines in Covent Garden, it is worth noting that Messrs. GARCIA have just made the first importation of these from Florida—from the neighbourhood of Jacksonville. This is an experimental lot, and the fruits have come to hand in first-class condition. In quality they are very fair, the leaves being somewhat like those of the Smooth Cayenne.

—— HORTICULTURAL CLUB.—The annual meeting of this Club will be held at the Club-house, 37, Arundel Street, Strand, on Tuesday next, the 13th inst. After the formal business the members will dine together, under the presidency of Mr. JOHN LEE.

—— MR. MARIES' JAPANESE COLLECTIONS.—Mr. MARIES, who has been collecting plants in Japan at the instance of Messrs. VEITCH, proposes to exhibit at the Royal Horticultural Society, at its meeting on Tuesday next, a selection from the numerous curiosities and objects of natural history collected by him in Japan and China. The collections comprise birds, insects, fossils, shells, Japanese books, implements, &c.

—— THE WEATHER.—General remarks on the weather during the week ending January 5, 1880, issued by the Meteorological Office:—The weather was very dull, unsettled, squally, and rainy during the first part of the period, but afterwards moderately fine; in some parts of England on the 3d and 4th it was very fine and bright. The temperature was above the mean in all districts—as much as 4° or 5° in excess over the greater part of England and in Ireland, but only 2° in "England, S." and "Scotland, E." The wind was generally south-westerly all over the kingdom; strong to a gale in several places until January 2, when it became moderate or light, except in the West of Ireland, and continued so during the remainder of the week. The rainfall was more than the mean in Ireland, Scotland, and in "England, N.W.," but less than the mean in all other districts. At most stations the bulk of the fall occurred during the first three days.

Home Correspondence.

Fruit Culture: Restriction or Extension.—Discussions as to the relative value of the two methods of producing fruit, viz., by "the restriction" or "the extension" system, may be productive of much instruction; but when one side is entirely in favour of unmodified extension, and the other as entirely in favour of restriction, and can see no good under any circumstances in its opponent's views, much good time may be wasted in reading or paying attention to them. Under certain circumstances there is no room for doubt but that the extension system, reasonably modified, is the right one, while under other circumstances it would be folly to adopt it. Suppose a man hires a house and new garden of moderate dimensions on a seven years' lease, that he is fond of fruit growing, and wants a succession of good Apples, Pears, Plums, &c., all through the seasons at which they are to be had, and prefers growing them to buying them, he may satisfy his desires in this respect by purchasing a quantity of "restricted" pyramids, cordon, or espalier-trained trees; and by continuing to restrict their growth both in root and branch, and by liberally supplying them with suitable food, depend on their producing him a supply of fruit from the first to the last of the seven years, and after the first season or two they will, if he thoroughly understands the management of them, become very "models of fertility." A great number of sorts may, by the restrictive system, be grown on a very small piece of land, and, what is also an object to many people, immediate results may be obtained. Some people may object, "But the restrictive system is so unnatural." I maintain that, properly carried out, it is artistic and scientific, and proved by success to be natural also. I go further, and say that, if it were not natural, neither could it be artistic or scientific. An Apple tree entirely in a state of Nature would be a wild Crab, producing fruit of very little use to man. It is natural in man, by all the scientific and artistic means in his power, to improve the fruits Nature has given him, and it is further perfectly natural in him to produce, by artificial and scientific means, various results from improved varieties, in accordance with his wishes. The little restricted pyramids, cordons, or bushes, laden with fruit and in the lustiest health, are a splendid agument against the means used to produce them having been unnatural. It is my humble opinion that the restrictive system may be carried out by natural scientific methods and in highly artistic ways, with the most successful results, far beyond anything yet attemped on a large scale in British gardens. When success is not secured, it is because something in the application of the methods or the conditions of growth is unnatural, and therefore unscientific. People who talk of growing their fruit-trees in a perfectly natural way, seldom, I think, know quite what they mean. Man in a perfectly natural state (*i.e.*, when Nature has had no aid from natural science or art) is a savage, and man under the highest influences of art, science, and religion, is not more above man in a savage state than is an Apple tree on which natural science and art have expended their utmost care above a wild Crab. *J. E. Ewing, Norwich.*

Our Rural Population, and its Great Domestic Want.—In every village we have a church and minister, a school with its teacher and inspector, and the children now are obliged by law to go to school, and not allowed to be employed until they have passed a certain standard or reached a certain age. We also have a sanitary district medical officer and inspector to look after and improve our drainage and drinking water, and to try and keep off if possible all infectious diseases, for sanitary science now-a-day teaches "that prevention is better than cure." But with all these laws and regulations, the poor people in nearly every village are totally unable to procure milk for love or money. People living in towns are much better off, for there a regular supply is sent round night and morning at 2*d.* per pint, but in the country village and in many places surrounded by large dairies where there are gallons and gallons made daily into butter and cheese, not a drop of milk can be had. This seems strange, but no less true. Go into the cottage, and the morning meal is made off bread and a weak decoction of cheap tea and sugar, instead of cocoa made from the nibs, and plenty of hot boiled milk with either bread or a basin of oatmeal porrage, a health-giving and hearty breakfast. Now the composition of milk includes all the substances which the tissues of the growing child needs for its nutrition, and which is required for the production of animal heat. I saw an account some short time since where a celebrated chemist said, "a pint of good milk contains as much [available] solid animal matter as a full-sized mutton chop." Such being the case, how important and how necessary it becomes that children should have a plentiful supply of milk. Teetotalers are very energetic in proclaiming against drink, but they do not find a poor man a substitute. All he can now get is some flavoured water highly charged with carbonic acid gas, a very expensive and very indigestible drink. Let a poor man be able to buy his pint of milk for 2*d.*, and be persuaded that it is much better than beer (even if made of pure malt and hops), and thousands would be glad of the chance. Our American cousins are now sending us such a large supply of cheap butter and cheese that the value of our own goods has been greatly depreciated; would it not be a great gain and saving of trouble and expense, and also a great boon and blessing to our poorer neighbours, if some of our producers would sell milk in its pure state? *W. F. Radclyffe.*

Rhododendrons at Pinkhill.—When passing through the houses at Pinkhill Nurseries the other day I saw some very fine varieties of Rhododendron in bloom. Amongst them I noticed Duchess of Edinburgh and jasminiflorum; the pure white flowers of the latter variety scented all around. It is strange this variety is so seldom met with, as none of all the other varieties are so useful for cut flowers, and none so rich in perfume. A plant that can be had in bloom at this season of the year having so many qualities as Rhododendron jasminiflorum is worth possessing, and should be in every conservatory. *L. Dow, Saughton Hall, near Edinburgh.*

The Origin of the Clanbrassil Fir.—"A Lover of Trees" has sent us one of those curious tufts of densely crowded branches which occur now and again on the Spruce Fir, as shown in the figure (11). They are quite different from the Witches' brooms of the Germans, which are the result of fungus growth. In Switzerland some few years since we had reason to think that those growths were perpetuated from seed, at least young plants may be seen on the ground as well as on the boughs. The Clanbrassilian

FIG. 11.—TUFTED BRANCHES OF FIRS.

and other dwarf varieties of Firs have apparently originated from these forms. EDS.

Cleaning Stove Plants.—At this dull season, when work in the garden is not quite so pressing as at other times, a few practical remarks on the cleaning of stove and greenhouse plants may not be out of place. For the last few years it has been my lot to take charge of collections of plants that have had mealy-bug, scale, &c., upon them, and I have tried various insecticides, but with no success until I tried a mixture made as follows:—Paraffin oil, two wineglassfuls; soft soap, ½ lb.; and common shag tobacco, 2 oz. The tobacco I put into a jar and pour a quart of boiling water over it, covering it tightly down until it becomes cold, and then the strength is drawn out of it. I then take a small galvanised iron pail, put the ½ lb. of soft soap into it, and add the paraffin oil, beating the same up with a flat stick until it becomes a paste; then put with it the tobacco-juice, and add one gallon of boiling water. When cold it is ready for use. When about to clean the plants we put one wineglassful of the mixture into a pan, and add about a quart or so of lukewarm water, then proceed to sponge the plants. With stove plants and Camellias I find it exceedingly useful; in fact, I use the mixture every time I have my plants washed, and thereby have no further trouble with insects of any sort. And now that Azaleas, Cytisus, Bouvardias, Cyclamen, Eucharis, and plants of a like nature are being introduced into the forcing-house it will be found useful to syringe the plants so introduced at least once a-day with a solution of the mixture, putting a wineglassful into a 4-gallon can, and keeping the same well stirred with the syringe while using it. It will not hurt the most delicate foliage plant. *A. B.*

The Champion Potato: a Farmer's Lesson.—Some of Mr. Culverwell's statements at p. 694 of your last volume are not quite correct (though I am sure not intentionally so), and might tend to lead some of your readers into error if not corrected. The rows were 40 inches apart, which, I think, was quite far enough, and not 4 feet as stated by Mr. Culverwell; the price of the land was £10 10*s.* per acre, the Potatos to be hoed and cleaned to my satisfaction: the rest of the particulars, as to manure, &c., are about correct. I am glad to say that the Potatos were a good crop, but not so good as Mr. Culverwell thinks. I tried the crop carefully before it was lifted, and considered there would be a little over 7 tons per acre; but now, as they are all out of the ground, I have measured them and find I have over-estimated them. About 6 tons will be nearer the mark, which will leave a nice profit to the planter if sold at £6 per ton, the top price here at present for them. I think he deserves a fair profit after spending at least £20 per acre for only one crop. I may say that I have been interested in Potato growing for over twenty years, but I have not learnt the lesson by this one transaction to grow all Champion Potatos in future, as it is only in such seasons as the last and 1877, that was almost fatal in some districts to the Regent, that the Champions will come to the front. Last year, when the top qualities of Regents about here were only worth about £4 4*s.* per ton, the Champions could be bought for £3 per ton; any one looking at the quotations of the London Potato markets last year about this time you will find the Champions quoted at from £1 to £1 10*s.* per ton less than Regents. Though the Champion this year is not a bad table Potato it is very much inferior to the Regent, which has kept sound and good about here this year, though a light crop. Mr. Culverwell asks where the farmers can find a better friend than the land they cultivate if they treat it liberally and fairly. No doubt it is a good friend in good seasons, but I am sure a great many farmers will say they could have found a better last year had they known what sort of weather they would have had to contend with, and which has brought ruin to many a hard working and careful man. *James Greaves, Snape Castle, Bedale, Yorkshire.*

The Late Frost.—It is too early in the year to speak confidently of the saved, but unfortunately some of the lost are too distinctly visible, as one makes a tour of the beds—a somewhat melancholy operation, though the air is bland this New Year's Day. First of all, the old Stauntonia latifolia is killed to the ground, so is the Myrtle-leafed Sumach. Rhus glabra laciniata seems all right. Erica codonodes and mediterranea are both gone; Muhlenbeckia complexa severely punished, as also Mesembryanthemum uncinatum and Margyricarpus setosus on the rockeries. The beautiful Selaginella helvetica vera seems quite fresh, and many other alpine treasures; but a lovely old solitary Rose, Blairii No. 2, on the lawn, will never bloom again. The exquisite Tea, Marie van Houtte, called "Lemon Ice" by the master of the house, is dead: it had three buds when the frost seized it, so the sap was high. Catherine Mermet, another lovely Tea, looks well as yet, and all the beds of Roses on their own roots look happy. That pearl of shrubs, Olearia Haastii, is lusty and green, evidently very hardy. Azara microphylla is rather brown; the Escallonias are dreadfully punished, also three Ceanothus trees, the worst being the oldest in age, C. azureus; Bridgesia spicata is injured. The Rhododendrons look comfortable, and are well budded. The Tritomas are suffering; Libertia ixioides stands well. With regard to the common things, Lavender, Rosemary, and Lavender-cotton are better than last year, and so is the Golden Thyme. All the double Wallflowers are dead with one exception—the early Belvoir Dwarf Yellow is quite fresh. The evergreen Magnolias are flourishing, but the Sweet Bay and Laurustinus are wretched. Cistus laurifolius is very hardy, but the Gum Cistus is not; C. formosus has been nearly killed, and Jasmines humilis and fructicans also. The sweet Coronilla Emerus is well, but Eugenia Ugni is all but dead. The lovely variegated Olive looks deplorable, and many of the Euonymus would have been dead had not the smaller plants been lifted; E. Duc d'Anjou and E. radicans picta are especially tender. The large bushes of Euonymus are perfect martyrs to this arctic *régime*. Though the frost here was not so severe as in our Lincolnshire garden, where 36° were marked, and here only 29°, there all the Laurustinus are killed, and even the Aucubas nearly so. The most tender Ivy in a collection of eighty-seven sorts is Hedera canescens; it is dead, a pretty hoary plant. H. himalaica, also grey, and delicately cut, stood well on a west wall. Van Houtte's purple Daphne is very robust, and its bronze rosettes are effective in the foliage beds. Cineraria acanthifolia is beautifully hardy in a most exposed bed facing north. The charming Hypericums proliferum and oblongifolium are well; H. nepalensis, the most lovely of all, perished last season. The Camellias and Cyclamens have done very badly in the houses, but the little alpine Sowbread never fails, both pink and white, spring and fall. There are still some autumn Crocuses struggling into existence

to cheer the heart and please the eye of garden-loving people; and, to crown all, we have finished planting the bulbs to-day for the spring garden. The old tufts of Christmas Rose are crowded with buds, and we have already picked some of the lovely roseate-tinted cups of Helleborus niger maximus (altifolius), the most engaging of winter flowers; and, finally, the Ivies, great and small, green, golden, silver, and arborescent, are in perfect health. Hedera dentata is a grand plant, quite tropical in its effect, suits in any situation, and is never discoloured by the most intense frost. *H. M. E., Midland Counties.*

Poisonous Plant.—Another plant from which farmers often suffer, is the Solanum Dulcamara, which in some districts grows very freely in hedge-rows, where sheep are fond of browsing, and these after eating the berries soon pine away and die. A friend of mine lost eight of his flock in a few days, and only saved the others by removing them from the field till the plants were grubbed up and destroyed. S. nigrum is even more deadly than S. Dulcamara, but fortunately is less common. *J. S.* [Can this be authenticated? EDS.]

Lælia anceps alba.—Having noticed in several of your numbers that Mr. W. Bull, of Chelsea, first bloomed this beautiful variety of anceps, I beg to say that it was in bloom with me just twelve months ago, which I think was before it bloomed at Chelsea. I shall have it in bloom again in the course of a week or ten days, when I will forward you a bloom by post. *James Hill, Gr. to Geo. Hardy, Esq., Pickering Lodge, Timperley, Cheshire.* [Mr. Bull's plant was recorded by us as being in bloom in our number for Dec. 14, 1878, p. 756. EDS.]

Influence of the Stock upon the Scion.—I herewith forward some Pears and a sample of Horse Radish,

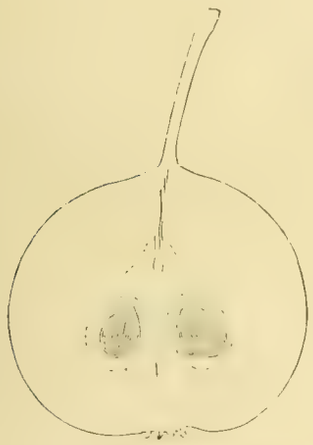


FIG. 12.—ASTON TOWN

for the meeting of the Scottish Horticultural Association on December 2. I send the Pears as an illustration of the possibility of the stock altering the character of the fruit. I must own that I have hitherto been sceptical on the point, but the members can see and judge for themselves of the great difference produced in the fruit by the specimens I send for examination. A tree of Aston Town Pear, which seldom produced any fruit, was headed back some years ago, and grafted with Beurré Clairgeau Pear. This year some of the old spurs left on the Aston Town stock bore fruit, of which fig. 12 is a sample. The sample fig. 13 is fruit of Beurré Clairgeau, produced by a pyramid tree from which the grafts were taken for working upon the Aston Town. No. 3 (fig. 14) is the produce of these grafts—Beurré Clairgeau worked upon the tree which produced No 1 fruit, Aston Town. The fruit is rather smaller than usual with us in Cheshire, owing to the bad season. I would have kept them till they were ripe, so that their quality might be judged of at the meeting, but I am afraid they will not keep sound till the next meeting in January. However, the members will be able to see and discuss the great change produced in the character of the fruit of No. 3, by being grafted upon a particular stock. [The above note, by Mr. William Burns, Thingwall Hall, Birkenhead, was read at one of the recent meetings of the Scottish Horticultural Association. The illustrative specimens were obligingly forwarded to us, and, as will be seen from our drawings (figs. 12, 13, 14), they are singularly interesting. The graft, No 3, is curiously intermediate in form and size between Aston Town and Beurré Clairgeau. If the variations had been in external characters only we might have attributed them simply to that innate tendency to vary which all plants possess more or less, and which may possibly be due to their mixed ancestry, but, in the present instance, not only is the outward form intermediate, but the form of the core and of the seeds. The speckling of the graft was like that peculiar to Aston Town, but less in amount. There is still another possible cause of the variation, and that is that the pollen from the flowers of the stock were transmitted to those of the scion, and so produced a hybrid production. Such cases are asserted to have happened, but we think such a supposition much more improbable than that of graft hybridisation. EDS.]

—— Much has been written upon the subject of what stocks are the best for certain sorts of fruit, but I should like to know if any one has noticed whether any varieties of fruits or flowers grafted or budded upon wild stocks of any sort have thereby been deteriorated? We often hear that the Golden Pippin Apple and others are not so good as they were, and in my opinion, looking at the subject from a physiological standpoint, the blending of the superior with the inferior must tend to deteriorate the former; and if this is so it is evident that we should endeavour to get the superior varieties of fruits on their own roots. We see in the case of Roses that the first year or so the flowers are best, and many growers are getting them on their own roots. It also becomes a question if we do not retard progress by raising seedlings from grafted plants, as the progeny must have more or less of the wild sap in

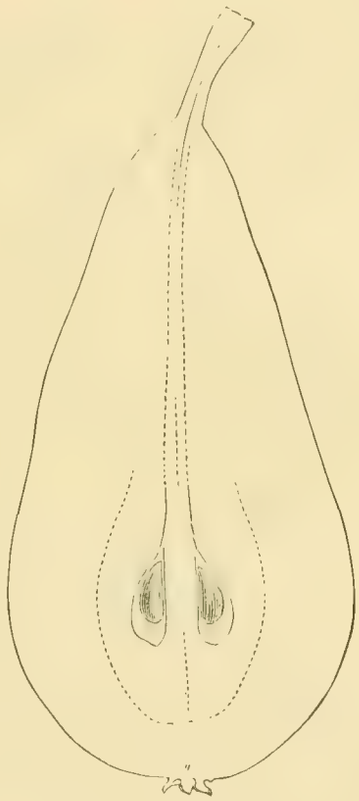


FIG. 13.—BEURRÉ CLAIRGEAU.

them. The results of observations on this point made by others would be interesting. *J. Croucher.*

Slaughter of the Apricots.—Herewith I send you a portion of a dying branch of an Apricot, which upon examination you will find pretty well filled with grubs in various stages of development, the said grubs being—in my opinion, at least—the primary cause of death in the branch referred to. *Herefordian.*

Daphne Mezereum and other Wild Plants in North Lancashire. — Near Grange-over-Sands, which is on mountain limestone at the head of Morecambe Bay, Daphne Mezereum is common in the rocky woods, far from gardens or ornamental walks, and I think is undoubtedly indigenous. The cottagers dig it up freely for their gardens. Daphne laureola is common in the same woods. Aquilegia vulgaris (Columbine) is of general occurrence throughout the district, growing in wild lanes and out-of-the-way places in which it would be difficult to account for its introduction, if not native. Two other plants of more general distribution are very conspicuous from their great abundance here, occurring from the very top of the limestone hills, 700 feet high quite to the sea level—Verbascum Thapsus (Great Mullein) and Inula Conyza (Ploughman's Spikenard). These biennials take the place of Foxgloves, which are found rather sparingly on the limestone. I also observe fine clumps of Atropa Belladonna (Deadly Nightshade) growing out of the limestone rock close to high-water mark. All these plants I have seen, and I am also told by more than one trustworthy authority that Ophrys apifera is often found here, associated with Ophrys muscifera, though less common. In Sowerby's *English Botany* we are told that O. apifera does not occur on the western side of the island farther north than Tenby. *C. W. Dod, Grange-over-Sands, Jan. 5.*

Market Prices of Vegetables. — There is one phase of this subject that, if explained, may perhaps tend to throw some light upon the cause of such unsatisfactory returns from market salesmen as are now and then complained of, and which are too apt to lead the reader to imagine that these said salesmen are but a voracious set of vultures preying upon the poor grower and on the public. On the west side of London there are a very large number of market growers who do not, as a rule, take their produce to market, but dispose of it at the greengrocers' shops through the immense western suburbs, thus coming more immediately into contact with the consumer than is the case when a salesman is the go-between. These growers are unanimous in the opinion that the present winter has been one of the worst ever known to effect profitable sales; the shopkeepers, who are the best barometers of the rise and fall of the wages income, all declare that there is no money about; that their best purchasers in times of labour and prosperity are the working classes, who are ready-money customers, and that the general depression has told so heavily upon these that they have little spare money wherewith to purchase garden products. It is

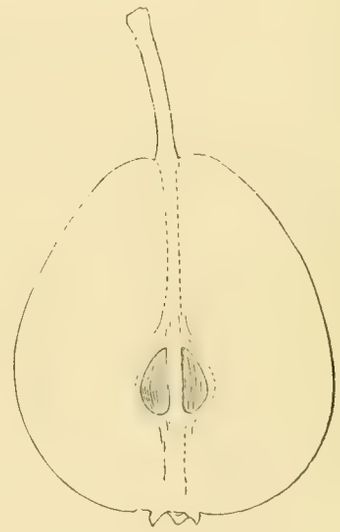


FIG. 14.—GRAFT HYBRID

therefore evident that if the dealers cannot afford to pay remunerative prices to the growers direct, they nor their fellows can better afford to do so through market salesmen. Depend upon it whenever trade and commerce shall so improve as to make labour abundant, and the purchasing power of the masses perhaps double what it now is, we shall hear few complaints as to low prices, for the wants of the metropolitan community are enormous. *X.*

Picea lasiocarpa (Lowiana).—I notice that in the *Gardeners' Chronicle* of Saturday last you say that the Picea Lowiana had not yet fruited in this country. I had a few cones, about three or four, on the top circle of branches of a lately moved plant of what I had from Mr. Low as P. Lowiana. I intended to have sent you a cone, but unfortunately I find that they have all broken up and fallen to the ground. However, to show that there were cones I have sent a small box with a few of the seeds, a lot of the scales, and a core of what was the cone. I also send a branch of the tree on which the cones grew, and a branch of what I have for P. grandis. They seem to me to be perfectly distinct; what do you say to them? *J. B. Mackay, Totteridge, Herts.* [We thank you, and will give you the benefit of our opinion after we have had time to study your specimens. EDS.]

The Late Frost.—I fear the late severe weather has finished off some things that just escaped 1878 and the spring of 1879. I see that Magnolia grandiflora ferruginea, which is generally the hardiest of the two, has suffered very much this winter. On looking over some few things concerning last season there were several (to me) strange occurrences as to the way in which the frost affected the same genera and species

under different circumstances. Cistus laurifolius, planted on a small island with about 30 feet of water all round, and which last season was frozen over under 22° of frost, has escaped unhurt and looks well at the presenti me; yet of other plants of the same species planted by a south wall several died. I judge from this that there is too great a change in that situation between the day and night temperature, while that of the island was much more regular up to the time the frost broke up altogether. I give you below the names of a few things that have been killed or injured, and a list of some among the plants whose hardiness is generally considered doubtful but which have escaped:—

Killed

Jasminum azoricum	Cistus corboriensis
Solanum jasminoides	,, cordatus
Olea europæa	,, sagittifolius

Injured.

Myrtles, cut down	Rosa bracteata
Ceanothus sp., points killed	Rubus rosæfolius, tops cut
Leptospermum virgatum	Libertia formosa
Gynerium, nearly killed	Calycanthus macrophyllus
Kniphofia	Garrya elliptica
Eschscholtzia polystachya	Azara microphylla
Edwardsia microphylla, points killed	Phormium tenax, partly sheltered, flowered in summer
Aloysia citriodora	

The late growths of common Laurels and Portugal were very much injured.

Not Injured.

Berberidopsis corallina	Olearia Haastii, hardy as anything
Lardizabala biternata	Veronica pinguifolia
Bignonia capreolata	Rubus deliciosus
Escallonia macrantha and others	Camellias
Gunnera manicata, a few dead leaves	Daphne collina
,, scabra, ditto	Hymenanthera crassifolia
Fuchsia procumbens	Canna Achiras

Charles Green, Pendell Court, Bletchingley.

Potatos.—Referring to the letter of "Solanum" in your last week's paper, I shall be glad if you will allow me to say, that it was not merely with my consent, but by preference, that in sending out the Woodstock Kidney to the public through the Messrs. Sutton, their name was attached to it rather than my own. I had, of course, no facilities for the distribution of my Potato such as are possessed by those gentlemen, and I have had no reason to regret having put it into their hands. My name is quite sufficiently well known to my friends in connection with my seedlings, and I considered it important to entrust my seedlings to a firm from whom the public would certainly be able to obtain a supply, not only in the first but in all subsequent years, of the true stock raised by me. It is curious that it takes about two years after a novelty is sent out for it to reappear in your advertising columns under other auspices, and bearing the names of other firms, with or without the word "improved." Two years may be enough time after having been purchased from the raiser to get up a stock of the original thing, but it certainly is not sufficient time for others to create any improvement, sufficient for commercial purposes, upon the original stock. *Robert Fenn, Cottage Farm, Sulhamstead Abbots, Jan.* 5.

—— In justice to Messrs. Sutton & Sons I wish to state that I sold them the entire stock of my Potato, with the clear understanding that the purchase included the right to call it whatever they liked. Of course having parted with the whole stock to those gentlemen, I never wished or expected my name to be used, and they did quite right in sending it out to the public as Sutton's Magnum Bonum. Messrs. Sutton having allowed me to keep the produce of some small "chats" left in the ground, which came up in my field the following year, these greatly increased during the next two years; and finding the Messrs. Sutton had by that time as many of their own growth as they required, I sold some to my neighbours and others, including a London seed merchant. I soon found, however, by the gardening papers, that the London firm in question were calling the Potato by their name, which, of course, they had no right to do, as I sold that right to Messrs. Sutton. Whether their adding the word "improved" saves them from getting themselves into trouble I do not know, but I thought it only fair to myself and Messrs. Sutton that the facts should be told by myself. *James Clark, Christchurch, Hants.*

—— Your correspondent "Solanum" appears to be unaware of the fact that we purchased a portion of the original stock of Magnum Bonum Potato from the raiser, Mr. Clark, and offered them in our catalogues as far back as the year 1877. At that time we sent a portion of the original stock of Potatos to one of the best and most reliable gardeners in the country, and after a selection by that gardener, we received back the "improved" stock of Magnum Bonum Potato, to which our name has ever since been attached. We hardly know that we are called upon as a well-known house of business to defend ourselves against an anonymous correspondent, but we think that in justice to the public we ought to make a few remarks. As regards great seed firms and their practices, if "Solanum" had any practical knowledge of the production of seeds, he would be aware that original types rapidly deteriorate in character during the process of ordinary cultivation, but some of the great seed houses who wish to keep their stocks pure and distinct use extraordinary efforts to attain for their seeds a high standard of excellence, and in order to do this they are compelled very often to remove a large portion of plants from the seed crops, whenever any are found showing the slightest tendency to deteriorate in quality, and when, on the other hand, they observe occasional plants in every way superior to the crop in general, the produce of these superior plants is carefully harvested by itself, and grown again and again, and if the superiority is of a fixed character an improved variety has been secured. This has probably escaped "Solanum's" attention, or perhaps he is imperfectly acquainted with the subject, therefore it is prudent for a careful producer to offer these select stocks as being of greater value than the originals: this is reasonable and truthful. It would be perhaps justifiable in some instances to rename the selected variety, but this course would be more confusing to the trade, and pernicious to the public if adopted; and any one who attempts to check the use of the word "improved," as applied to superior vegetable productions, is striking a blow at the purity of stocks: for what seedsman would care to take the trouble, and bear the great addition to the expense of production, if he did not get one of two things, either extra profit or enlarged reputation? It will be found on reference to the catalogues that some houses make no extra charge for these improved varieties, relying for recompense upon an increase of renown for their house, so that "Solanum's" imputation, that the British public have to pay for such improvement, is hardly justified. We should have almost thought that the necessity for careful production of vegetables and flowers for seed purposes was so well known to the professional gardeners and amateurs that the remarks of "Solanum" would have been unnecessary. We trust, however, that in any future communication "Solanum" will have the courage to sign his real name, otherwise the purport of his letter might be reasonably subject to what "Solanum" would consider uncharitable criticism. We have perhaps a greater right to call things "improved" than most houses, as it is a well known fact that our seed farms are larger than any in England, and it is also a well-known fact that we are always selecting and re-selecting stocks. *James Carter & Co.* [Would not the word "selected" be preferable to "improved," as not liable to mislead? EDS.]

Pears that Have Done Well.—In a previous number I named some Pears that had failed here, I now turn to a more pleasing view of the subject and specify kinds without which our supply for the dessert and kitchen would have presented a great falling off. Jargonelle, on a north wall, carried a good crop, fruit not quite so large as usual but tolerably well up in flavour; Comte de Lamy, a standard fruit, quite equal to other years in size, was a month later than usual in ripening and supplied the table until December: with us this is the highest flavoured of autumn Pears, colours beautifully and is worthy of a place in every collection; Marie Louise, on walls and standards a fair crop, had to thin the wall tree; ripened and finished well, not fit for table until the beginning of this month; will keep up the supply to the end of the year. Doyenné du Comice not quite so large as in other years, but nearly up in quality; Duchesse d'Angoulême on wall had a fair crop, but fruit not so regular in size as usual, a few at the extremities of the branches are large and well finished—makes a fine dish on the dinner table, and this season will be fit for use up to the end of January; Beurré Clairgeau, standard, good crop and showy Pear, not quite so large as last year, will not be fit for use this month; Catillac, on wall, carried a good crop of average-sized fruit; Uvedale's St. Germain, grown on wall, heavy crop, had to be well thinned, fruit not quite so large as usual, but well coloured, sound and good. The two last are kitchen Pears, which keep up the supply until the beginning of June. *T. Blair.*

Decorative Gardening at Kew.—I have often seen the opinion expressed editorially in the *Gardeners' Chronicle*, that, so far as the reasonable demands of the general public will permit, the purely decorative phase of gardening should be subordinated at Kew to the development of horticulture of an educational or scientific character; and with that opinion I entirely agree. At the same time I think it most unwise on the part of the Kew authorities, while they profess to devote some portions of the establishment to the decorative element, to allow that portion—which is little enough, goodness knows—to be so much neglected as it appears to be at the present time. I never remember to have seen the show-house—popularly known as No. 4—look so mean as it did a few days ago, when the side stages were decorated (?) with third-rate Primulas, a few miserable Hyacinths, here and there a leggy Cineraria, a couple of lean Bouvardias, Chrysanthemums all legs and pots, their flowers passing into the decomposition stage; starved and weakly little Heaths, a few ancient Solanums, and Zonal Pelargoniums that would drive Mr. Cannell crazy. Not a Cyclamen, a Carnation, a Tulip, or a Violet, not even a spray of Lily of the Valley to be seen in the first week of January, 1880, in the one show-house maintained in Kew Gardens. There was, however, one plant in flower that pleased me much—a pretty Strobilanthus, and that, which is by no means so common as it deserves to be, was unnamed. Disappointed with No. 4 I went to the Orchid-houses, and in the great national garden, that we are all so proud of, there was not a solitary Calanthe to gladden one's vision. My old friend Ansellia africana was there in good form, but not a single Calanthe! Can the reason of their absence be that they cannot grow these splendid flowers at Kew? I am loth to believe that. Of the science put on paper at Kew the general public knows nothing, and, worse luck, cares less; but as regards the art of cultivation, I do think that those who pay for it have an undoubted right to demand that it should be, as far as it goes, at least no worse than the general average attained at other places; at present, as exemplified by the contents of No. 4, it is sadly below par. *Townsman.*

Soil Temperature.—In the last week the changes have been very striking. Up to December 29 the earth thermometer at my station here, 1 foot below the surface, had ranged between 32° and 33° from Dec. 7 to Dec. 29. Since then it has risen daily until up to 41°.1 on January 2. The thermometer at 2 feet below the surface stood between 36° and 37° from Dec. 7 to Dec. 16: from that date to the 18th was for the most part between 35° and 36°, then rose gradually to 37° on the 31st, and now stands at 40°.6. It seems to me very interesting in connection with plant growth. *O.*

Horticultural Boilers and Heating.—I sympathise with Messrs. Weeks in one very cogent observation adduced by them, viz., that their work in many cases has been brought into bad repute by so-called engineers, who, divested of their hardfacedness, are either plumbers, blacksmiths, or gasfitters, sometimes better and sometimes worse, but seldom capable of undertaking the duties of a competent engineer. A person should at least understand the rudimentary principles of heating before he dubs himself with the title of "engineer." There can be no doubt that the Messrs. Weeks execute their work thoroughly; indeed, their houses are models of what horticultural buildings should be, and where the glass is arranged in "blocks" according to modern ideas, their boilers are powerful, and there need be no fear of them doing their work. Mark! I say nothing about "consumption of fuel." According to lawyers, however, there are always two sides to a case, and upon the other side I agree in the main with Mr. Baines. Messrs. Weeks' boilers are public property, and there is nothing wrong in criticising their merits; moreover, it is claimed for them that they are the best boilers extant. The point I should like to see discussed is the respective "principles" upon which the upright tubular and saddle boilers are made. If the principle of the upright tubular is wrong there is an end of the case, and *vice versâ*. Gardeners, as a rule, are a matter-of-fact body of men, and it is hard to knock out of them what they have observed in practice and acquired by hard work. When I used to stoke in my younger days, I was sometimes severely cautioned when charging a saddle boiler for putting a lot of fuel in such a way that the whole mass burned away together. It was understood by us juveniles in those days that in order to be economical the body of fuel should burn steadily from the back of the boiler to the furnace-door, and if this be correct it cannot be done with the tubular, for self-evident reasons. There cannot be two opinions as to their great consumption of fuel. Within the last few years I have had several opportunities of choosing any form of boiler that I liked to heat several ranges of houses, and I have invariably chosen the common saddle boiler with waterway back, or the terminal-end saddle. It is supposed or rather asserted that night stoking can only be abolished by having those tubular boilers. This is a fallacy which has gone abroad, because many people are tempted through a kind of mistaken economy and sometimes under the advice of those whose interest it is that the work should be done "some way," to have small boilers and insufficient heating surface which necessarily keeps the stoker continually busy and entails more cost in a very short time, besides not being so good for plants than if a good-sized boiler and plenty of piping were put in at first. I had a practical illustration not long ago, near to where I then lived, in arranging the heating of two ranges of houses for Gilbert Winter Moss, Esq., of The Beach, Aigburth, near Liverpool. The architect (not being a horticultural one) had no say in the heating, and I determined when my advice was taken not only to put in

an ample quantity of piping according to the temperature that was required to be kept in each house, but also to see that the boilers were large enough for all future anticipations: the result being that the stoker could go comfortably to bed all last winter at 10 o'clock without doubting the capacity of the apparatus to keep the different houses at the requisite temperatures until 7 o'clock the following morning. The mischief of large boilers (and I do not name the tubular more than any other kind) is most felt in places where the glass is scattered, and the houses that require the highest temperature are not so arranged as to be nearest the boiler. The loss of heat in "the mains" must be great (especially if they are not laid within the houses where it could be utilised), in fact a waste of heat before it reaches the point where it is most required. Mr. Baines was also undoubtedly correct when he stated that in such places two or three saddle boilers would be much more useful and economical than a couple of tubulars or a couple of any other kind that any one else can mention. *W. Hinds.*

—— I have read most of the letters on this subject which have appeared in the *Gardeners' Chronicle*, and I am sorry to say with very little advantage, for they amount to a mere squabble of words without communicating any useful information. Comparisons are made between tubular and saddle boilers without any proper basis. Even in the paragraph which appears in your last volume, p. 822, it is stated, "the tubular boilers in the Palmhouse at Kew, of which we gave an illustration in November, 1877, are giving great satisfaction—giving a proportionately larger amount of heat for the same quantity of fuel than the flued saddle in the temperate-house." No fellow can understand this. The fuel is equal, but the other member of the proportion is wanting. The only other letter I shall refer to is that quoted on p. 760, and to which you seem to attach some importance, where the writer says that "It is not so much the shape of the boiler as the position in which it is set, the work it has to do, and chiefly the manner in which it is stoked." With this I cannot agree, for I think the shape of the boiler is most important, the work it has to do is comparative to its efficiency. I look at the question in this way. 1st. A hundredweight of fuel gives out a certain amount of heat when consumed in the most perfect manner. How is this heat best utilised for heating our hothouses? It cannot be used direct, and therefore one must have some means of rapidly absorbing it, and conveying it to where it is wanted. 2d. The most convenient means of absorption is a boiler, and therefore the boiler which is so formed as to absorb the greatest amount of heat developed from the fuel must be the best. Now, looking at the advertisement on p. 672 of November 22 last, I cannot conceive that the tubular boiler there shown can be the best, either for generating the heat or for absorbing it. I had one of Weeks' boilers some ten years ago; it cost a good deal, and a good deal more for setting. It worked a short time, when the bottom ring split. I had to pull the brickwork to pieces to get a patch put on—no easy job for the mechanic. It gave way again in a storm. I then determined to make an end of it. I telegraphed to Russell & Co., Glasgow, and got an upright malleable iron boiler from them, which required no brickwork, and I had it at work again within forty-eight hours. I have not had the least trouble since. On breaking up the Weeks' boiler I found the tubes coated on the outside with about half an inch of hard soot, which, being a non-conductor, must have caused a great loss of heat. My present boiler is certainly not the best form, but I was obliged to take it to save my stove plants and vineries. I intend to alter it next summer, and hope to save much fuel. As it is impossible to compare two boilers doing different work, I would suggest that the makers of saddle, tubular, and other boilers, should have a competitive trial, each putting up a boiler capable of heating, according to their statements, say 5000 feet of 4-inch pipe, up to 100° or some agreed temperature. Let these boilers be unconnected with any pipes, but open to the atmosphere, so that the steam generated can escape rapidly. Each must have a tank containing a certain quantity of water, with a tap to allow the water to enter the boiler, so as to keep a constant level in it; give them a certain quantity of fuel to start with, keep the boilers going for ten hours, then weigh the fuel remaining, and measure the water evaporated. In this way will be ascertained the quantity of water evaporated per pound of coal, and prove which is the best boiler. There is no other way of doing it. The work done is the heat absorbed through the boiler by the water evaporated, and this is equivalent to a certain number of feet of pipe kept hot in a temperature of so many degrees. No two houses are alike, and therefore the heat of 1000 feet of pipe in a Palmhouse cannot be compared with 1000 feet in another house. Unless some such experiment is agreed on and made, the squabble may go on; but "facts" which are mere assertions are not "proofs," or proved by other assertions which are not true. No mere inspection of a boiler at Bull's or Cowes, even by H.R.H. this or Sir William that, will prove anything as to work done, which is what we are all most anxious to ascertain. *R. S. Newall, Fernclene, Gateshead, December 27.*

—— This subject, which has occupied so much of the *Gardeners' Chronicle* of late, is a most difficult one, and it is doubtful if any good results will be derived from such a discussion unless some plan, as suggested by your correspondent, Mr. Bramham, at p. 768, could be successfully carried out, for there are but few gardeners who have not a fancy for a particular boiler, either from their own experience or because it has been strongly recommended by a friend, and all the writing imaginable would not convince them that they had not the best boiler out, unless you could prove by some undisputed fact to the contrary. During the last thirty years I have had experience in the working of at least a dozen different boilers, including both cast and wrought iron saddle boilers, and my idea for a long time was that there was nothing equal to the saddle boiler, and I should have held very strong arguments in its favour. In 1873 we had one of Weeks' No. 4A patent duplex compensation boilers fixed here, to heat the following range, viz., two greenhouses, two plant stoves, three vineries, Fig-house, Peach-house, Mushroom-house, potting-shed, a room for keeping Grapes in bottles, and my office. Since the above date my views have quite changed as regards the saddle boiler where you have a large quantity of piping to heat by one boiler; and I am prepared to say, when you have several thousand feet of 4-inch pipes to heat there is no boiler that has come under my notice that has given me such satisfaction as Weeks' duplex compensation. It is rapid in circulation, easily managed, and consumes a remarkably small quantity of fuel for the amount of piping it has to heat. *I. Dell, Stoke Rochford.*

—— During the present discussion on this subject, there has not appeared anything from the stokers. Surely, if some of them would speak their minds, they would help to solve this difficult problem, for it depends principally on the stoker's attention and intelligence whether a boiler does its work efficiently or not; and, as one of your correspondents has very forcibly remarked, "the best fuel economiser is a good stoker." With your permission I will relate my experience during my term of probation as an assistant gardener; but let it be distinctly understood that I have no interest in recommending one boiler more than another, as I am not in any way connected with the trade, and am quite unknown to all the large firms of hot-water engineers, &c. I can therefore give a strictly unbiassed opinion, as far as my experience goes; but, first of all, I will just enumerate the various kinds of boilers I have had to work. They are the old form of wrought-iron saddle, the flued saddle, the terminal saddle, the corrugated saddle, the saddle used by the Cowan Company for their limekiln apparatus, the conical boiler, the upright cylinder, Hurd's tubular, Thompson's tubular, the old form of Weeks' tubular, and Weeks' tubular with patent diaphragm, &c.—amounting in all to thirty-three apparatus, in various parts of the kingdom; and I unhesitatingly say that, for quickness in getting up a good heat, smallest quantity of fuel required according to the work done, minimum amount of labour required in stoking, length of time they can be left without attention in any way, general efficiency and trustworthiness, I have found none that will bear any comparison with Messrs. Weeks' patent as fixed by them at present. Of their durability I am not able to give an opinion for any length of time, but I can say I have never known a tubular boiler to fail except Thompson's, which gave way through the melting of a lead pipe which had been fixed to the boiler to clean it out by—a fault which was easily remedied, and which would never have existed had the boiler been properly erected in the first place. I could mention one tubular boiler which had been at work to heat a mansion for upwards of forty years. As regards the saddles, I have a lively recollection of one which had been put in to heat a Pine-stove, &c., giving way in a severe frost through a bad crack, which had to be replaced at once by a new one, causing no end of trouble to all concerned; and several others have cracked in a less degree, and had to be repaired. I have never heard of a tubular causing any bother in this way. As regards the quality of fuel, tubulars certainly require the best coke that can be got, in order to do their work thoroughly; so also do saddles, and they burn a greater quantity in proportion than the improved tubulars. I am strongly in favour of a mixture of coke and coal for both classes of boilers. A much greater heat will be got if a small quantity of the latter is added. *W. H. Divers, Burghley.*

—— Throughout this correspondence we feel that we have rebutted by the best possible testimony, namely, that of facts and figures, every statement made by Mr. Baines, until nothing is now left to reply to but the promised "long list" of failures, which we presume Mr. Baines has done his best to produce. In this endeavour he, as we knew he must, has signally failed simply because the much-talked-of failures never had any existence; and we feel perfectly justified in repeating, that this as well as many others of his statements was reckless and consequently unfair and misleading, and as to the four cases he has somewhat insinuatingly mentioned they can be easily disposed of. In the first place the boilers discarded by Messrs. Veitch were not of our design, manufacture or fixing, but were of a totally different construction; and as every unbiassed person knows there are tubulars and tubulars. As to those at Manley Hall we never had a duplex boiler either fail, crack or go wrong in any respect. The simple facts are, two of our duplex boilers worked part of that establishment for five years with great success, and were only removed when the establishment was unfortunately broken up, and the collection of plants, hothouses, boilers, and pipes sold. That these boilers were in good condition and sound at that time, after five years' wear and tear, we can furnish the most clear testimony. As to the boiler at the Messrs. Henderson's, Pineapple Nursery, the late Mr. J. Weeks—than whom few men were more zealous and successful in advancing the principles of heating by hot water—here worked out a series of experiments of which we possess the benefit. The old boiler constructed by him is still there, and may be seen working, so that it neither failed nor broke down. True, there is more than one boiler at this establishment, and, owing to the great acreage of glass, we doubt if any one boiler could be made to do the work; but this does not interfere with the fact that what two improved saddles here failed to do is now being easily accomplished by one of our duplex boilers. With regard to the boiler at Columbia Market, it was fixed by us about ten years ago, and successfully worked the apparatus for several years. Of late it has had no fire in it, simply because the hall or market as a market has ceased to exist. So far, however, from the boiler having failed or broken down it still exists as originally fixed, and can be inspected by any one. It has never failed, broken down, or been repaired, and on examination is found to be now in good working condition. *J. Weeks & Co.*

Heating: Trade Refuse as Fuel.—In your number of December 20 I advised your readers to burn refuse material for heating purposes and save their coke bill, and that this can be done I have no doubt whatever. For some years prior to 1864 I had great difficulty at my factory in disposing of my trade refuse; my furnaces were small, and nothing but the best coal and coke would keep the steam up. I therefore had two boilers made especially to burn refuse; each boiler was 20 feet long and 7 feet in diameter, of the double-flued Cornish pattern, with very large flues and deep fuel spaces so as to hold a large quantity of fuel. Each fuel space was 7 feet deep and 2 feet 6 inches in diameter, making in all 70 feet super of fire-bar and the contents about 140 feet cube of fuel. The fire traverses the boiler twice, or about 40 feet in all. Now as to its results: from the time of my setting these boilers, sixteen years ago, they have constantly driven a coupled 50-horse high-pressure engine, and except on Sundays and holidays the fires have not been out a week altogether during the whole time. During the whole time not a ton of best coal nor a chaldron of coke has been used, and I have succeeded in disposing of the whole of my trade refuse, and utilising it for fuel with the addition of coal screenings or dust. There are employed an engineer and a stoker, with a man to wheel the refuse from the vertical shaft, which passes through the floors, and is some distance from the stokehole for safety. My stoker estimates the fuel burnt at about fifty barrowloads a-day; it consists of chips, shavings, and sawdust, and my small coal bill averages at the present time 14*s.* per day, and the water used 2750 gal. a-day, as measured by meter. The best of the shavings and sawdust, amounting to about twenty sacks a-day, are not burnt but are sold, and realise about 35*s.* per week. I do not consider my arrangements as perfect. I should like to carry the flame once more round the boiler, only the shaft is at the wrong end, and I am strongly of opinion that none of our boilers are swept as often as they should be. A friend of mine has just set a Cornish boiler with a flue space of 3 feet all round it. Supposing the boiler is 4 feet in diameter, the flues added make 10 feet in all; this enables a man to walk round it and thoroughly cleanse it from soot, and everybody knows how much quicker a kettle with a clean bottom will boil than a foul one. At all events, my friend tells me the boiler set in this way does double the work it did before with the same amount of fuel. I think those twisting, cranky flues the curse of the horticultural boilers. I know I shall make boiler-makers open their eyes when I talk of a man walking round his flues, but "out of sight out of mind" applies to foul flues as well as other things, and in heating we must never forget that whilst iron is one of the best conductors of heat, carbon or soot is one of the worst. I will leave your readers to make their own estimate as to the relative power of driving a 50-horse steam-engine and heating hothouses, and how many miles of pipes these boilers would be equal to. This is a point I should much like information on if any

of your readers could supply it. I suppose no one at the present day is simple enough to say that fuel that will get up steam will not heat pipes in a hothouse. Now, a word for the smaller kinds of houses. We don't all want boilers we can walk round; and, for small houses, I quite believe that hot air will drive hot-water boilers out of the field. I have just had a hot-air apparatus advertised in your paper set up in a conservatory, and the advantages I hope to gain are as follows:—In a small house you have your stokehole where you keep your fuel to heat the boiler; the boiler heats the pipes, and the pipes heat the air. It is hot air you want; but what a roundabout way to get it. Why not do away with the pipes, the stokehole, the boiler, and put a stove in the house itself? There are difficulties in the way—sulphur is one: this can be obviated by feeding outside; drawing the ashes is another: this can be done by having the ash-door outside; dry heat is another: a large shallow evaporating-pan, kept at a level by a ball-tap and a cistern connected by a pipe, will remedy that. The stove is ugly; well, make it pretty—put a case on it, and make it beautiful for ever. Now, let boiler-makers look at that and look at this, and ask themselves if they have not got into a bad, stupid groove, and whether it is not possible to heat hothouses in a very much less costly method than the present system? *W. H. Lascelles*, 121, *Bunhill Row, E.C.*

Limekiln Heating.—For the information of Mr. Cowan, I may state that when engaged in making a limekiln of Weeks' tubular boilers I was a subordinate, consequently his remark on my failing with the tubulars goes for nothing; but I have still a vivid recollection of the trouble that was taken to make it answer. The course pursued was simply this: two of Weeks' large-sized tubulars were fixed side by side, each was filled with coal and chalk in layers, and when one had nearly burnt out the other was lighted; but it never paid for the trouble, and the heating, as may be supposed, was anything but satisfactory. *North Country.*

—— I send you an account of fuel consumed here in heating five ranges of early forcing-houses and one range of sheds during the three years 1876-77-78. Each of the five ranges is 100 feet long, and they are each divided into three compartments. They are used for cultivating Pines, Cucumbers, and Melons, stove plants, early Grapes, general forcing, and propagating. The sheds consist of Mushroom-house, potting-shed, seed-room, and fruit-room, all of which are heated. The amount of piping in use, including bottom-heats and mains, is equal to 5000 feet of 4-inch. The boilers (two of Weeks' upright No. 6 tubulars) are placed in a central position, and each boiler is worked every alternate week, and they are so fixed as to allow of a gradual rise in the main flowpipe into the lowest house. The flues are regularly cleaned after each week's work, and every two months the boilers are thoroughly flushed and cleansed from all sediment, by taking out the pads at the base. Neglect of this simple precaution is, I fear, the cause of nine-tenths of the failures which occur to horticultural boilers. To prevent furring by the lime, we use soft water in the apparatus here, and even from this we get a deposit of soot and dirt, which is washed from the roofs of the houses, and would soon prove destructive to any boiler if not removed.

Amount of Fuel Consumed.

1876.—64 tons 13 cwt. of culm coal, at 22*s.*	£71	7	9
,, 10 tons of chalk, digging and carting, at 1*s.* 6*d*	0	15	0
1877.—55 tons 17 cwt of culm, at 20*s.* .. ,, ..	55	17	0
,, 13 tons of chalk, at 1*s.* 6*d.*	1	7	0
1878.—61 tons 14 cwt. of culm, at 19*s.*	83	12	3
,, 20 tons of chalk, at 1*s.* 6*d.*	1	10	0
Total cost of fuel for three years ..	£189	9	0
Deduct value of lime burned and used in the garden, 168 qr., at 4*s* per quarter	33	12	0
Cost of fuel for three years	£155	17	0

—or for one year £51 19*s.* There being eighteen compartments, about 33 feet, by 12 feet wide, to heat, it costs exactly £2 17*s.* 8½*d.* per year to heat them, or 1¾*d.* per day. In giving these items, I am not so presumptuous as to think they show greater economy in heating than many others could show if they felt disposed, but my object is to induce others to state the amount of fuel they consume in a given time in heating a specified number of houses of a given area, for what purposes the houses are used, and the quantity of piping employed in heating them. Having failed to attain the object at which we aim, viz., "to prove which is the best boiler, and which the best system of heating," by freely airing our fancies and theories, perhaps this, the more practical method, may in a slight degree aid us in our endeavours to attain that object. That chalk can be used as fuel to advantage when it can be obtained near at hand there can be no doubt whatever, especially in the upright tubulars, where the fuel is directly under, inside, and in direct contact with every part of the boiler. I do not mean by this that any direct heat is obtained from the chalk, but when dry it absorbs and conserves the heat from the coal, which would otherwise pass into the flue; the greater portion of that heat is again liberated so gradually as to produce a long-enduring moderate heat. Had Mr. Cowan claimed for the limekiln system of heating somewhat less advantages, and had he suspended an upright tubular boiler therein, made to fit the kiln, I venture to think his system would not, even at the present time, be designated a failure by its opponents. We have just added to the present apparatus here 5000 extra feet of piping, to heat a range of late vineries and Peach-houses, which is worked by the same boiler very satisfactorily. If spared till the end of 1880 it will afford me great pleasure to again send you an account of the fuel consumed. *T. Challis, The Gardens, Wilton House.*

Foreign Correspondence.

ALONG THE DEDEMSVAART.—I have several times visited remarkable parts of the Netherlands, and long ago resolved on going to the province of Friesland, and stop at the Dedemsvaart, to have a look at the nurseries of one of the old pupils of the horticultural school of Ghent—Mr. A. M. C. Jongkindt Coninck. Besides, having promised to give a lecture on arboriculture at Zwolle and at Arnhem, I wished to avail myself of that opportunity of visiting Meppel Leeuwarden, Groningen, and Arfen, consequently I had to pass by the Dedemsvaart.

At the hour agreed upon my host met me at the station, and conducted me to his establishment. Unfortunately I was taken ill, and was obliged to return home immediately. I had scarcely time to make a few notes on the nurseries of Mr. Jongkindt Coninck, which, however, are so important, that I think it my duty to him to send you the following lines.

Dedemsvaart is the name of the second station after Zwolle on the railway towards Meppel. It is also the name of an immense district, which stretches for miles from that point. As is still to be seen, the country was a few years ago partially an arid desert, partially a marshy turf-field. But courageous, sagacious, and industrious men united themselves, in order to furnish the necessary capital to make a canal, hours and hours long, provided with several sluices, and serving not only to import turf and wood, to bring manure, &c., but also to make the country wholesome and habitable. At the head of that enterprise stood an active man, Baron van Dedem, one of the chief proprietors of that country. In his honour the canal is called Dedemsvaart, in English Dedem's Canal. But, as often occurs, that gigantic work required enormous sums of money, and in the beginning gave little or no rent, which caused the worthy man to lose a good deal of his fortune. However, people were not ungrateful towards him. His contemporaries erected a monument in his honour, which the passer-by respectfully salutes when he considers how many thousands of acres of unproductive land have been transformed into a beautiful, populous and industrious country by the Dedemsvaart (Dedem's Canal). From the station to Mr. Jongkindt Coninck's establishment, one and a-half hour's drive along the canal, a vigorous growth of trees, chiefly of Oaks, is to be seen; it is a pity they are so badly pruned. On both sides of the canal fields are being grubbed up; the cultivated ones already produce good crops. Further on people are digging turf, making small canals in connection with the large Dedemsvaart, and bringing the sand from those small canals over the peat in order to improve the soil. It is easily understood that the greatest activity shows itself everywhere. There are not only churches and schools, but also post and telegraph offices, shops, manufactories, and even one devoted to glasswork. Wharfs especially are very numerous; nearly all materials are transported by ships and boats. All the houses are neat, often very elegant, with nice gardens, in which especially Coniferæ and Rhododendrons do admirably well. Luxury is not known, still less misery.

At last we reached our destination. Mr. Jongkindt Coninck's nurseries comprise at present about 20 acres of excellent land. Convinced that his enterprise will extend, he made the necessary buildings, packing-sheds, propagating-house and frames, but before everything had the land thoroughly drained and trenched, which, of course, was very expensive. To insure a good drainage several narrow but deep ditches have been made; these divide the land into squares of about 50 metres long and 30 metres broad, each square being surrounded by hedges of Abies excelsa as a wind-break. This is a capital thing, generally practised in the Netherlands, but too often neglected in other countries. The soil has been trenched at a depth of 1 metre. This labour, already very expensive in ordinary circumstances, was still more so here, because the land was to be levelled, and the peat to be mixed with the sand from the ditches.

Of course, trenching being done in autumn, both peat and sand being exposed to the frosts during winter, excellent soil has been obtained, besides large quantities of manure have been used. All those heavy expenses and the extraordinary advertisement costs (few Continental nurserymen advertise so largely as Mr. Jongkindt Coninck) will give some idea of the sacrifices he had to make in a country where he is the only nurseryman, and where he has to help himself. I should not have been at all surprised had he been discouraged; however, at present he is pleased with what he has done, and has reason to be proud of it. It was very cold when I visited the said nurseries, but scarcely felt any wind because of the many hedges. The soil, a mixture of peat and sand, is in splendid condition, and very favourable to the growth of almost all sorts of plants. In winter nothing is to be feared from moisture, neither does dryness in summer do any harm. One is entirely master of the water, and able to keep the soil dry in winter and moist in summer. I will explain how such is possible. The nurseries, being surrounded at the south by the Dedemsvaart and at the north by a small river, the water level of which is from 1 to 1½ foot lower than that of the Dedemsvaart, floodgates have been made, by means of which the water level can be regulated as required. This of course is most important. Mr. Jongkindt Coninck chiefly grows perennials, rock plants, bulbs, flower roots, Coniferæ, fruit trees, Roses, hardy Rhododendrons, and Azaleas, Rose stocks, &c. All plants are grown by the thousand for wholesale, not for amateurs, and sold at very low prices. About 300,000 Rose stocks (Rosa multiflora de la Grifferaie and Rosa Manetti) are grown and offered at £1 per 1000. The department of fruit trees deserves special mention. There is a complete collection of these, as well as regards the varieties as the different forms. What also attracted my special notice is the large collection of rock plants, planted as in their native spots, on an artificial rockwork made by the proprietor himself. This rockwork, 33 metres long and 22 metres large, has been very naturally made. From the summit, 5½ feet high, a small cascade, making several windings and passing through a grotto, comes down into the surrounding water. The whole rockwork is planted with rock and alpine plants, which grow admirably well and give an excellent idea of what can be done with these lovely plants. Amongst other interesting things I must not forget to mention the winter carpet beds, of which I saw many beautiful specimens. Several rock plants, when planted by themselves, are easily passed by unperceived, because of their being so modest, at least one cannot imagine what effect they produce when planted together and well arranged according to the different colours. Especially in summer one is little aware how much the colours of a great many of these plants get altered in winter; of course the colours are always somewhat faded, but still sufficiently marked to produce a pleasant effect. Near Mr. Jongkindt Coninck's office I saw several of these winter carpet beds, really well made as concerns the form, the design, the symmetrical distribution of the plants, and the different colours. Can any one believe that at a time of the year (it was in the beginning of April) when, especially in that northern country, Nature was still sound asleep, where snow had scarcely disappeared and the soil was still frozen — can any one believe, I say, that already at a distance one is struck by the attractive colours of what at the first sight is thought to be a flower-bed? And still such was the impression which those beds of rock plants produced on me. A great many different plants are suitable for such carpet-beds, but care should be taken only to plant those which sufficiently vary one from another. In a great hurry I marked the following:—

White.—Antennaria tomentosa, Cerastium Biebersteinii, Sedum brevifolium, Stachys lanata, Veronica incana.

Greyish-White.—Sedum dasyphyllum, S. glaucum.

Grey.—Festuca glauca, Sempervivum chrysanthum, Thymus lanuginosus.

Yellow.—Lamium maculatum aureum, Sedum acre aureum, Stellaria graminea aurea.

Red.—Sedum pruinatum.

Reddish-Brown.—Ajuga reptans atro-purpurea, Sempervivum fimbriatum.

Green.—Saxifraga cæspitosa, S. muscoides, Sedum anglicum, S. lydium, Thymus montanus albus.

What variety! And such of plants which withstand any amount of frost, which require no other care than being replanted from time to time. Really one is inclined to use show plants in summer as well as in winter, instead of Alternanthera, Pyrethrum, Coleus, and other plants, which are only effective during three months. My opinion is that rock plants, which are so appropriate for all sorts of designs and edgings, because of their remaining so dwarf and having such characteristic colours in winter, deserve much more attention from a decorative point of view than they have hitherto received.

Whilst most nurserymen in the Netherlands who grow perennials have no frames, a large quantity of these are to be seen here. Mr. Jongkindt Coninck has visited good schools and excellent horticultural establishments in different countries, and very well understood that to grow plants well and in the shortest time possible, glass is indispensable. Besides, he had a propagating-house made, the hot-water apparatus of which also warms two long rows of frames, consequently these are always full of seed-pans, cuttings, grafts, repotted plants, &c.

Everywhere order shows itself, each square has its proper destination, and is as much as possible planted with plants of the same class; thus errors are easily avoided, work is much facilitated, and general inspection greatly simplified. In one word, the nurseries very much pleased me. Although a little out of the way, they greatly deserve to be seen, and may be considered a model of good organisation. The plants sold are cheap and good, their roots are so numerous that it is difficult to shake off the soil; last, not least, one is sure always to be heartily welcome. I experienced this, and present my sincere thanks to Mr. Jongkindt Coninck. *H. J. Van Hulle, Curator, Botanic Gardens, Ghent.*

BUFFALO, NEW YORK: *American Apples.*—In reading the article by "J. S.," in your paper of November 8 last, in his selection of the best Apples to plant I notice that he does not include any one of our four leading winter Apples—viz., Northern Spy, Baldwin, Spitzenberg, and Rhode Island Greening. They are strong growers, heavy croppers, and of the highest quality. They may have all been tried in Great Britain and found wanting in some particular, but I scarcely think they can have been, or they would stand high in the first dozen winter Apples. Our crops in this locality (Western New York), the greatest Apple-producing district in the United States, have been a great contrast to the sad accounts we get from England. Fine fall Apples have been sold at 30 cents per bushel; good winter Apples are now worth 75 cents per bushel. Potatos are plentiful and good, and worth 50 cents per bushel. In September we bought very fine Peaches at 1.50 dol. per bushel. I think there is nothing, among the many blessings of this country, more enjoyed and appreciated by the emigrant Britisher than the abundance of good wholesome fruit always within reach of the poorest family. *W. S., December* 11, 1879.

DEPARTMENT OF AGRICULTURE AND COMMERCE, N.-W. P. AND OUDH: *Nov.* 17, 1879.—The following is an account of Mango grafting practised with some successs as regards number of grafts and cheapness at Allahabad, N.-W. P., India, by the Superintendent of the Government Gardens. I shall be glad to learn whether there is any reason to believe that trees thus raised will be less hardy and fruitful than those which are raised from scions on three year old stocks—the usual practice. As there is a great saving in time and money in raising trees in the method proposed by the Superintendent, I shall be obliged by receiving your opinion, or that of any of your correspondents, on the subject. *E. C. Buck, C.S., Department of Agriculture, N.-W. P.*

"*Process of Grafting Mangoes on the Tree.*—The process by which this is accomplished is very simple. In the first place the seedling with seed attached thereto, when it is about 6 or 8 inches high and three weeks old, is carefully lifted with a small ball of earth. The roots, with the earth intact, are then wrapped up in a little grass, and the young seedling plant tied to the tender branch of the tree required to be grafted from, care being taken that the young seedling tree and the branch to be grafted should lie pointing in the same direction, and be of the same age, *i.e.*, both seedling and and graft should be of that year's growth. When grafted the joint should be covered with grafting clay to exclude the air.

"2. The roots of the seedlings, suspended as above described, when grafted must be kept moist by watering, either by hand or with a garden syringe, in case there be not sufficient rain.

"3. The process of grafting should be commenced in the beginning of the rainy season, as soon as the young Mango seedlings are procurable. The plant should be ready for cutting, *i.e.*, the graft should have taken well, within a month;* but I have succeeded in cutting them so soon as thirteen days after grafting, and the plants so removed are now in good growth in the nursery. In fact, plants thus grafted in this season are now growing strongly and ready for sale. The plants grafted in this way on young wood, where the junction is so complete, will, in all probability, be much stronger than those grafted on two or three years' old plants where, the wood being hard between the grafts, such a comple union is impossible, from which cause a great number of plants die or are broken down by the wind.

"4. The following is the actual cost incurred in raising 2000 grafted Mango trees by the above method:

	Rs.	a.	p.
To digging bed and sowing seed	1	0	0
,, lifting and tying up plants for grafting ..	4	4	0
,, grafting 2200 plants	5	0	0
,, Bhisti watering, one month	4	8	0
,, cutting and planting the young grafted trees in bed	2	8	0
,, twine for tying plants to trees	2	2	0
Total	Rs. 19	6	0

"Total say Rs. 20, equal to less than 2 pie per plant; add watering in the nursery for one year, Rs. 10; the plants when ready for sale would thus cost about 3 pie per plant. Plants raised at such a trifling cost, and in such numbers, and which promise to be so hardy, should soon take the place of the common seedling Mango trees on roadsides, canal banks, topes, &c."

GRAHAMSTOWN BOTANIC GARDEN, CAPE COLONY: *Foliage of Plants Injured by the Action of the Sun after Rain* (?).—During the last twenty years it has been my constant practice to disregard the generally received opinion on the above subject; and, with the exception of one family of plants—viz., the Gesnerworts—I do not scruple to water all over the foliage of any plant during the hottest sunshine, and to the best of my knowledge I never saw a leaf injured in consequence. We even treat small seedlings just breaking through the soil in this manner; in fact, there is no other way of keeping them alive, unless the beds are shaded, which is not possible at all times. I am so sure of the absence of danger in watering during the heat of the day, that all my seed customers are strongly advised to follow my own practice in this matter, and they do so with good results. Finally, on the principle that "Fools rush in," &c., I may state my opinion to the effect that although it is just possible that drops of water hanging in the foliage of plants may concentrate the rays of the sun in sufficient number to scorch any leaves placed in the exact focus of the said drops, it is not at all probable. By hottest sunshine I mean thermometer at from 130° to 140° in the sun.

Scale on Fruit Trees, &c.—The mixture described in the *Gardeners' Chronicle* of October 4 is strongly recommended by me for dressing all hard-leaved plants subject to scale, such as the Orange tribe, Camellias, Crotons, Aucubas, Gardenias, Myrtle and allies, Palms, also Conifers, some of which are much injured by scale—Araucaria excelsa, for instance. I trouble you again on this subject because the above heading is, to my mind, misleading. "Fruit trees" hardly include the above-named subjects. *E. Tidmarsh, Nov.* 27, 1879.

ROYAL HORTICULTURAL SOCIETY.

THE following are the names and addresses of the gentlemen elected by the Council to serve on the three committees during the present year:—

SCIENTIFIC COMMITTEE.

Chairman.—Sir J. D. Hooker, K.C.S.I., M.D., C.B., F.R.S., V.P.L.S., Royal Gardens, Kew.

Vice-Chairmen.—The Rev. M. J. Berkeley, M.A., F.R.S., Sibbertoft, Market Harborough; Maxwell T. Masters, M.D., F.R.S., Mount Avenue, Ealing, W.; Arthur Grote, F.L.S., 20, Cork Street, Burlington Gardens, W.

Secretary.—Samuel Jennings, F.L.S, 58, Granville Park, Blackheath.

Baker, J. G., F.R.S., Royal Herbarium, Kew.
Bennett, Alfred W., M.A, B.Sc., F.L.S., 6, Park Village East, N.W.
Blenkins, George E., 9, Warwick Square, S.W.
Boscawen, Hon. and Rev. J. Townshend, Lamorran, Probus, Cornwall.
Church, A. H., F.C.S., Royston House, Kew.
Clarke, Colonel R. Trevor, Welton Place, Daventry.
Cooke, M. C., Ph.D., 2, Grosvenor Villas, Junction Road, N.
Crewe, Rev. H. Harpur, Drayton Beauchamp Rectory, Tring.
Denny, John, M.D., Stoke Newington, N.
Dyer, W. T. Thiselton, M.A., B.Sc., F.L.S., Royal Gardens, Kew.
Edgeworth, M. P., F.L.S., 6, Norham Gardens, Oxford.
Gilbert, J. H., Ph.D., F.R.S., Harpenden, St. Albans.
Hemsley, W. B., A.L.S., 2, Woodland Cottages, Gunnersbury.
Henslow, Rev. G., F.L.S., 6, Tichfield Terrace, Regent's Park, N.W.
Hogg, Robert, LL.D., F.L.S., 99, St. George's Road, Pimlico, S.W.
Joad, George Curling, F.L.S., Oakfield, Wimbledon Park, S.W.
Maw, George, F.L S., Benthall Hall, near Broseley.
McLachlan, R., F.R.S., Limes Grove, Lewisham.
Moore, F., F.Z.S., 110, Oakfield Road, Penge, Surrey.
Renny, J., 106, Warwick Street, Pimlico, S.W.
Scofield, W. J., M.R.C.S., 13, South Hill Park Gardens, Hampstead, N.W.
Smith, Worthington G., F.L.S., 125, Grosvenor Road, Canonbury, N.
Webb, Sydney, Redstone Manor House, Redhill.
Wilson, Geo. F., F.R.S., Heatherbank, Weybridge Heath.

FRUIT COMMITTEE.

Chairman.—Henry Webb, Redstone Manor House, Redhill.

Vice-Chairmen.—John Lee, Royal Vineyard Nursery, Hammersmith, W.; Philip Crowley, Waddon House, Croydon; William Paul, F.L.S, Waltham Cross, N.

Secretary.—Archibald F. Barron, Royal Horticultural Society, Chiswick, W.

Badger, E. W., Mostyn Villa, Mosely, Birmingham.
Beale, E. J., F.L.S., Stoneydeep House, Teddington Grove, S.W.
Berkeley, Rev. M. J., F.R.S., Sibbertoft, Market Harborough.
Bunyard, George, The Nurseries, Maidstone.
Cox, John, Redleaf, Penshurst, Kent.
Dancer, F. N., Chiswick.
Gardiner, William, The Gardens, Eatington Park, Stratford-on-Avon.
Haycock, Charles, The Gardens, Barham Court, Maidstone.
Hogg, Robert, LL.D., F.L.S., 99, St. George's Road, Pimlico, S. W.
Killick, Lewis A., Mount Pleasant, Maidstone.
McKinlay, Peter, Headley Lodge, Croydon Road, Penge, S.E.
Miles, G. T., The Gardens, Wycombe Abbey, High Wycombe.
Nutting, W. J., 60, Barbican, E.C.
Osborn, Robert, Fulham, S.W.
Sage, George, The Gardens, Ashridge Park, Berkhamstead.
Silverlock, Charles, 412, Strand, W.C.
Smith, J., The Gardens, Mentmore, Leighton Buzzard.
Smith, W. Baxter, 3, Broadlands, S. Northwood.
Stevens, Zadok, The Gardens, Trentham Hall, Stoke-on-Trent.
Veitch, H. J., F.L.S., Royal Exotic Nursery, Chelsea, S.W.
Weir, Harrison, Weirleigh, Brenchley, Staplehurst.
West, James Firth, Lynmouth Lodge, Reigate.
Wildsmith, W., The Gardens, Heckfield Place, Winchfield.
Wood, Charles, Woodlands Nursery, Maresfield, Uckfield.
Woodbridge, John, The Gardens, Syon House, Brentford, W.

FLORAL COMMITTEE.

Chairman.—John Denny, M.D., Stoke Newington, N.

Vice-Chairmen.—Charles Noble, Bagshot, Surrey; James McIntosh, Duneevan, Weybridge; W. B. Kellock, F.L.S., Stamford Hill, N.

Secretary.—Archibald F. Barron, Royal Horticultural Society, Chiswick, W.

Baines, Thomas, Avenue Road, Southgate, N.
Baker, George, Coombe Cottage, Kingston-on-Thames.
Barr, Peter, 12, King Street, Covent Garden, W.C.
Bennett, H., Manor Farm Nursery, Stapleford, Salisbury.
Bethell, George, The Gardens, Nonsuch Park, Cheam.
Bull, William, F.L.S., &c., King's Road, Chelsea, S.W.
Cannell, Henry, Swanley.
Crewe, Rev. H. Harpur, Drayton Beauchamp Rectory, Tring.
Cutbush, James, Highgate, N.
Denning, William, The Gardens, Londesborough Lodge, Norbiton, Surrey.
D'Ombrain, Rev. H. Honywood, Westwell Vicarage, Ashford, Kent.
Douglas, J., The Gardens, Loxford Hall, Ilford, E.
Elwes, H. J., F.L.S., F.Z.S., Preston, Cirencester.
Fellowes, Rev. E. L., Wimpole Rectory, Royston.
Fraser, John, Lea Bridge Road Nursery, Leyton.
Green, Charles, The Gardens, Pendell Court, Bletchingly.
Hudson, James, The Gardens, Gunnersbury House, Acton.
James, J., The Redlees Gardens, Isleworth.
King, James, Gardener to G. Simpson, Esq., Wray Park, Reigate.
Kinghorn, F. R., Sheen Nursery, Richmond, Surrey.
Lee, Charles, Royal Vineyard Nursery, Hammersmith.
Llewelyn, J. T. D., F.L.S., Ynisygerwn, Neath, Glamorganshire.
Little, Henry, Hillingdon Place, Hillingdon, near Uxbridge.
Mayor, H. K., Bamford Lodge Winchmore Hill, N.
McIntyre, A., Victoria Park, Hackney, E.
Moore, Thos., F.L.S., Botanic Gardens, Chelsea, S.W.
Paul, George, Cheshunt, Herts.
Roger, Alexander, Era House, Surrey Lane, Battersea, S.W.
Smith, F. T., The Nurseries, Dulwich, S.E.
Smith, G., New Villa, Hedge Lane, Edmonton.
Smith, Geo., Tollington Nursery, Hornsey Road, N.
Turner, Harry, Royal Nursery, Slough.
Veitch, Arthur, Royal Exotic Nursery, King's Road, Chelsea.
Williams, Henry, Victoria Nursery, Upper Holloway, N.
Wills, John, Onslow Crescent, Onslow Square, S.W.
Wilson, Geo. F., F.R.S., Heatherbank, Weybridge Heath.

* The graft should be partly secured at first, and completely severed a few days afterwards.

Reports of Societies.

Scottish Horticultural Association. — The usual monthly meeting of this Association was held on Tuesday, the 6th inst., at 5, St. Andrew Square, Edinburgh, Mr. Dunn, Dalkeith Gardens, presiding. Mr. George Robertson, Mordington Gardens, Berwick-on-Tweed, read a paper on herbaceous plants, his object being to enlist the sympathies of members in their behalf as substitutes for the more transitory and often disappointing tender plants that now occupy our flower gardens. No gardener could forget the anxiety and labour expended on the tender occupants of the flower-beds last summer, and the poor results secured by his painstaking. The points which he paid particular attention to in the cultivation of these, were their propagation, the preparation of the soil, and the production and arrangement of colour. He gave a description of his mode of planting so as to produce a constant succession of flowers from March to November. Some discussion ensued, and a hearty vote of thanks was given to Mr. Robertson for his paper.

Mr. P. W. Fairgrieve, gr. to the Dowager Duchess of Athole, Dunkeld Gardens, afterwards read a thoroughly instructive practical paper on "The Culture of Hardy Stoned Fruits," the result of his own experience in the Highlands. After some preliminary remarks as to the interesting character of fruit culture, he gave an idea of the situation of Dunkeld Gardens. They were situated on a delightful slope, and the ground was well sheltered on every side. The gardens were, he believed, formed by His Grace John, fourth Duke of Athole, well known to horticulturists as "the planting Duke." They stood about 176 feet above the sea level at the lowermost and about 244 feet at the uppermost part. His Grace must have had an eye to fruit-growing, if they judged from the positions of the walls and the various aspects thereby gained. He exhibited a plan of the gardens to illustrate what he said, and observed that the Duke must have had as good an idea of the science of horticulture as they had now. The soil was of light loam, with a gravelly subsoil, which he thought, with a little assistance, suited the cultivation of stoned fruit admirably. Selection of the fruit to be grown was a very important matter, and he thought was too little practised as a branch of fruit-growing. Judicious selection must always hold a paramount place to having a large number of varieties. He then gave a few general hints as to the rearing of Peaches, Apricots, Nectarines, and Plums. He named a few of the varieties of each of these fruits which he thought were the best and most remunerative for growing. Among the varieties of Peaches which he mentioned were the Early York, which was a good Peach, of capital colour and flavour; the Early Alfred was a fine variety, with beautiful flesh. Hale's Early was also an excellent new variety. Among the Nectarines he specially mentioned the Balgowan and the Pineapple. Apricots required a stiffer soil. Of the Plum there were a great many varieties, but he thought most of the Kirke's Seedling. He concluded by laying great stress on the importance to fruit-growers of keeping the trees clean. The trees ought to be syringed at least twice during the season, and for this purpose he used a liquid of his own for exterminating vermin. He also called attention to the mode he had of protecting his out-of-door trees from frost by the exhibition of a model framework, which was covered with Frigi Domo, and which could be drawn up like a blind when necessary. He said he had found it very effective, that it cost about 1*s.* per superficial yard, and would protect the borders with early vegetables also. Mr. Fairgrieve received the thanks of the meeting for his paper.

The following subjects were exhibited :—From Mr. A. M'Millan, Broadmeadows, twenty varieties of Chrysanthemums, sixteen of Cinerarias, sixteen of single Zonal Pelargonium trusses, sixteen of double Zonal Pelargonium trusses, and one Carnation bloom —Souvenir de la Malmaison; from Messrs. Downie & Laird, two trusses of Rhododendron—Princess Alexandra and Jasminiflora; from Mr. John Forbes, Hawick, Calceolaria deflexa in flower; from Mr. Laurence Dow, Saughtonhall, a bloom of Lasiandra macrantha; from Dr. Paterson, Bridge of Allan, the original white variety of Odontoglossum Alexandræ, which was very much admired; and from Messrs. Todd & Co., West Maitland Street, a table bouquet, consisting of Roses, Lily of the Valley, and Maidenhair Ferns.

Obituary.

WE have to record the death of Mr. THOMAS STANSFIELD, of Tanshelf Nursery, Pontefract, which took place on December 30. Mr. T. Stansfield—Tom Stansfield as he was familiarly called amongst his friends—was well known as a member of the firm of A. Stansfield & Sons, of Todmorden, one of the nursery establishments in which the cultivation of British and exotic Ferns was taken up many years ago in good earnest, and which has always since maintained a good reputation for cultivating an extensive collection, with a trustworthy nomenclature. The Stansfields, father and sons, were, indeed, not merely cultivators of Ferns, they were collectors also; and for the knowledge of many novel additions of great interest and beauty to our Fern lists we are indebted to them. They were moreover raisers of Fern novelties, and for several interesting and ornamental hybrid forms we have to thank them. In all this work our deceased friend was for many years intimately mixed up. So great was his knowledge of these plants, so wide-spread his acquaintance with Fern lovers, and so genial his disposition, that many members of the fraternity of British pteridologists will deeply regret to learn that his smiling cheerful countenance will no more be seen amongst his favourite plants, of which he has generally kept a good illustrative collection before the public at the principal exhibitions held in that part of the country. Mr. T. Stansfield had attained the age of fifty-three years, and was interred at Christ Church, Todmorden, on Saturday last.

—— We also note the death, on December 20, of Mr. JOHN GRIER, of Ambleside, Westmoreland, a well-known nurseryman in the Lake district, where he had carried on business for many years.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JANUARY 7, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
	In	In.	°	°	°	°	°	°	°		In.
Jan. 1	29.82	0.00	54.5	48.9	5.6	52.0	+ 14.8	47.6	85	S.W.	0.09
2	30.01	+0.22	50.9	41.0	9.9	46.3	+ 9.4	39.9	79	WSW : W.	0.00
3	30.30	+0.53	46.9	36.7	10.2	42.0	+ 5.1	37.5	85	WSW	0.00
4	30.30	+0.54	43.8	33.0	10.8	38.6	+ 1.9	35.1	88	S.W.	0.00
5	30.33	+0.58	41.3	31.5	9.8	36.8	+ 0.3	34.5	92	S.S.E. : S.S.W.	0.00
6	30.43	+0.68	36.4	31.0	5.4	33.9	— 2.5	29.2	83	S.E. : SSW : S.S.E.	0.00
7	30.48	+0.74	38.1	31.3	6.8	34.8	— 1.5	33.0	94	S.E. : E.S.E.	0.00
Mean	30.24	+0.47	44.6	36.2	8.4	40.6	+ 3.9	36.7	87	S.W. : S.E.	sum 0.09

Jan. 1.—A dull overcast day. Very mild. Strong wind. Rain fell before 9 A.M.
— 2.—A fine bright day. Mild. Colder at night. Gale in early morning. Few drops of rain at 9 A.M.
— 3.—A very fine day. Pleasant. Little colder.
— 4.—A very fine bright day. Clear. Colder. Cloudy at night.
— 5.—A fine day. Much colder. Some fog in morning.
— 6.—Overcast, dull, and cold throughout.
— 7.—A very dull overcast day. Cold. Thin mizzling rain at night.

LONDON : *Barometer.*—During the week ending Saturday, Jan. 3, 1880, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.27 inches at the beginning of the week to 29.64 inches by the afternoon of December 30; increased to 29.78 inches by the morning of the last day of the year, decreased to 29.67 inches by the afternoon of the same day, and increased to 30.50 inches by the end of the week. The mean reading for the week at sea level was 30.02 inches, being 0.50 inch below that of the preceding week, and the same as the average.

Temperature.—The highest temperatures of the air observed by day varied from 54½° on January 1, and 52° both on December 28 and 31, to 44° on December 30; the mean value for the week was 50¼°. The lowest temperatures of the air observed by night varied from 32½° on December 31 to 49° on January 1; the mean value for the week was 38¾°. The mean daily range of temperature in the week was 11½°; the greatest range in the day being 19½°, on December 31, and the least 5½°, on January 1.

The mean daily temperatures of the air and the departures from their respective averages were as follows :—Dec. 28, 46°.3, + 8°.8; 29th, 44°.9, + 7°.5; 30th, 39°.4, + 1°.8; 31st, 44°.2, + 7°; Jan. 1, 52°, + 14°.8; 2d, 46°.3, + 9°.4; 3d, 42°, + 5°.1. The mean temperature of the air for the week was 45°, being 7°.8 above the average of sixty years' observations, and 4° higher than the value for the corresponding week in 1879.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 72° on December 29, 67° on January 3, and 65° on January 2; on the remaining days the highest readings were between 50° and 55°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 30° on December 31, and 30½° on the 30th. The mean of the seven lowest readings was 35°.

Wind.—The direction of the wind was W.S.W. and S.W., and its strength strong. The weather during the week was generally fine, though occasionally dull and very mild; the thaw which set in on December 28 continued throughout the week. A *thunderstorm*, accompanied by hail and rain, occurred at 1 P.M. on Tuesday, December 30.

Rain fell on four days during the week; the amount measured was 0.51 inch.

ENGLAND : *Temperature.*—During the week ending Saturday, January 3, 1880, the highest temperatures of the air observed by day were above 55° at Bristol, Cambridge, Norwich, Nottingham, and Sunderland, and below 50° at Brighton; the mean value from all stations was 54½°. The lowest temperatures of the air observed by night were below 32° at Cambridge, Norwich, Wolverhampton, Nottingham, and Bradford; and above 35° at Plymouth and Leeds. The mean from all stations was 32½°. The extreme range of temperature in the week was above 26° at Cambridge and Nottingham, and below 16° at Plymouth and Brighton; the mean range of temperature in the week from all stations was 22°.

The mean of the seven high day temperatures was above 51° at Truro, Plymouth, Cambridge, and Nottingham, and below 49° at Brighton and Hull; the mean value from all places was 50¼°. The mean of the seven low night temperatures was below 39° at Brighton, Blackheath (London), Wolverhampton, Nottingham, Hull, Bradford, and Sunderland, and above 43° at Truro and Plymouth; the general mean from all stations was 39¼°. The mean daily range of temperature in the week was above 12° at Wolverhampton, Nottingham, and Sunderland, and below 10° at Truro, Plymouth, Bristol, and Sheffield; the mean daily range of temperature from all places was 11°.

The mean temperature of the air for the week from all stations was 44¾°, being 5¼° higher than the value for the corresponding week in 1879. The mean temperature of the air was above 47° at Truro and Plymouth; and below 44° at Brighton, Wolverhampton, Hull, Bradford, and Sunderland.

Rain.—Rain fell on every day in the week at Bristol and Bradford, and on five or six days at most other places. The heaviest falls were 1.82 inch at Bradford, and 1.69 inch at Sheffield; and the least falls were 0.13 inch at Cambridge, and 0.33 inch at Norwich; the average fall over the country was three-quarters of an inch.

The weather during the week was somewhat fine, though the sky was generally cloudy, and frequent rain fell. The thaw which set in on Sunday, December 28, continued throughout the week; the weather was very mild.

Thunderstorms were pretty general over the country on Tuesday, December 30.

SCOTLAND : *Temperature.* — During the week ending Saturday, January 3, 1880, the highest temperatures of the air observed by day varied from 57° at Perth, and 56¼° at Leith, to 54¾° at Edinburgh and Greenock; the mean value from all places was 55½°. The lowest temperatures of the air observed by night varied from 29° at Perth to 34¾° at Leith; the mean from all stations was 32¼°. The mean range of temperature in the week from all places was 23¼°.

The mean temperature of the air for the week from all stations was 42½°, being 8° higher than the value for the corresponding week in 1879. The mean temperature was the highest at Leith, 45¼°, and the lowest at Dundee, 41½°.

Rain.—The amount of rain measured at Greenock was 3.85 inches, and at Perth 2.58 inches, whilst at Aberdeen the amount was 0.53 inch only; the average fall over the country was 1.69 inch.

DUBLIN.—The highest temperature of the air was 56¼°, the lowest 33°, the extreme range 23¼°, the mean 45¾°, and the fall of rain 0.93 inch.

JAMES GLAISHER, F.R.S.

Variorum.

HYOPHORBE VERSCHAFFELTI (Wendl., in *Ill. Hort.*, tt. 462, 463).—A Palm spread over the whole island (Rodriguez), but never occurring on the coralline limestone. It is of a very striking appearance by reason of the bulging which takes place in the stem towards the middle, the stem on both sides of the swelling decreasing in size. If the tree be lofty there may be a second ventricosity. But the tree seems rarely to attain an altitude above 20 feet to 25 feet. The external hard part of the stem is very thin, not more than 1 inch thick, and within it is a soft succulent mass of cellular tissue and fibro-vascular bundles. The juice from this tree is said by the inhabitants not only to be unwholesome, but even poisonous, causing, if taken in small quantities, severe emesis. The leaves have an exceedingly plumose appearance, and with their yellow stripe beneath are very picturesque. The parts of the tree are put to no use. Hyophorbe, to which the species belongs, is a Mascarene genus represented by only three species. Of these, the one here mentioned is endemic in Rodriguez. H. amaricaulis, Martius, *Hist. Palm.* iii. 309, formerly cultivated in Europe under the name Areca speciosa, is a second species endemic in Round Island, about six miles from Mauritius. This, from its habit, is not unfrequently termed in Mauritius the "Bottle Palm," and hence it has for long been confounded with the Chilian Bottle Palm, Jubæa spectabilis, with which, however, it has no connection. The Rodriguez Palm, I should have said, has also been confounded with Jubæa. The Round Island Palm is very distinct from the Rodriguez plant. The third species is the most delicate. Originally described as Hyophorbe indica, by Gärtn., *de Fruct.* ii. 186, the name, H. Commersoniana, was substituted by Martius, *Hist. Palm.* iii. 164. There seems, however, no sufficient ground for the alteration. BORY St. Vincent, *Voy.* ii. 296, mentions and describes this Palm as Areca lutescens, under which name it is frequently and most commonly met with in gardens. The species has a wider distribution than the others, occurring in both Mauritius and Bourbon. It is in these islands confined to the shady parts of the woods and valleys, and is now extremely rare. It differs in habit from the other species in having a slender tapering stem, not dilated, and with no ventricosities. Dictyosperma album, Wendl., in *Linnæa*, xxxix. 181, var. aureum; Areca alba, Bory, *Voy.* i. 306. This palm is very abundant in Rodriguez, growing freely both on the volcanic soil and on the coralline limestone. It has for many years been cultivated in the gardens of Europe as Areca aurea. This is a very variable plant, and by reason of this several garden names have been given to its forms under cultivation. Thus we have Dictyosperma furfuraceum, D. rubrum, and D. aureum. These are, however, all varieties of the one Palm, Dictyospermum album, Wendl., and the last-mentioned is that form which occurs in Rodriguez. *J. Bayley Balfour, on the Botany of Rodriguez.*

VERTICAL AND HORIZONTAL LEAVES.—Grisebach, in his account of the vegetation of Australia,* dwells on the close relation of interdependence which exists between the tree vegetation and the coating of grass which covers the ground beneath it, and remarks that the amount of light allowed by the trees to reach the ground beneath them is rendered more than usually great by the vertical position in which their leaves grow. Hence the growth of the grass beneath is aided. It may be that this permitting of the growth of other plants beneath them, and consequent protection of the soil from losing its moisture, besides other advantages to be derived, is the principal reason why, as is familiarly known, two widely different groups of Australian trees, the Eucalypti and Acacias, have arrived at a vertical instead of a horizontal disposition of their leaves by two different methods. The Acacias have accomplished this by suppressing the true horizontal leaves, and flattening the leaf-stalks into vertical pseudo-leaves, or "phyllodes." The Gum trees, on the other hand, have simply twisted their leaf-stalks, and have thus rendered their true leaves vertical in position. There must exist some material advantages which these different trees derive in common from this peculiar arrangement, and the benefit derived from relation to other plants by this means may be greater and more important than that arising from the fact that the vertical leaves have a like relation to the light on both sides, and are provided with stomata on both faces. In support of this conclusion I was told when at Melbourne that when the native vegetation was cleared away from under Gum trees they ceased to thrive, and in time perished. I was shown a number of Gum trees not far from the city, scattered over some public land, covered with only short turf, which seemed to be mostly in a dying condition. *Notes of a Naturalist on the "Challenger," by H. N. Moseley.*

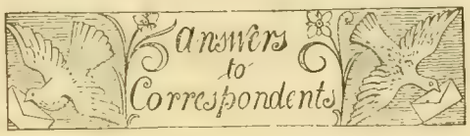
* A. Grisebach, *Vegetation der Erde*, p. 216. Leipzig: W. Engelman, 1872.

Enquiries.

He that questioneth much shall learn much.—BACON.

GREENING OF ARTIFICIAL LAKE.—I have a small artificial lake, cemented at the bottom and sides, about 20 yards long by 10 broad, in the middle of wh ch is a fountain supplied from the main. There is an outlet for the water near the ground, but I am compelled—especially in the summer—to clean and paint it all over about every two or three weeks, owing to the whole bottom and sides becoming so green with some short vegetable growth. Will any of your correspondents tell me how I can prevent this forming? *Water Lily.*

WHITE AZALEAS.—If any of your readers know of any better white Azaleas for the cut flower and marketing trade than A. Fielderi, I should be much obliged if they would give me their names. *W. T. S.*



APPLE TREES DYING: *W. P.* Your Apple twigs are not affected with American Blight, but there is the spawn of a Fungus on them—of what species cannot be ascertained without fruit. *M. J. B.*

BAROMETRICAL TABLES (see p. 24): If "R. R." will send thirteen stamps to Mr. H. West, 73, Upper Kennington Lane, S.E., he will receive a book of barometrical tables for one year, which will answer his purpose exactly. The linear system is, of course, preferable to that recommended. *H. King, Captain R.N.*—"R. R." should apply to Mr. G. J. Symons, 62, Camden Square, N.W.; or to Mr. Stanford, of Charing Cross, who supply Meteorological Registers for one year in stiff covers at 2*s.*, ruled for two observations daily for barometer, thermometer, wind, rain, &c., with the opposite page blank for observations. Diagram sheets can also be had for barometrical, thermometrical. &c.. readings. *J. E.. North Wales.*

BOOKS: *C. W.* 1, Thompson's *Gardeners' Assistant*, 35*s.* (Blackie & Co.); 2, *The Farmers' Calendar*, 15*s.* (Warne & Co.); 3, tastes differ. Ask your publisher to advise you.—*J. F.* Baltet's *The Art of Budding and Grafting*, published at the *Garden* office, Southampton Street, Strand, W.C.

CATALOGUE: *Troublesome.* Perhaps it was Biddle's, of Loughborough, Leicestershire.

CLIMBERS FOR VERANDAH: *J. B. J.* Jasminum officinale, or J. revolutum; Clematis lanuginosa and lanuginosa nivea, Bignonia capreolata, or some of the finely coloured varieties of Pyrus japonica.

CYPRIPEDIUM MAULEI: *J. Cocker & Sons.* Cypripedium Maulei is a variety of C. insigne, but superior to the type. It has a much larger proportion of white on the back sepal, and the spotting on the white portion is purple.

FUNGUS: *O. M. B., Isle of Wight.* Your fungus is one of the Starry Puffballs, probably Geaster fimbriatus—*i.e.*, if the mouth, A, is finely fimbriated, like the folds of a minute fan.

KAINIT AND WOOL MANURE: *Jardinier.* Kainit is a sulphate of potash mixed with other salts, and costs about £4 a ton. It would be a good manure for Vines. Wool manure would be very useful as a slowly acting nitrogenous manure—like shoddy. We do not know the price. Any dealer in artificial manure would supply your requirements.

MUSHROOMS: *C. S., Hemel Hempstead.* We have frequently seen Mushrooms and other Agarics in a similar condition with those sent by you—viz., bloated stems and no tops, or with tops so distorted as to be unrecognisable as such, the Fungi being in shape like irregular massive clubs. We believe the distortion is caused by frost whilst the plants are making growth. The specimens may be wholesome, though far too ugly and suspicious-looking for the table. They probably differ in edibility, the same as Potatos and some other esculents differ after frost either for good or bad.

NAMES OF PLANTS: *J. B. J.* Cotoneaster Simonsii. —*A. J. Maule.* Sarcanthus pallidus.

RESPONSIBILITY FOR DAMAGING A BOILER. *J. S.* does not say whether C was the agent of A, or whether B simply followed his advice. At any rate B was rather simple to light a fire before seeing whether there was water in the boiler. Such simplicity makes B morally responsible, if not legally.

SEEDS: *D. M. G.* We cannot answer either of your questions. Write to the growers direct.

THE WOODLOUSE: *M.* The female insects (myriapods) carry their eggs in a pouch, where they are hatched. The young resemble their parent, except in being very small, more clumsy in make, and in wanting one of the seven pairs of legs of the adult insect. They cast their skins, their transformations resembling those of the cockroach. *I. O. W.*

VINE ROOTS: *Troublesome.* The roots are dead, but in the absence of any information as to the treatment they have received, we cannot suggest the cause. You should encourage them to root nearer the surface by replacing as much as you can of the present soil with a fresh compost.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—Messrs. Thos. Methven & Sons (15, Princes Street, Edinburgh), Catalogue of Garden, Flower, and Agricultural Seeds, &c.; also Select Descriptive List of Gladioli.—Messrs. C. Daly & Son (13 and 15, Bridge Street, Coleraine), Catalogue of Roses; also General Catalogue of Forest and Fruit Trees, Shrubs, Herbaceous Plants, &c.—Messrs. James Dickson & Sons (108, Eastgate Street, Chester), Catalogue of Seeds, Potatos, Tools, &c.—Messrs. Samuel Finney & Co. (35, Mosley Street, Newcastle-upon-Tyne), Catalogue of Vegetable and Flower Seeds.—Messrs. Ireland & Thomson (20, Waterloo Place, Edinburgh), Catalogue of Vegetable and Flower Seeds, Gladioli, &c.—Messrs. Daniels Brothers (Norwich), Illustrated Descriptive Catalogue and Amateurs' Guide.

COMMUNICATIONS RECEIVED.—Troublesome (thanks for the seed).—J. Laing & Co.—T. King.—J. H. C.—C. & S.—J. Veitch & Sons.—H. L.—W. L.—M. B. A.—R.—Douglas & Sons.—Florist.—T. B.—F. W. B.—R. D.—E. G. H.—One who has seen a thing or two.—J. R. J.—N. E. Br.—M. J. B. —J. G.—J. M.—J. v. V. (with thanks).—R. J.—M. H.—J. P.—J. J.—S. H.—T. W.

Markets.

COVENT GARDEN, January 8.

Trade somewhat improving, with a better demand for high-class goods, while inferior samples meet with little encouragement. American Apples and St. Michael Pines are still arriving in large quantities, the former in rather better condition. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve ..	2 0– 6 0	Lemons, per 100 ..	3 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100 ..	6 0–12 0
Cob Nuts, per lb. ..	1 0– ..	Pears, per dozen ..	3 6– 6 0
Grapes, per lb. ..	1 6– 6 0	Pine-apples, per lb.	2 0– 3 0
— Muscat, per lb...	3 6– 8 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0– 7 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle ..	1 0– ..	Lettuces, Cabbage, per doz.	1 6– ..
— French, per bun.	7 0– ..	Mint, green, bunch..	2 0– ..
Beet, per doz. ..	1 0– 2 0	Onions, new, p. bun.	0 6– ..
Brussels Sprouts, lb.	0 6– ..	Parsley, per bunch..	0 6– ..
Cabbages, per doz. ..	1 0– 2 0	Peas, per lb. ..	1 0– ..
Carrots, per bunch..	0 8– ..	Potatos (new), per lb.	0 9– 2 0
— New Fr., p. bun.	1 0– ..	Rhubarb (Leeds), per bundle	0 9– ..
Cauliflowers, per doz.	2 0– 5 0	Seakale, per punnet	3 0– ..
Celery, per bundle ..	1 6– 2 0	Shallots, per lb. ..	0 6– ..
Chilis, per 100 ..	3 0– ..	Spinach, per bushel	5 0– 6 0
Cucumbers, each ..	1 6– 2 6	Tomatos, per dozen	3 0– ..
Endive, per score ..	1 6– ..	Turnips, new, bunch.	0 6– ..
Garlic, per lb. ..	0 6– ..		
Herbs, per bunch ..	0 2– 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 150*s.*; and Champions, 130*s.* to 150*s.* per ton. The large supplies received from Germany are making from 4*s.* to 7*s.* per bag.

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 0	Lily of Val., 12 spr.	3 0– 9 0
Arum Lilies, p. doz.	9 0–18 0	Mignonette, 12 bun.	6 0– 9 0
Azalea, 12 sprays ..	1 6– 4 0	Narcissus, Paper-white, 12 spikes ..	2 6– 6 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	1 0– 2 0
Camellias, per doz...	4 0–18 0	— zonal, 12 sprays	0 9– 2 0
Carnations, per dozen	1 0– 3 0	Poinsettia, 12 blms...	6 0–12 0
Chrysanthem., large flowers, per doz...	1 6– 6 0	Primula, double, per bunch	1 6– 3 0
— per doz. bundles	12 0–24 0	— single, per bunch	0 6– 1 6
Cyclamen, 12 blms..	0 4– 1 6	Roses (indoor), doz.	2 0– 9 0
Epiphyllum, 12 blms.	1 0– 3 0	Spiræa, 12 sprays ..	3 0– 6 0
Eucharis, per doz. ..	6 0–18 0	Tropæolum, 12 bun.	1 0– 3 0
Gardenias, 12 blms..	9 0–24 0	Tuberoses, per dozen	4 0– 6 0
Heliotropes, 12 sp. ..	0 6– 1 0	Violets, per bunch ..	6 0– 9 0
Hyacinths, Roman, 12 spikes	1 6– 4 0	White Lilac, Fr., per bundle	10 0–15 0

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	24 0–36 0	Ferns, in var., doz.	4 0–18 0
Azaleas, per dozen	30 0–60 0	Ficus elastica, each	2 6–15 0
Begonias, per doz.	6 0–18 0	Foliage Plants, various, each	2 0–10 6
Bouvardias, per doz.	12 0–24 0	Fuchsias, per dozen	6 0–18 0
Chrysanthemums, p. dozen	9 0–30 0	Hyacinths, per doz.	10 0–18 0
Cinerarias, per doz.	12 0–18 0	Myrtles, per doz.	6 0–12 0
Cyclamen, per dozen	12 0–30 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	4 0– 9 0
Dracæna terminalis	30 0–60 0	Poinsettia, per dozen	12 0–24 0
— viridis, per doz.	18 0–24 0	Primula, single, per dozen	6 0–12 0
Erica gracilis, per dozen	9 0–18 0	Solanum, per dozen	9 0–24 0
— hyemalis, p. doz.	12 0–30 0	Tulips, 12 pots	9 0–15 0
Euonymus, various, per dozen	6 0–18 0		

SEEDS.

LONDON: *Jan. 7.*—Increased activity is now seen on the seed market, and on all sides there is more disposition for business. Fine parcels of yearling English red Clover are exceedingly scarce. One parcel realised this week on Mark Lane £5 per cwt. Not a single new sample has yet come to market. Of American seed the arrivals into London continue on a surprisingly moderate scale. For choice Trefoil high prices are obtained. In white Clover the late advance is well maintained. Timothy is in very short supply. A good business is passing in Italian Rye-grass, and rates are steadily advancing: to-day's quotation is 7*s.* per bale above that ruling a month ago. The available stocks in France and also here are at an unusually low ebb. The trade for Canary seed is inactive; Hemp and Millet seed are both about 1*s.* per quarter higher. Boiling Peas move off slowly on former terms. No change in Linseed, Haricots, or Lentils. Spring Tares meet a greatly improved inquiry. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday was much in the same state as last reported. Holders of Wheat demanded full prices, and a small business was concluded. The paucity of business, however, made it a difficult matter to maintain quotations. Barley was dull, and prices as regards feeding qualities were rather easier. Malt was quiet and unaltered. For Oats quotations gave way to a slight extent. Maize was from 6*d.* to 1*s.* per quarter cheaper on the week. For Beans and Peas prices were unchanged. Flour was in full supply, and the turn easier.—On Wednesday trade was quiet, Wheat, both English and foreign, sold slowly at late rates. With regard to Barley, fine malting produce remained firm; but grinding samples were weak. Oats were neglected, and rates were perhaps a shade easier. Maize met with a moderate demand at former currencies. Peas and Beans were unaltered, while the flour market was inactive at late rates.—Average prices of corn for the week ending Jan. 3, 1880:—Wheat, 46*s.* 11*d.*; Barley, 37*s.* 7*d.*; Oats, 21*s.* 7*d.* For the corresponding period last year:—Wheat, 39*s.* 7*d.*; Barley, 38*s.* 10*d.*; Oats, 20*s.* 3*d.*

CATTLE.

At Copenhagen Fields on Monday prices advanced for all kinds of beasts, and a clearance was effected earlier than usual. Prices for sheep were on the average lower, and it was difficult to clear out. Trade was dull for calves at about late rates. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.* 2*d.*; calves, 5*s.* to 6*s.*; sheep, 5*s.* to 5*s.* 4*d.*, and 5*s.* 10*d.* to 6*s.* 8*d.*; pigs, 3*s.* 8*d.* to 4*s.* 8*d.*—Thursday's trade was firm. Supplies of all kinds were short. There was not much animation in the demand, but both beasts and sheep were rather higher in value than above recorded. Calves were steady.

HAY.

The Whitechapel Market report for Tuesday states that good qualities were firm, and supplies fair. Quotations:—Prime Clover, 100*s.* to 126*s.*; inferior, 70*s.* to 95*s.*; prime meadow hay, 82*s.* to 95*s.*; inferior, 60*s.* to 75*s.*; and straw, 30*s.* to 37*s.* per load.—On Thursday there was a fair supply of fodder on sale. The trade was rather quiet, except for best Clover, prices for which were dearer.—Cumberland Market quotations:—Superior meadow hay, 98*s.* to 105*s.*; inferior, 42*s.* to 80*s.*; superior Clover, 120*s.* to 130*s.*; inferior, 80*s.* to 105*s.*; and straw, 36*s.* to 40*s.* per load of 36 trusses.

POTATOS.

The Borough and Spitalfields Markets reports state that sound Potatos command a steady inquiry, but there is not much demand for inferior sorts. The supplies are moderate. Scotch Regents, 130*s.* to 160*s.*; do. Champions, 140*s.* to 150*s.*; Lincoln Regents, 140*s.* to 150*s.*; French whites, 85*s.* to 95*s.* per ton.—The imports into London last week were very limited, the total receipts from the Continent barely exceeding 1000 bags. There have been several small consignments from the United States, and 1772 barrels were also received from Halifax.

COALS.

The figures current at market during the week have been as follows:—Bebside West Hartley, 14*s.* 3*d.*; East Wylam, 16*s.*; West Hartley, 14*s.* 3*d.*; Walls End—Hetton, 16*s.* 6*d.*; Hetton Lyons, 15*s.*; Hawthorns, 15*s.* and 15*s.* 3*d.*; Lambton, 16*s.*; Original Hartlepool, 16*s.* 6*d.*; Wear, 15*s.*; Tunstall, 15*s.*; Tees, 16*s.* 3*d.*; Radford Navigation, 16*s.*; Chilton Tees, 15*s.* 6*d.*; East Hetton, 16*s.* and 16*s.* 6*d.*; South Hartlepool, 15*s.* 3*d.*

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London Agents: HOOPER AND SONS, Covent Garden; and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

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HORSES AND NEAT CATTLE,

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PRESERVING HEALTH, VIGOUR AND CONDITION.

Their cost, too, is saved by the food turning to a better account, for it is a fact that Horses will keep up their condition better upon three feeds of Oats daily when a Ball is occasionally given than with four feeds without the Balls.

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Prepared by the Proprietor,

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DISS, NORFOLK.

Author of the PRIZE ESSAY on the "Diseases of the Liver of the Horse."

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WHOLESALE RUSSIA MAT MERCHANTS.—New Archangel and St. Petersburg MATS of every description. RAFFIA FIBRE. MARENDAZ AND FISHER, 9, James Street, Covent Garden, London, W.C.

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GARDEN STAKES, LABELS, VIRGIN CORK, MATS, RAFFIA, &c. None cheaper. Prices of WATSON AND SCULL, 90, Lower Thames St., London, E.C.

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SILVER SAND, fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

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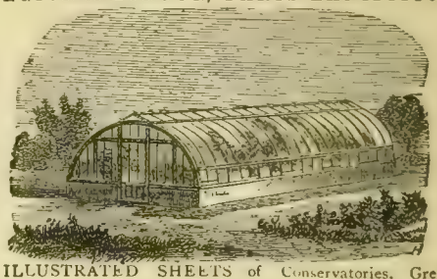

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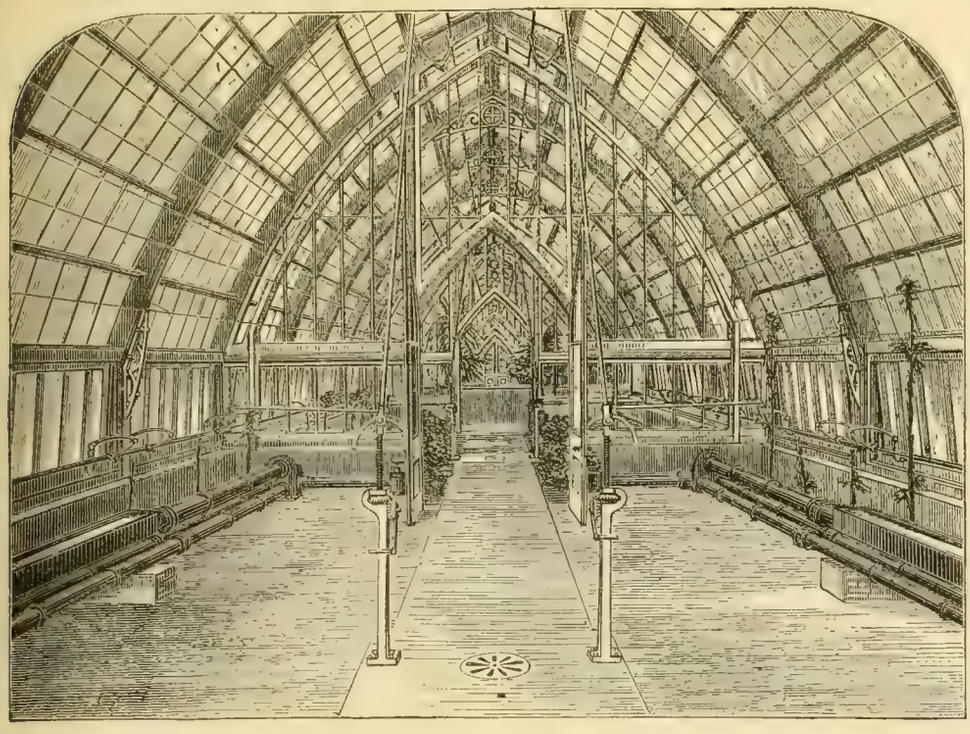

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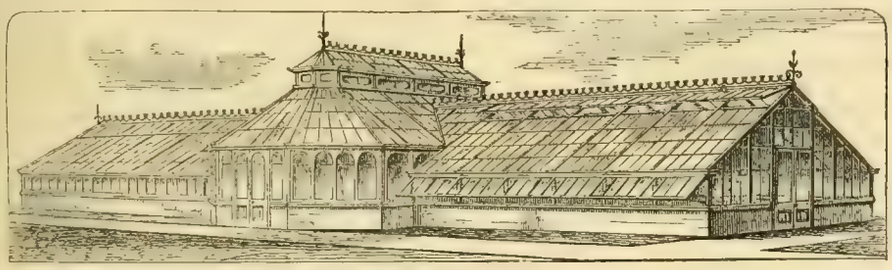

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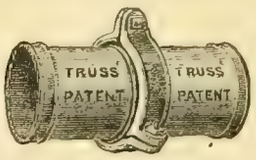

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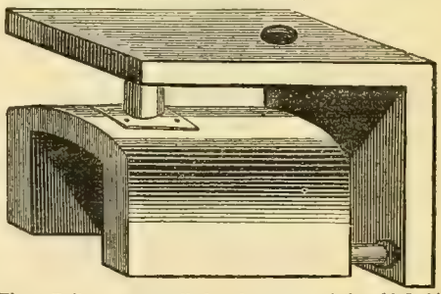

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10 ,,	..	.. 0 6 0		21 ,,	..	.. 0 11 6	
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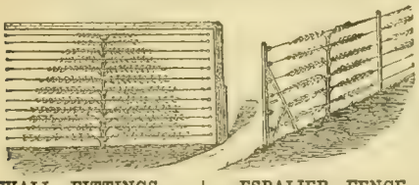

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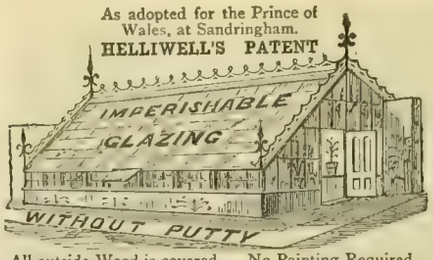

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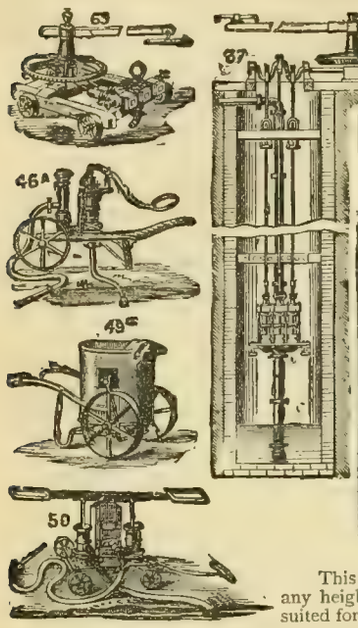

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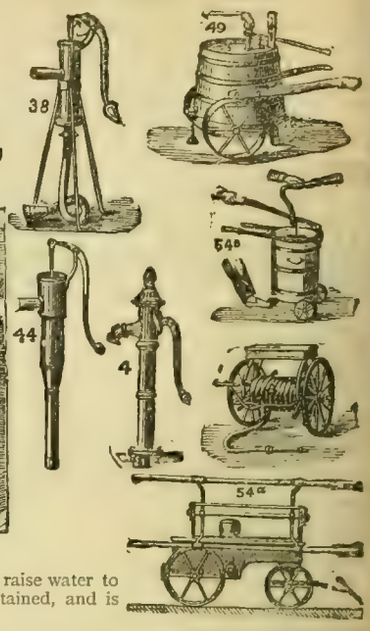

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WHOLESALE SEED CATALOGUE.—We have now posted our Wholesale CATALOGUE of Agricultural, Vegetable and Flower Seeds to all our Customers. Any one not having received it will oblige by letting us know. Free by Post on application.

WATKINS AND SIMPSON, 1, Savoy Hill, Strand, W.C.

W. BALL AND CO. have many thousands of WINTER and SPRING BEDDING PLANTS; also a large quantity of HERBACEOUS and ALPINE PLANTS, at very low Prices to the Trade and large Buyers. Price LISTS forwarded on application.

Bedford Road Nursery, Northampton.

THOMAS RIVERS AND SON beg to offer STANDARD PURPLE-LEAVED BEECH, 6 to 7 feet, and 5 to 6 feet, well grown grafted trees; also SCARLET HORSE CHESTNUTS, 6 feet.

The Nurseries, Sawbridgworth, Herts.

SPIRÆA PALMATA.—The largest and best stock in Europe, 10s. 6d., 15s., 20s., and 25s. per 100. SPIRÆA JAPONICA, for forcing, the finest possible clumps.

CHARLES NOBLE, Sunningdale.

FOR SALE, about 100,000 1-yr. seedling OAKS and Spanish CHESTNUTS. For price and samples apply to

J. HARTNELL, Bailiff, Houghton Hall, Swaffham, Norfolk.

SPANISH CHESTNUT, ASH, BIRCH, HAZEL and ALDER, stout, well-rooted, transplanted. Also a large quantity of 1 and 2-yr. Seedling SPANISH CHESTNUT, at 6s. and 8s. per 1000.

GEORGE CHORLEY, Costers' Nursery, Midhurst.

Oak, English, 4 to 8 feet, 1000 to 1500 for Sale.

GROWN in a PRIVATE NURSERY, and all transplanted two years ago. Price on application to

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

QUICKS—QUICKS.—About 170,000 good strong 3-yr. THORN QUICKS, cut back and transplanted last spring, to be sold at 12s. per 1,000. Apply to

W. BRAY, Nurseryman, Okehampton.

LILIES, Superior, of English growth. BULBOUS PLANTS of all kinds.

HARDY ORCHIDS, and ORCHIDS for Cool-house culture.

Before Purchasing, see CATALOGUE of the NEW PLANT AND BULB CO., Colchester. Post-free on application.

Dr. Wallace's "Notes on Lilies," Illustrated, post-free 5s. 6d.

LILIUM AURATUM.—English grown far superior to Imported. Fine Bulbs, in three sizes, 12s., 18s., and 30s. per dozen respectively. A few, extra large, at 3s. 6d. each.

HOOPER AND CO., Covent Garden, London, W.C.

LILIUM AURATUM.—Splendid Bulbs of this fine Lily at Reduced Prices, 6d., 9d., 1s. and 1s. 6d. each. For other new Lilies, rare and cheap Orchids, apply for CATALOGUE to

WM. GORDON, Bulb and Plant Importer, 10, Cullum Street, London, E.C.

Liberal discount to the Trade.

SPIRÆA PALMATA.—This beautiful pink variety, with immense flower bunches, justly called "The Queen of Spiræas," is offered at 20s. per 100, strong clumps. Wholesale CATALOGUES free on application.

BUDDENBORG BROTHERS, Bulb Growers, House, Bloemswaard, Hillegom, near Haarlem, Holland.

Gold Medal Begonias.

LAING'S CHOICE HYBRIDISED SEED, superior to all others, is now harvested from their unequalled collection, which was again awarded the Royal Horticultural Society's Medal in August. Sealed packets, free by post, 1s. and 2s. 6d. each. The Trade supplied.

JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

SEED POTATOS.—We have a fine Stock of all the principal Old and New Varieties. Special Price List on application.

KERR AND FOTHERINGHAM, Seed Merchants, Dumfries.

MESSRS. JOHN AND GEO. BELL, of Covent Garden Market, are now offering MAGNUM BONUM SEED POTATOS, true to name, at 8s. per Bushel, or £14 per Ton, Cash.

ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.

ALFRED GRANT AND CO., Steam Works, 39½, Leather Lane, London, E.C.

SALES BY AUCTION.

6000 extra fine Lilium auratum, &c.
ON MONDAY NEXT.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock, 6000 extra fine LILIUM AURATUM; also ten Cases of new and beautiful IRIS, NYMPHÆAS, and NELUMBIUMS, just arrived from Japan in good condition (the native drawings of each variety will be produced at the Sale); an importation of Californian LILIES, Plants from India, DISA GRANDIFLORA from the Cape, 200 TROPÆOLUM TUBEROSUM, an assortment of English-grown LILIES, Including very large bulbs of Brownii, Humboldtii, pardalinum, and giganteum; AMARYLLIS, TIGRIDIAS, CHRISTMAS ROSES, and a collection of choice established ORCHIDS, comprising Epidendrum vitellinum majus, Lælia anceps, Oncidiums, Odontoglossums, and Cattleyas.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Paddock Wood, Kent, Close to Railway Station.
Re Yeldham, deceased.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises as above, on TUESDAY, January 27, at 12 o'Clock, 9500 HOP-POLES, 3½ POCKETS of HOPS MARKET VAN, TUMBRIL CART, a CHESTNUT HORSE, 22 MILK-CANS, 38 CASKS, DUNG, IMPLEMENTS, and EFFECTS.

View day prior to Sale. Catalogues on the Premises, at the local Inns, and of the Auctioneers, 98, Gracechurch Street, E.C.

Consignment of Plants from Ghent.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, January 21, at half-past 12 o'Clock precisely, fine Pyramid-shaped Specimen CAMELLIAS, INDIAN AZALEAS, DRACÆNAS, Standard LAURUSTINUS, &c., from Ghent; Standard, Dwarf, and Trained FRUIT TREES, SHRUBS, HERBACEOUS PLANTS, first-class ROSES, choice GLADIOLI, LILIUMS, and other BULBS and ROOTS.

May be viewed the morning of Sale, and Catalogues had.

8000 Lilium auratum, and a Great Variety of Rare
HARDY BULBS AND PLANTS

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, January 23, at half-past 12 o'Clock precisely, IRIS KÆMPFERI, a fine lot from New Jersey, consisting of some very fine varieties, both single and double; a quantity of Trilliums, Habenarias, Cypripediums, Smilacina, Dodecatheon, and other plants from North America; a small case of Primula denticulata, Disa grandiflora, Crinums, Gladiolus, Amaryllis, and others, from the Cape; many varieties of Pancratiums, Brodiæas, Erythroniums, Caladiums, Ixias, Sparaxis, and others; also a few of the lovely Erythrina herbacea, Crinum americana and Pancratium rotatum from Florida; also a first-class lot of hardy English-grown LILIES, consisting of all the best varieties in cultivation, and of extraordinary size; 8000 splendid bulbs of Lilium auratum, from Japan; 5000 Tigridia grandiflora, 2000 Tigridia conchiflora, from New Jersey; 50 plants of Epigæa repens, and an importation of Sarracenias from America, &c.

May be viewed the morning of Sale, and Catalogues had.

Reading, Berks.—In Liquidation.
TO NURSERYMEN AND HORTICULTURISTS.

MESSRS. EGGINTON AND PRESTON are instructed by the Trustee to SELL by AUCTION, at the Queen's Hotel, Reading, on THURSDAY, January 29, at 3 o'Clock punctually, the LEASE of the NURSERY GROUNDS in the Oxford Road, Reading, for many years carried on by Messrs. Phippen & Robinson. They are about 2 acres in extent, and include a seven-roomed Residence, 12 Greenhouses and Hothouses, and 3 unheated ditto, with numerous Ranges of Cold Pits and Frames, Carpenter's Shop, Packing and Potting Sheds, Stabling, Cart Shed, and Piggeries. The NURSERY contains an extensive Collection of Fruit Trees, Shrubs, Ornamental Trees, Greenhouse, Hothouse, and Bedding Plants, and General Nursery Stock suitable for a local trade. There are in addition a considerable stock of Shrubs and Trees on three outlying pieces of nursery ground. There are also Two Horses, Two Carts and Van. The whole, including GENERAL NURSERYMAN'S STOCK of Tools, Fittings, and Appliances, will be sold as a going concern. The unexpired term of the lease is about eight years, and the annual rent is £24.

Full particulars of sale may be obtained of EGGINTON AND PRESTON, Auctioneers and Valuers, 150, Friar Street, Reading.

Horse Pit Field.
Within half a mile of Twyford and its Station on the Great Western Railway.

To GARDENERS, NURSERYMEN, and OTHERS.
60 ACRES of highly productive ARABLE LAND.

MESSRS. ROLLS AND LAWRENCE have received instructions from Edward Gosling, Esq., to LET by AUCTION, at the King's Arms Hotel, Twyford, on TUESDAY, January 27, at 3 for 4 o'Clock precisely (unless previously disposed of by Private Contract), in 14 Lots, 60 ACRES of highly productive ARABLE LAND, known as Horse Pit Field, lying within a ring fence, and most desirably situate within half a mile of Twyford, immediately adjoining and having extensive frontages to the Wargrave Road.

The property, which is Lotted, may be viewed and particulars had of Mr. GOODCHILD, Builder, Twyford; R. C. HANROTT, Esq., Solicitor, 14, Bedford Row, London, W.C.; and of the Auctioneers.

Estate and Auction Offices, Marlow and Maidenhead.

To Seedsmen and Florists.

WANTED to PURCHASE, a small FLORIST'S or SEEDSMAN and FLORISTS' BUSINESS. London or neighbourhood preferred.
W. B., Messrs. Minier, Nash & Nash, 60, Strand, London, W.C.

WANTED to RENT, a low SPAN-ROOFED GREENHOUSE, not less than 40 feet long, 12 to 16 feet wide—also a MEDIUM-SIZED FORCING HOUSE, with good bottom-heat—until the end of March next. Must be in a good open position, within easy access of St. John's Wood. Child's Hill or Hendon preferred.
J. B., 13, Bolton Road, St. John's Wood, N.W.

To Lovers of the Garden.

COMFORTABLE RESIDENCE and fine old-fashioned Garden, Lawn, Fish Pond, productive walled Kitchen Garden, well-constructed Greenhouses with a good Collection of Orchids, Vinery, Fernery, Forcing Pits (all heated by hot water), Poultry Houses, &c., pleasantly situate on the main road, Tottenham, near the station. The LEASE, of eighteen years, at the low rent of £50. TO BE DISPOSED OF, with or without Furniture, by order of the Administrator of of late Lessee, who occupied the property for many years.

Messrs. DEBENHAM, TEWSON, AND FARMER, 80, Cheapside, E.C. (32,087.)

To Florists, Nurserymen, &c.

ABOUT FIVE ACRES of first-class LAND, admirably adapted for the above, with or without two Freehold Villas, containing four bedrooms, dining and drawing-rooms, kitchen, &c. Most admirably situate on high ground, within easy distance of Bushey Park, Hampton Court, &c.

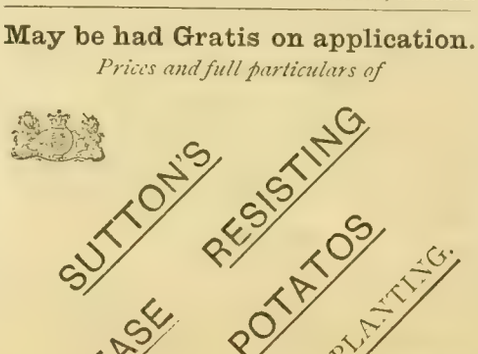
Possession can be had at once.
Apply to J. EMBLETON, Suffolk House, New Hampton.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

SPECIAL CHEAP OFFER
TO THE TRADE.

APPLES, Pyramid, extra strong and well rooted, 40*s* per 100.
PEARS, Pyramid and Standard, extra strong and well rooted, 50*s*. per 100.
CHERRIES, Standard trained, PLUMS, Standard trained, PEARS, Dwarf trained, } Prices and sorts on application.
SPRUCE, Norway, 2 to 3 feet, very bushy and well rooted, 40*s*. per 1000.
THUJOPSIS BOREALIS, 5 to 6 feet, 24*s*. per dozen; 6 to 7 feet, 30*s*. per dozen; 7 to 8 feet, 48*s*. per dozen.
W. G. CALDWELL AND SONS, The Nurseries, Knutsford.

May be had Gratis on application.
Prices and full particulars of



SPECIAL RATES FOR LARGE QUANTITIES.

NOTICE.

Mr. R. PHILLETT, *Weston-super-Mare, writes us*:—"The Magnum Bonum Potatos you supplied me with this year produced a most extraordinary crop, amounting to an average rate of 210 sacks per acre, of 240 lb. per sack, and there was not a single diseased one among them."

SUTTON & SONS,
THE QUEEN'S SEEDSMEN, READING.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, offer as under:—

At per 1000:—

ALDER, 2 to 3 feet, 22*s*.; 3 to 4 feet, 27*s*.
ASH, Mountain, 3 to 4 feet, 20*s*.
DOGWOOD, Red, 1 to 1½ foot, 40*s*.; 1½ to 2 feet, 60*s*.; 3 to 4 feet, 80*s*.
FIR, Silver, 4 to 6 inches, 8*s*.
,, Spruce, 4 to 8 inches, 5*s*.; 6 to 9 inches, 7*s*.; 9 to 15 inches, 9*s*.; 1 to 1½ foot, 12*s*.; 1½ to 2 feet, 20*s*.
LARCH, 1 to 1½ foot, 15*s*.
POPLAR, Black Italian, 3 to 4 feet, 23*s*.; 4 to 5 feet, 28*s*.
PRIVET, yellow-berried, 1½ to 2 feet, 16*s*.
QUICKS, 9 to 15 inches, 12*s*.; 1½ to 2 feet, 22*s*.
WILLOW, Huntingdon, 4 to 5 feet, 30*s*.
FLOWERING SHRUBS, in variety, 40*s*. to 60*s*.
BERBERIS, Aquifolia, 6 to 9 inches, 12*s*.
,, Darwinii, 1 to 1½ foot, 70*s*.
,, Dulcis, 9 to 12 inches, 20*s*.
MEZEREON, Red, 9 to 18 inches, 60*s*.
IVY, Irish, 25*s*. and 40*s*.
LAUREL, Common, 9 to 12 inches, 35*s*.; 1 to 1½ foot, 40*s*.
,, Portugal, 1½ to 2 feet, 60*s*.
PERNETTYA, mucronata, 6 to 9 inches, 25*s*.
RHODODENDRON, hybrids, 4 to 6 inches, 50*s*; 6 to 9 inches, 65*s*.; 9 to 15 inches, 85*s*.
,, ferrugineum and hirsutum, 80*s*.
WHIN or GORSE, double, 1 to 1½ foot, 80*s*.
YEWS, 9 to 12 inches, 75*s*.; 1 to 1½ foot, 100*s*.; 2 to 3 feet, 200*s*.

At per 100:—

ARBOR-VITÆ, Tom Thumb, 6 to 9 inches, 7*s*.
AZALEA, pontica, 1½ to 2 feet, 30*s*.
BOX, elegantissima, 6 to 12 inches, 10*s*.
CEDRUS, Deodara, 1½ to 2 feet, 60*s*.
CRYPTOMERIA, elegans, 9 to 15 inches, 15*s*.; 1½ to 2 feet, 30*s*.; 2 to 3 feet, 35*s*.
HOLLY, 1 to 1½ foot, 20*s*; 1½ to 2 feet, 28*s*.
PICEA, nobilis, 2 to 3 feet, 60*s*.
PINUS, Cembra, 4 to 6 feet, 30*s*.
RETINOSPORA, plumosa, 4 to 6 inches, 12*s*.
THUJOPSIS, dolabrata, 3 to 4 inches, 10*s*.; 6 to 9 inches, 18*s*.; &c.

GEE'S superior Bedfordshire-grown FARM and GARDEN SEEDS, SEED POTATOS, CABBAGE and other PLANTS and ROOTS, &c. For truthfulness of stocks, purity of growth, and general excellence, not to be surpassed.

FREDK. GEE'S selected stocks of Bedfordshire-grown Seeds and Plants have attained a world-wide celebrity. The rich soils in Mr. Gee's occupation are admirably adapted to the growth of seeds and plants, and offer facilities enjoyed at few places for bringing them away to perfection; and under his skill and perseverance they are turned to good account.—*Vide* "Opinions of the Press."

Select CATALOGUE for the coming Season may be had post-free on application. Also Special Trade LIST of Bedfordshire-grown Seeds, Plants, Roots, &c., may be had on application to

FREDK. GEE, Seed Grower, Seed Merchant, and Nurseryman, Biggleswade, Bedfordshire.

SPRUCE FIRS.—Many thousands, 2, 3, 4 and 5 feet. Stout, well furnished, and good rooted.
ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

MAGNUM BONUM POTATOS.—A splendid sample of the above, grown from Seed direct from the raiser (Mr. Clark), price 7*s*. 6*d*. per bushel of 56 lb., free on rail, sacks included.
H. T. BATH, Seedsman, &c., 80, High Street, Lymington.

A Quantity of Plain and Curled

CRESS SEED (New) for Sale. Will GROW small SEEDS by CONTRACT. Apply to Mr. S. W. CAMPAIN, Deeping St. Nicholas, Spalding.

CYCLAMEN PERSICUM, showing large quantities of bloom, 30*s*. per 100; sample dozen, 5*s*.
WHITE VESUVIUS, 20*s*. per 100; 3*s*. per dozen, package free.
GEORGE GUMMOW, 114, Loughborough Road, Brixton, S.W.

Johnstone's St. Martin's Rhubarb.

STRONG ROOTS, 9*s*. per dozen.
Trade price on application.

This well known and highly esteemed variety has now been supplied by us to most of the leading Nurserymen in Britain, but where any difficulty arises in procuring it true, application should be made to us direct.
W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

TRUE ARGENTEUIL ASPARAGUS.—Strong Roots of this splendid variety are offered in three sizes, at 7*s*. 6*d*., 10*s*. 6*d*., and 15*s*. per 100 respectively.
HOOPER AND CO., Covent Garden, London, W.C.

PINE PLANTS.—Two dozen Pine Plants to be disposed of. Enquire of
The GARDENER, Sizewell House, Saxmundham, Suffolk.

Green and Variegated Ivies of Sorts,
Large and small-leaved, in eight kinds.

ROBERT PARKER, having a Surplus Stock of fine Plants in pots of the above-named, will be pleased to dispose of them in quantities at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application.
Exotic Nursery, Tooting, Surrey, S.W.

Surplus Stock of

FOREST TREES and SHRUBS, stout and good in every respect, viz., Scotch FIR, 1½ to 2 feet (native); ALDER, ASH, HORNBEAM, narrow-leaved ELM, 3 to 4 feet; WYCH ELM, POPLARS (sorts), SYCAMORE, Purple BEECH, LABURNUMS, 3 to 6 feet. Prices, and also General Nursery CATALOGUE, on application to
JOHN CARTER, Nurseryman and Seedsman, Keighley, Yorkshire.

To the Trade Only.

SPIRÆA JAPONICA.—Very strong clumps for forcing, 10*s*. per 100, £4 10*s*. per 1000. Package free for cash, with order.
H. B. SMITH, Ealing Dean Nursery, Ealing, W.

New Celery, Clayworth Pride.

ROGLEY respectfully invites all Celery Growers to give this variety a trial, and they will not be disappointed. There were over 400,000 heads grown in Clayworth last season. It is considered the only variety worth growing here. It is a pink Celery, of the highest excellence, —the best in cultivation. Packets post-free 13 stamps. Address,
Clayworth, near Bawtry, Yorkshire.

JAMES BACKHOUSE AND SON'S Priced LISTS of VEGETABLE and FLOWER SEEDS are now ready, and will be forwarded post-free on application. The FLOWER SEED LIST will be found to contain an excellent assortment of Perennial and Rock Plants, which have been saved from their well known Collection; to which is added a well assorted descriptive list of Gladiolus Roots.
JAS. BACKHOUSE AND SON, The Nurseries, York.

SHRUBS.—Any Gentleman or Builder in want of a quantity of good Shrubs, can meet with a bargain. They can take them as they want them, any time from now until next Christmas. Good road close at hand; good soil to them. Close to rail.—RICHARD RICHARDSON, Cottenham Park, Wimbledon.

To the Trade.

SEEDLING and TRANSPLANTED FOREST TREES, and other useful HARDY NURSERY STOCK always in demand.
Priced LIST on application.
W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

Vines—Vines—Vines.

F. AND A. SMITH can supply the above in strong close-jointed Canes, true to name, Fruiting and Planting. Price on application.
The Nurseries, West Dulwich, S.E.

Garden Seeds.

JAMES IVERY AND SON'S Illustrated CATALOGUE, with Cultural Directions, is now ready. It contains a selection of the best Kitchen Garden and Flower Seeds, including the novelties of the season, and is a neatly got-up work of between fifty and sixty pages, comprising much useful information. Price 6*d*., post-free. Gratis to Customers.
The Nurseries, Dorking, Surrey.

To the Trade.
"PRIDE OF ONTARIO" POTATO.

H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.
Seed Growing Establishment, Wisbech.

STRONG WELL TRANSPLANTED TREES CHEAP.
BEECH, 3 to 4 feet, 4 to 5 feet, 5 to 6 feet, for cover and hedges.
SPRUCE FIR, 1½ to 2 feet, 2 to 3 feet, for covers and hedges.
LARCH, 1½ to 2 feet, 2 to 3 feet, very good.
QUICKWOOD, strong, 3 and 4 yr. transplanted.
Write for prices and particulars to
W. JACKSON AND CO., Nurseries, Bedale, Yorkshire.

Webb's Prize Cob Nut Trees.
CALCOT GARDENS, NEAR READING, BERKS.

MR. COOPER, having succeeded to these Gardens, and being about to make considerable alterations, is desirous of reducing the valuable stock of PRIZE COB FILBERT TREES, for the cultivation of which the late Mr. Webb was so justly celebrated.
Mr. COOPER desires to caution the public in purchasing Nut Trees advertised as WEBB'S PRIZE COB FILBERT TREES, as no one is authorised by him to sell them.
Early applications should be made, addressed
Mr. COOPER, Calcot Gardens, near Reading, Berks.

KITCHEN GARDEN AND FLOWER SEEDS, ALSO GLADIOLI ROOTS, &c.

DOWNIE AND LAIRD have posted their CATALOGUES of Kitchen Garden and Flower Seeds, including Gladioli Roots, &c, to all their customers; if however, by any chance they have not been received, and their friends will kindly let them know, a copy will be forwarded in course of post.
DOWNIE AND LAIRD, Seedsmen and Nurserymen, 17, Frederick Street, Edinburgh.

SPECIAL OFFER.
ALNUS CORDATA, 12 to 16 feet, 2s. each
BIRCH, Silver, 12 to 16 feet, 1s. 6d. each
CHESTNUT, Scarlet, 8 to 10 feet, 1s. each
ELM, Chichester, 8 to 10 feet, 8s. per dozen, 50s. per 100; 10 to 12 feet, 10s. per dozen, 65s. per 100
" English, very fine, 8 to 12 feet, 15s. per dozen
ORNUS EUROPÆUS, flowering Ash, 8 to 10 feet, 1s 6d. each
THORNS, with good heads, single Pink, 9s. per dozen
" with good heads, double Crimson, 10s. per dozen
CURRANTS, Black and Red, 10s. per 100
FILBERTS, best named, transplanted layers, 20s. per 100
GOOSEBERRIES, all leading kinds, 15s. per 100
WALNUTS, 6 to 8 feet, 12s. per dozen.
JAS. GARAWAY AND CO., Durdham Down Nurseries, Clifton, Bristol.

To the Trade.

JOHN PERKINS AND SON offer the following:—
ROSES, strong, on Manetti, 30s. per 100
APPLES, Pyramids, 50s. per 100
APRICOTS, Moor Park, dwarf, cut back, 50s. per 100
CURRANTS, Black, strong, 10s. per 100, 80s. per 1000
" Red, ditto, 10s. per 100, 80s. per 1000
ELMS, Wych, 3 to 4 feet, 20s. per 1000
HAZEL, 2 to 3 feet, 18s. per 1000; 3 to 3½ feet, 20s. per 1000; 3½ to 4½ feet, 30s. per 1000
PRIVET, Evergreen, 2 to 3 feet, 20s. per 1000
LAURELS, Common, 2 to 2½ feet, 12s. per 100
" Portugal, 1½ to 2 feet, 20s. per 100
YEWS, English, 2½ to 3 feet, 30s. per 100; 3 to 4 feet, 60s. per 100
52, Market Square, Northampton.

NEW ZONAL GERANIUMS of 1879. PEARSON'S SET of thirteen splendid varieties, 8d. each; the set for 6s., post-free.
Selected varieties:—Jeanne d'Arc, finest single white; Candidissima plena, double white; Zonal Tricolor H. M. Pollett, Mr. Parker, Lord Gifford, Arnobius, Brennus, Laverna, Numitor, Syressa, Tereus, 8d. each, 12 for 6s., post-free.
Executors of H. WALTON, Edge End Nursery, Brierfield, near Burnley.

To the Trade.
HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are prepared to make special offers of their choice stocks of HOME-GROWN GARDEN and FIELD SEEDS to those who have not yet completed their supplies for the coming season.
Seed Growing Establishment, Wisbech.

New Cucumber, Sir Garnet Wolseley.

JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, post-free for 30 stamps.
"The points in which Cucumber Sir Garnet Wolseley surpasses all other long-fruited varieties are the symmetry of its fruit, and the abundance with which they are produced; there being no shank or handle to Sir Garnet." — *Gardeners' Chronicle*, September 27, 1879.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.
Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

Strong Transplanted

FOREST TREES, &c.—
FIR, Spruce, 1 to 1½ foot, 1½ to 2½ feet.
" Scotch, 3 to 3½ feet.
" Silver, 1 to 2 feet, 2 to 3 feet, 3 to 4 feet.
HAZEL, 1½ to 2 feet, 3 to 4 feet.
BEECH, 1 to 2 feet, 3 to 4 feet, 4 to 5 feet.
OAKS, English, 8 to 10 feet.
" Evergreen, 2, 3, 4, 5, and 6 feet.
BIRCH, HORNBEAM, LIMES, and QUICKS, of all sizes. APPLE and QUINCE STOCKS, Raby Castle Black CURRANTS.
Special cash prices on application to
J. GEO. HILL (late John Scott), Royal Nurseries, Merriott, Somerset.

To the Trade.

CARTER'S WHOLESALE CATALOGUE of SEEDS, &c., has been posted to all Customers. Should any have miscarried another copy will be sent on application.
237 and 238, High Holborn, London, W.C.

Special Trade Offer.

W. BALL AND CO., Bedford Road Nursery, Northampton, have a very large stock of the undermentioned to offer to the Trade and large Buyers, in fine condition:—
APPLES, good Standards, best market varieties, our selection, 55s. to 65s. per 100.
PEARS, good Standards, best market varieties, our selection, 65s. to 70s. per 100.
PLUMS, good Standards, best market varieties, our selection, 65s. to 70s. per 100.
APRICOTS, Dwarf-trained Moorpark, 20s. to 24s. per dozen.
CURRANTS, Black, 3-yr., very strong, 12s. per 100.
LIMES, Standards, fine, 5 to 6 feet, 6 to 7 feet stems, 80s. to 100s. per 100.
CHESTNUTS, Common, 6 to 7 feet stems, fine heads, 75s. per 100.
ELMS, Standard Italian, 6 to 7 feet stems, fine heads, 90s. to [100s. per 100.
ASH, Common, 2 to 3 feet, 23s. per 1000.
BEECH, Common, strong, 5 to 7 feet, 25s. per 100.
HORNBEAM, strong, 3 to 5 feet, 25s. per 1000.
QUICK, very strong, 3-yr., 15s. per 1000.
BLACKTHORN, very strong, 3-yr., 15s. per 1000.
HOLLY, Green common, fine, 3 to 4 feet, 50s. to 60s. per 100.
LAUREL, Portugal, very fine, bushy, 3 to 3½ feet, 60s. to 70s. per 100.
YEWS, Common, fine Pyramids, 3 to 4 feet, and 4 to 5 feet, 90s. to 100s. per 100.
" well rooted, 3 to 4 feet, 60s. to 70s. per 100.
ROSES, fine Standards, 4 feet stems, large heads, our selection, 70s. to 75s. per 100.

PYRAMIDAL PEAR TREES, in full bearing, from the noted Merriott Nurseries.
No. 1 COLLECTION of 6 best sorts for succession, 10s. 6d.
No. 2 " " 12 " " 21s.
No. 3 " " 18 " " 30s.
No. 4 " " 24 " " 40s.
J. GEO. HILL (late Scott), Royal Nurseries, Merriott, Somerset.

To the Trade.
MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.
Seed Growing Establishment, Wisbech.

Special Offer.

PEACH and NECTARINE TREES, in POTS, ripened under glass, well-shaped trees, 3s. each.
VINES, leading sorts, extra strong Canes for fruiting in pots this season, 5s. and 6s. each. Very fine planting Canes, 3s. each.
JAS. GARAWAY AND CO., Durdham Down, Clifton, Bristol.

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 3, and 3 to 4 feet.
SCOTCH, 1½ to 2, and 2 to 2½ feet.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 4 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

A. M. C. JONGKINDT CONINCK, Dedemsvaart, near Zwolle, Netherlands, has much pleasure in offering the following:—

CONIFERÆ, 1 foot high.
25s. per 100, 10 of each sort.
£10 10s. per 100, 100 of each sort.

ABIES Menziesii	CHAMÆCYPARIS plumosa aurea
CHAMÆCYPARIS Boursierii argentea	CRYPTOMERIA elegans
" " fol. arg. var.	RETINOSPORA filifera
" " fol. aureo var.	" leptoclada (squarrosa Veitch)
" " glauca	THUJA Vervaeneana

CONIFERÆ, half a foot high.
12s. per 100, 7 of each sort.
£5 per 1000, 70 of each sort.

CHAMÆCYPARIS Boursierii argentea	CHAMÆCYPARIS sphæroidea Andelyensis
" " compacta	JUNIPERUS glauca
" " fol. arg. var.	RETINOSPORA filifera
" " fol. aureo var.	" leptoclada (squarrosa, Veitch)
" " gracilis	" squarrosa
" " minima glauca	THUJA Vervaeneana
" pisifera	THUJOPSIS Dolabrata
" plumosa aurea	

	Height.	Price per 100.
ABIES nigra	1 foot ..	9s.
" pectinata	½ foot ..	9s.
CHAMÆCYPARIS Boursierii (Cupressus Lawsoniana)	1 foot ..	17s.
THUJA occidentalis	1 foot ..	9s.

Gros Guillaume Grape.—Roberts' Variety.

W. TAIT AND CO. are offering strong well-grown CANES of this wonderful variety, at 5s., 7s. 6d., and 10s. 6d. each, grown from eyes taken from the parent Vine. See *Gardeners' Chronicle*, Dec. 20, 1879, page 794. Orders from strangers should be accompanied with remittance.
The Old Established Nursery and Seed Warehouses, 119 and 120, Capel Street, Dublin.

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R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.
All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
CATALOGUES free by post on application.

Kent, the Garden of England.

COB NUTS, fine Kentish; Kentish PLUMS, CHERRIES, PEARS, DAMSONS and APPLES; specimen MULBERRIES, large AUCUBAS, large LIMES, YUCCAS, and the finest general stock of FRUIT TREES in the Kingdom, some 200,000 to choose from.
General Descriptive FRUIT LIST on application.
The Trade supplied.
THOS. BUNYARD AND SONS, Old Nurseries, Maidstone.

To the Trade and Large Buyers.

ISAAC MATTHEWS AND SON'S
Special offer:—
200,000 ASH, Mountain, 3 to 4 and 4 to 5 feet.
100,000 " Common, 3 to 4 feet.
50,000 ALDER, 3 to 4 and 4 to 5 feet.
150,000 FIR, Scotch, 15 to 18 inches and 1½ to 2 feet.
50,000 " Spruce, 1½ to 2 feet and 2 to 2½ feet.
50,000 PRIVET, Evergreen, 2 to 3 feet.
50,000 WILLOWS, Osier, 3 to 4 feet.
20,000 RHODODENDRON, splendidum, white.
20,000 " Jacksoni.
50,000 " Ponticum, 1½ to 2 feet and 2 to 2½ feet.
50,000 " Hybrid Ponticum, seedlings, 1½ to 2 feet.
20,000 " named varieties, 2 feet.
50,000 YEWS, English, 1½ to 2 feet.
For prices and particulars apply to
The Nurseries, Milton, Stoke-on-Trent.

DICKSONS AND CO., NURSERYMEN and SEEDSMEN, 1, Waterloo Place, Edinburgh, are now Booking Orders for the beautiful DOUBLE MATRICARIA, figured in the *Gardeners' Chronicle* of Dec. 13, 1879, at 1s. 6d. each, 12s. per dozen, or 75s. per 100—all free by post; and are now sending out well-established Plants of their lovely new SAXIFRAGA WALLACEI, at 1s. 6d. each, 12s. per dozen, or 75s. per 100, free by post. Usual discount to the Trade.
D. & Co. have the largest stock of BEDDING VIOLAS in the country.
Descriptive CATALOGUE free on application.

TREES for AVENUE, PARK, or STREET PLANTING.
ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
" Horse, 14 to 16 feet, girting 8 to 10 inches.
" Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
" Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.
They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.
The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.
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WILLIAM FLETCHER, Ottershaw Nurseries, Chertsey, will be glad to quote prices to the Trade, as named:—
BIRCH, 2 to 3 feet, 3 to 5 feet, and 5 to 8 feet.
HAZEL, 2 to 3½ feet.
ASH, Common, 2 to 4 feet.
ALDER, 2 to 3 feet, 3 to 5 feet.
QUICKS, MANETTI STOCKS, &c.

FISHER, SON & SIBRAY,

Late FISHER, HOLMES & Co.,

NURSERYMEN, SEEDSMEN and FLORISTS,

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Nurseries:—Handsworth.

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KING'S ACRE, HEREFORD.

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ROSES, LAURUSTINUS, LAURELS, all uninjured by frost.

Extra fine CHERRIES, CURRANTS, GOOSEBERRIES, PEARS, PLUMS, CONIFERÆ, &c.

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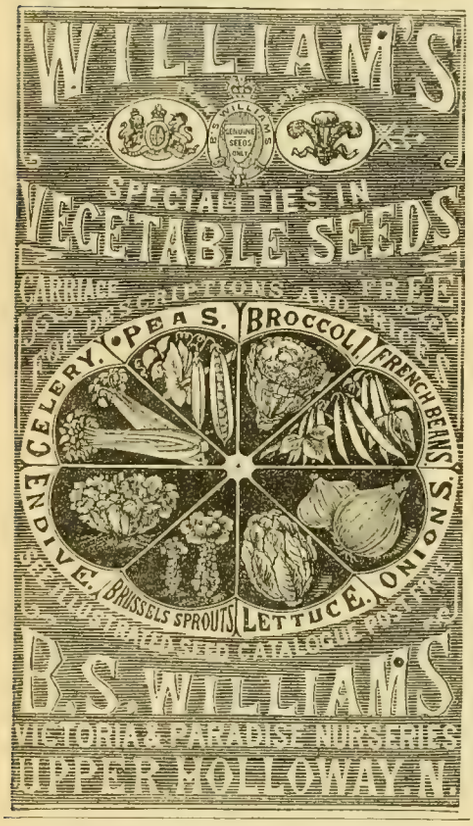
Seed Grower to Her Majesty the Queen and His Royal Highness the Prince of Wales.



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FIFTY ACRES of FRUIT TREES.—Apples, Pears, Plums, Cherries, Peaches, Nectarines, Apricots, and other Fruit Trees, as Standards, Dwarfs, Pyramids, Bushes, Cordon and Trained Trees, in great variety, all full of vigour and warranted true to name. Descriptive Price List, containing a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their Synonyms, Quality, Size, Form, Skin, Colour, Flesh, Flavour, Use, Growth, Duration, Season, Price, &c., for a penny stamp.

TWELVE ACRES of ROSES.—Standard, Dwarf, and Climbing, all the popular sorts; also 80,000 choice Tea-scented and Noisette Roses in pots; extra strong Roses in pots for immediate forcing. See Descriptive Price List, free for a penny stamp.

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ALL kinds of GARDEN SEEDS, of first quality, BULBS, MUSHROOM SPAWN, TOBACCO PAPER, ARCHANGEL MATS, and other GARDEN REQUISITES. See Lists, which may be had on application.

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WOOD AND INGRAM have just compiled a SPECIAL LIST of NURSERY STOCK, at greatly reduced prices. Free on application.

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TO THE TRADE.

VINES—VINES—VINES.

W. G. CALDWELL AND SONS can still supply extra strong Fruiting CANES, at 4*s.* 6*d.* each, of the following varieties:—Black Hamburgh, Madresfield Court, Foster's Seedling, Mrs. Pince, Lady Downe's Muscat of Alexandria.

Also a few strong Planting Canes at 3*s.* each.

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With copious and Original Articles on

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With One Hundred Pages of beautifully printed Letterpress, handsomely Illustrated with two magnificent Coloured Plates, and nearly 200 fine Wood Engravings. This is the most beautiful and comprehensive Seed Catalogue yet published, and *should* be in the hands of all interested in Horticulture.

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MANGEL SEED.

JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.

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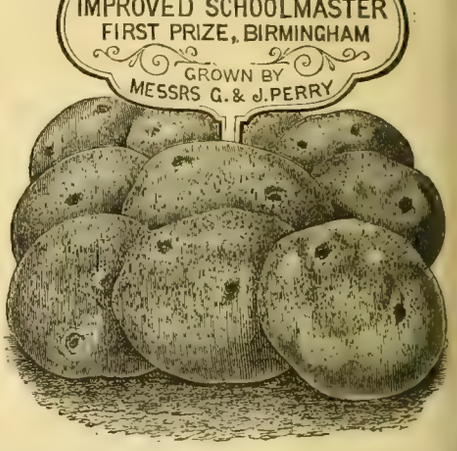

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This splendid new round variety has become deservedly popular, being the acme of perfection in quality and flavour. It is an immense cropper, producing tubers of large size, uniformly round and handsome, with shallow eyes; flesh, snowy white, and very mealy—undoubtedly the best Potato for table use ever introduced. STOCK LIMITED.

Price 5*s.* 6*d.* *per peck of* 14 *lb., or* 20*s.* *per bushel of* 56 *lb.*

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IMPROVED MAGNUM BONUM POTATO.

The Great Disease-Resister.

This remarkably late Kidney Potato is of grand quality. The tubers are of very large size, symmetrical in shape, with a few small eyes, and of exceedingly fine flavour; the flesh is firm, very white and mealy. It is an enormous cropper on all soils, and fit for use when got up, also an excellent late keeping Potato, as it resists the disease to an extraordinary degree.

Price 3*s.* 6*d.* *per peck of* 14 *lb.;* 11*s.* *per bushel of* 56 *lb.;* 30*s.* *per sack of* 168 *lb. Much cheaper by the half ton or ton.*

WEBB AND SONS being probably the largest growers of Seed Potatos in the kingdom, can offer other excellent varieties in large quantities on very advantageous terms.

Potatos of 20*s. value carriage free; 5 per cent. discount for cash.*

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SEEDS OF UNDOUBTED QUALITY.

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SUTTON'S MAGNUM BONUM.

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Messrs. CHARLES SHARPE & CO.

Have the above to offer, of their own growing.

In an extensive Series of Field Trials of Potatos last year the above varieties were alone found to resist the Potato Disease—producing heavy crops in every instance.

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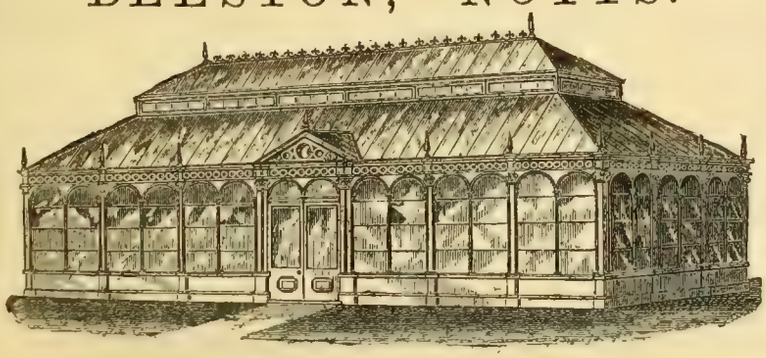

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LEICESTER RED CELERY has again proved itself to be the hardiest, sweetest, most solid, and best Celery this unfavourable season; when most kinds have been soft and watery this has been good in every way. Those wishing to obtain the true article should have it in printed packets, price 1*s.*; post-free on receipt of 13 stamps

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RICHARD SMITH AND CO. have pleasure in again offering this excellent BROCCOLI, and respectfully solicit early Orders, as the stock this season is limited. Price 1*s.* 6*d.* per packet, the usual discount to the Trade.

From *The Gardener*, July, 1876:—"The most valuable Broccoli we have seen this year is a kind coming into use in June; it is very white, and of large size before the leaves expand, and though yet in a private garden, we hope to see it comeatable by the public. It is growing in Westwood Gardens, near Droitwich, and Mr. Gough, the gardener, has been saving seed from the finest heads for some years, and has been rewarded with great success."

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DOUBLE .. .. 13*s.* per 100

PEARL .. .. 14*s.* ,,

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Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

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COCOA-NUT FIBRE WASTE, 1*s.* per bag, 30 bags for 20*s.* No charge for bags. Truckload (loose), free to rail, 25*s.*—BULBECK AND SON, Suffolk Place, Snow's Fields, Bermondsey, S.E.

COCOA-NUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1*s.*; 30 bags (bags included), 20*s.*; truck free to rail, 25*s.*

T. RICH (late Finlayson & Hector), Cocoa-Nut Fibre Works, 24 and 25, Redman's Row, Mile End Road, London, E.

COCOA-NUT FIBRE REFUSE.—Useful at all seasons. Largest makers in the Kingdom. 1*s.* per bag, 30 bags £1 (bags included), truck 25*s.* free to rail; 5*s.* van-load, at Works, Janet Street, Millwall, E. P.O.O. payable at General Post Office, London. Orders to be addressed to A. FOULON, Fibre Merchant, 32, St. Mary Axe, London, E.C.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.

BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.

Fresh SPHAGNUM, 10*s.* 6*d.* per bag.

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STRATAGEM PEA.

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"Carter's Stratagem is the only Pea awarded a First-class Certificate by the Royal Horticultural Society this season.

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Carter's Stratagem grows to a height of 2 feet, and the plant is literally covered with immense pods, many measuring nearly 6 inches in length, and containing ten large fine-flavoured Peas.

Special Caution.

Carter's Stratagem Pea can only be had direct from us, and all packets bear our seal.

Price, in sealed packets, 7s. 6d. per pkt.
(sufficient for a moderate sowing).

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Awarded a First-class Certificate by the Royal Horticultural Society.

"Carter's Telephone is the best Pea I have had in the garden, bearing large semi-double pods, well filled, and of excellent flavour."—Mr. RABONE, *Gardener to the* Right Hon. the Earl of Shrewsbury.

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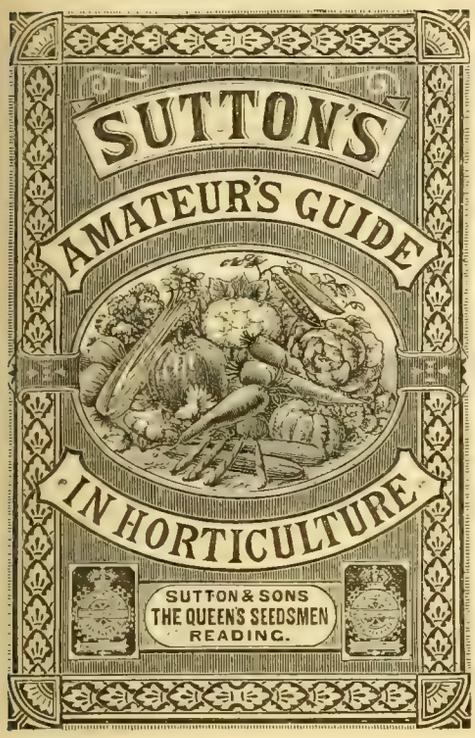

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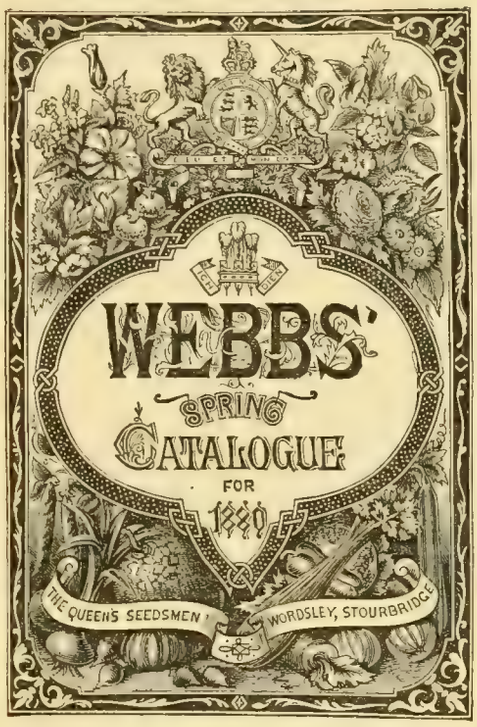

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THE
Gardeners' Chronicle.

SATURDAY, JANUARY 17, 1880.

SPRING, SUMMER, AND WINTER BEDDING.

NOTWITHSTANDING all the sarcastic abuse and denunciation that has been, and is still being, said and written against summer bedding, there is yet no diminution of it, but rather a growth, happily in an improved form, by the more free use of foliage plants, both as masses and as single specimens. By their means the gaudiness and monotony, for years so prevalent, have been relieved; but there is yet room for further improvement, more particularly in the way of a more general use of hardy plants. And once this is accomplished, the objectors to the system will have little ground on which to found their objection, seeing that if they have not the desired "Parsley-bed" on which to relieve their eyes, they have other and more graceful plants; and the hardy plants would remain all the year round—thus meeting other objections, viz., the transitory nature of summer-bedding, the long season of bare beds, and the immense labour involved in wintering and getting up a stock of tender plants. It is with a view of assisting to bring about such a desirable result that I now advocate the increased use of hardy plants, so that in the autumn, as soon as frost seems imminent, and the tender bedders must be removed, they may be so few, that, with a little supplementary planting, the beds shall be effective, if not gay, during the whole of the winter and spring months.

That an effective winter bedding arrangement is possible, none will doubt who saw the Messrs. Lee's exhibit at South Kensington in October last, and as practised in some few private gardens. Spring bedding is more than well done in many places, but how to combine the three—spring, summer, and winter—to get a maximum of effectiveness at all seasons by a minimum of labour, is a difficult problem. I think, however, that it can be solved—indeed, it is being solved; and though it may take years to complete the solution, the incentives to grapple with it are very great. During the last fifteen or twenty years there have been introduced, principally from Japan, a large number of small slow and compact growing shrubs, of almost every hue from dark purple to bright yellow, nearly all of them suitable for the adornment of the parterre, as they harmonise well with all kinds of bedding plants, and can be transplanted at any season with safety. They are in full beauty the whole year round, and are about the most effective "dot" plants that can be found for a groundwork of any variety of bedding plants: I allude more particularly to the Retinosporas, though there are other kinds of almost equal merit, particularly the smaller growing Thujas, the variegated Euonymus and Yuccas. It is to plants of this character that we must pay greater attention, by using them—if I may be allowed the expression—as permanent

bedding plants. Other hardy all-the-year-round plants, well suited for lines or groundworks, are found in Ajuga reptans rubra, Arabis lucida variegata, Antennaria tomentosa, Cerastium tomentosum, Pyrethrum Golden Feather, Santolina incana, Festuca glauca, F. viridis, and various well known Sedums, Saxifrages, and Thymes. These two sets of plants, with others of like nature, will as it were form the framework of the beds the entire year, and the rule or guide that should be observed in planting them should be to use them as largely as possible, but so to dispose them in the most varied arrangements that their repetition be not observable.

The summer filling in, and the most suitable plants for that purpose, will be understood by all, and when frost necessitates the removal of these the spaces may be effectively filled for the winter with small shrubs, the following being some of the best kinds for the purpose: — Cotoneaster microphylla, variegated Ivies, variegated Periwinkles, Mahonia Aquifolium, Laurustinus, small variegated Aucubas, Portugal Laurels, Pernettyas, Osmanthus, &c. Plants of this class will produce the best winter effect, but should spring effect be that most desired then the following will be best to take the place of the summer bedders :—Hardy Heaths, especially Erica herbacea, E. mediterranea, E. carnea, and E. rubra; Alyssum saxatile, Aubrietia Campbellii, Daisies, Pansies, Myosotis, Primroses, Crocus, Narcissus, Tulips, Hyacinths, and many others—only that when bulbs are used the ground should be carpeted for the winter with Sedums or some other neat surface-rooting plant. Such a furnishing of the bare soil, whilst it enhances considerably the winter appearance, is in no way detrimental to the growth of the bulbs.

Such a system of bedding as I have here sketched out necessarily implies the removal of the whole of the plants once each year for the purpose of renovation of the soil and working out fresh designs. It also necessitates a reserve garden, where the shrubs can be transferred till required, and division and propagation of spring plants be done during the summer season. All this, of course, involves labour, but if accounts were balanced I have no doubt that the verdict would be all-the-year-round effectiveness and less labour than that now required to produce with tender plants at the most sixteen weeks of summer beauty.

But some may ask—do ask—Why advocate bedding-out at all? Is there not a sufficiency of hardy plants and flowers to keep our gardens cheerful without having recourse to such artificiality? To such I answer—1. That as servants we are required to please our employers, many of whom demand that bedding-out shall be a speciality. 2. Bedding-out, or formal planting, is the only style adapted to all geometrical-formed gardens, surrounded with statuary, vases, &c., and till these become extinct the formal planting of gardens will continue. Moreover, the major part of flowering, herbaceous, and other hardy flowering plants, are not suitable for such planting; so that, much as some of us would like that there should be an end to the system, obviously our wish is not yet likely to be gratified; and it therefore behoves us, not to vent our abuse on what we are unable to alter, but to make the best of it, though it may be "a bad bargain," by doing our utmost to lessen the labour it entails by using all the hardy plants available, that the parterre may be gay the whole year round. *W. Wildsmith, Heckfield Gardens, Winchfield.*

THE ABYSSINIAN BANANA.—A magnificent specimen of the noble Musa Ensete is at present in flower at Mentmore, Bucks, where it forms a most striking object in the large temperate-house.

New Garden Plants.

BARKERIA CYCLOTELLA.*

This plant has cost me much trouble. Once more a miserably short winter's day was spent in looking over all my materials; and now I think myself entitled to establish this as a new species. It stands just between Barkeria Lindleyana and B. melanocaulon, having the characters of the keels of the first and in the shape of the lip coming nearer the second. One might even surmise it to be a mule between the two.

Barkeria Lindleyana (and the variety Centeræ, of course) is easily recognised by the oblong square lip, the middle keel ceasing at a distance from the apex of the lip, while the lateral keels are much shorter. The anterior part of the lip is of a beautiful dark purple. The column has dark spots. I had the other day a splendid plant of it, kindly sent by Mr. Backhouse, of Holgate House, York. Herr Consul Kienast sent me dried specimens, quite of late prepared (and of course ruined) by the application of hot iron by the Indians. Thus do the mistakes of civilisation spread! No doubt the same natives made the pencil sketch—a great proof of unusual talent, though, by an extravagant liberty, the keen artists drew in one of the flowers the column outside and underneath the lip, which, if really found in Nature, would alarm all the morphologists of the globe. The colours are very fine, and quite worthy of the excellent Dr. Lindley, to whom the species was dedicated by Mr. Bateman.

Barkeria melanocaulon has a lip that is broader at the base than at the top, where it is generally emarginate. The side borders are crenulate and very distinctly undulate, the middle keel just ceasing at the very tip of the lip. The column is green in the middle of the back, whitish at the sides over the very prominent wings, and covered with small dark stripes (not spots). From sketches I made from living specimens I see it folds down on each side of the lip, so as to look finally

FIG. 15.—BARKERIA CYCLOTELLA.

like an old-fashioned military cocked hat, as they were worn in the old times, and such as are even now to be seen with the Italian Carabinieri. As far as my remembrance reaches, the whole flower is light rosy, with the exception of the column, and there is no dark blotch on the top of the lip. Biologically this is quite distinct from all other species, since gardeners have the greatest difficulty in killing this—a quality one misses in the other species. In 1844 we had at Dresden fresh plants sent by Galeotti himself, and its descendants lived till 1870. It is a long time since I have seen fresh flowers, but I have twenty-three herbarium specimens at hand, which give me a very satisfactory idea of the species combined with my sketches and notes.

Now Barkeria cyclotella has a lovely inflorescence: the flowers are near those of B. Lindleyana, with the same keels, but the lip has neither the square outline of that species, nor has it the form and undulation of Barkeria melanocaulon, but it has its broadest transverse diameter through the centre, and there are no crenulations. The column has neither blotches nor lines; it is purple on the hinder surface near the top, whitish at the sides and in front. The colour is wholly that of a good "Barkeria Skinneri" (Epidendrum Skinneri of Lindley, but it sells much better as a Barkeria, though, scientifically, Barkeria is nothing but Epidendrum). Add to this, that the anterior part of the lip is nicely adorned by a dark purple spot as in B. Lindleyana. This appears never to be the case in B. melanocaulon.

Thus this novel Barkeria is a lovely thing. I made its first acquaintance by a single flower, kindly sent me by Mr. Bull (No. 413). I called it reluctantly B. Lindleyana, but wrote to my indefatigable correspondent that my conscience was not easy about the name. How can one expect a botanist to have an easy conscience after the "homœopathic dose of a single flower"? Now, my second oldest English correspondent, who has been so very often my helpmate and my teacher, having had a hint of my feeling uncomfortable in this Barkeria question, immediately sent me a complete inflorescence, nice and fresh. If there do not appear new and unexpected difficulties, as is so often the case in venturing upon knowledge of plants, I would regard the question settled. I have, however, some reason to guess that one of these days some critical plant may come from Mr. Backhouse, which may require us to re-open the question. *H. G. Rchb. f.*

* *Barkeria cyclotella*, n. sp.—Racemosa, bracteis triangulis scariosis ovariis pedicellatis quinquies brevioribus; sepalis triangulis acuminatis; tepalis ovatis acutis, labello supra basin columnæ adnato, basi leviter cordato, ceterum plus minus circulari, integerrimo, plano, carinis a callis depressis baseos exeuntibus bene ante apicem abruptis, vulgo obscuris; columnæ apice utrinque apiculata, alis semioblongis, haud conspicuis.—Colores Barkeriæ Lindleyana, sed columna immaculata. (Vidi specimina a cel. Bull et Day.)—*Epidendrum cyclotellum. H. G. Rchb. f.*

ODONTOGLOSSUM EDUARDI, *Rchb. f.*

When I named this on July 4, 1878, I did not hope to see it so soon in flower. I have a panicle at hand with sixteen flowers, coming from a bulb a third smaller than the wild bulb. Now this pretty inflorescence is quite a poor dwarf when compared to the giant specimens in my herbarium, gathered by the discoverer, Mr. Edward Klaboch. The flowers make one-third of those of Oncidium ornithorrhyncum, yet they are larger, and the lip is rather triangular. Their colour is mauve, with a light purple hue. The lip is not totally yellow, as had been stated, but of same colour, with only the callus ochre-coloured, and if you look carefully you will see a small narrow zone of light sulphur surrounding the anterior part of callus. I do not recognise in the fresh flowers such asperities outside the sepals as I have described them in the dried flowers. The callus is subject to several variations. It is oblong square, both sides going out in lobed keels, and an obscure ridge running through the middle. It appears sometimes that a square blade rises at its apex, and sometimes there is an obscure callus each side. I did not find any more in the fresh flowers, the lateral keels being forcipate, as I saw in a dried flower. It has just flowered with Mr. H. J. Buchan, Wilton House, Southampton. A First-class Certificate was awarded to this gay novelty by the Royal Horticultural Society last December 16 (see our columns, p. 787). No doubt Mr. Edward Klaboch will feel pleased, when reading this statement in some little known posada of some distant valley in the Andes. I have to thank for the specimen Mr. Arthur Veitch, who was delighted with the delicious perfume. *H. G. Rchb. f.*

DENDROBIUM AUREUM (*Lindl.*) PHILIPPINENSE, *n. var.*

This is a stately variety, with much taller bulbs than those of the Indo-continental form. It has larger flowers of a very pallid colour. The lip is far more acute, as are also the sepals. It has a single broad purple blotch under the velvety disk. On both sides of the base stand orange areas. It comes very near the Dendrobium heterocarpum Henshalli of *Bot. Mag.*, 4970, which has shorter bulbs and two dark blotches on the lip. It is well known that D. aureum, Lindl., and heterocarpum, Wall., are the same.

Just as Cattleya labiata, Dendrobium aureum, Lindl., is an exceedingly polymorphous species—to speak with Engler, in his monograph of Saxifraga, it is "typus polymorphus." This species is exceedingly variable, as my numerous specimens from Ceylon, Moulmein, Khasia Hills, Minahassa, Philippines, give evidence as well as my very copious garden specimens. If somebody compares the various good English representations (also of D. rhombeum and aureum pallidum) he will have an idea of the variations. Dr. Wight's plate, 1646, is a most indifferent representation. Those cheap Indian artists are very dangerous in their thoughtless, mechanical work.

I have had this variety at various times from Messrs. Low, Veitch, and Bull, and now it flowers once more with Messrs. Veitch [and with Mr. Thomas Christy]. *H. G. Rchb. f.*

NEW HYACINTHS OF 1879.

THE throstle's song in April, so clear, sweet, and inspiring, has been denominated "the first redresser of the winter's wrong." Its hopeful song, so full of joyous life, is heard in the early days of the month, and with it there are many precocious flowers gilding the fields and hedgerows, full of gladsome beauty in the invigorating rays of the sun. Ravishingly welcome as all this beauty is, it is but a gleam of the full flow of the light of floral life seen under glass when Spring, coming victorious from its tussle with and overthrow of Winter, leads forth numberless beautiful flowers as earnests of its triumph.

This thought was deeply impressed on my mind as, one sunny day in April last, I went into one of the span-roofed plant-houses in Messrs. Veitch & Sons' nursery at Chelsea, and saw there something like one

hundred plants of the newest Hyacinths of the season, including a few plants of each variety, making up a collection of novelties of unparalleled extent and remarkable beauty and quality. How actively at work the Dutch growers must be to produce in one small epoch of horticultural time so much of transcendent worth! When not less than eleven First-class Certificates of merit are awarded to new Hyacinths in one season, there must needs be something particularly fine and striking among them. Let us pass in review a few of the autocrats of this floral assembly, and note their characteristics.

Of blue-flowered varieties the doubles were represented by Duke of Norfolk, rich deep purple, almost a claret-purple, good bells, and fine close spike—a good and useful addition to this class; and Frans Hals, deep purple with dashes of bright blue—a variety that in all probability will require good culture to bring it to perfection. Of pale blue single flowers Duchess of Connaught took the lead; the surface of the segments delicate silvery-lilac, with a fine pale blue reverse, excellent form, and very fine handsome spike. Pottigieter, of a very delicate tint of grey-blue, with a bright pale blue reverse; distinct and very pretty. Lord Beaconsfield, bright pale blue reverse to the segments, with a delicate tint of lilac-blue on the surface; large and massive bells, of fine form: very fine spike, extra extra. John Bright, somewhat rough in the spike, a defect that may disappear with cultivation; the segments delicate blue on the face, with a good deal of pale bright blue on the reverse: this will most likely make a good Hyacinth; and Pauline Lucca, a very distinct flower, the reverse of the bells blue, with a deep tint of lilac-blue on the face, the segments margined with silvery-grey; very fine, and of excellent quality. The blues of a darker shade were—Masterpiece, black margined with deep purple, very dense symmetrical spike, and one of the finest new Hyacinths of the year. Duke of Connaught, more of purple and less of black, was characteristic of this variety as compared with the foregoing; great depth of a rich shade of a blue-purple colour; good bells, fine close spike; a rich looking and showy variety. Royal Blue, a variety with large and well-formed bells, the segments having dark stripes down the centre, with bright purple margins; a fine, distinct, and promising flower; and Ainsworth, dark purple segments edged with a brighter hue; rather rough, but with plenty of stuff in it to make a good Hyacinth.

In the class of red flowers King of the Reds stood out from all the rest for its strikingly rich and glowing hue of colour; deep bright lake, with a light centre to the bells, the latter of excellent form, and very fine close spike. Vurbaak and other fine reds looked pale by the side of this. Delicata, a bright deep red, an improved Lina, very good spike, and small well-formed bells; a pleasing flower of good quality. Lord Derby, the centre of the bells marked with a deep stripe of red, the margins delicate flesh; fine long showy spike, plenty of bells, the segments narrow; but, as in the case of the white Seraphine, they are so numerous as to form a symmetrical spike. Trocerado, pale pink, with stripes of deep rose; a very fine pleasing variety; excellent bells and spike, combined with a good habit of growth. Loveliness, blush ground with deep pink stripes along the segments and across their tips; very fine spike, a strikingly delicate flower, and most appropriately named. Romeo, rosy-lake, with a broad stripe of colour along the segments and pale margins; good close spike. Salmon King, an almost semi-double variety, delicate salmon-pink, with a stripe of deeper salmon-pink along the segments, this colour deeper still on the reverse; very large massive bells, and grand spike: extra fine. Leviathan, flesh-colour, and flushed and delicately striped with pink; very delicate and chaste, and extra fine quality.

Of white varieties there was a most promising double under the name of The Bride. This was a really pure white double Hyacinth; large handsome bells, and fine spike. Of single varieties there were Galatea, French-white, with very slight stripes of the most delicate lilac only just perceptible; very distinct in colour, and fine close spike. L'Ornement des Roses, almost a yellow; white, with very slight buff stripes along the segments; fine bold-looking bells; and Catherine Hermina, a wonderfully pretty Hyacinth, a kind of refined La Grandesse: if the spike will but lengthen and become more massive with cultivation, it will make a rare white Hyacinth.

Of new yellow varieties there were Kenan Hasselaar, of which it may be said that if the dash of yellow on the reverse was on the face of the segments, it would be grand in colour; rare close spike, and suggestive of getting near perfection as a yellow save in wanting greater depth of colour. McMahon, in the same way, but wanting the massiveness of texture and form. Canary Bird, also a good yellow, but below the first-named in point of quality. Obelisk, also wanting in massiveness. Lord Derby, pale buff yellow with dashes of pink in the tube; distinct in colour, and may improve with cultivation. Lastly Brutus, like Duc de Malakoff, but with less of red on the segments.

Two claret-coloured varieties must be mentioned—viz., The Shah, having pale wine-purple segments with dark stripes, forming a dense spike—a fine bright-looking Hyacinth; and The Sultan, claret and magenta, with bright purple dashes—a bold and showy Hyacinth; excellent spike.

With so much wealth of form, and such varied flushing of hues, with their distinct and novel tints and shades, there is no lack of new Hyacinths; but when they will be put into commerce is a matter which cannot now be rightly determined. *R. D.*

JAPANESE CHRYSANTHEMUMS:
THE CHUSAN DAISY.

HAVING given a list of the names of plants discovered and introduced by me from China and Japan (see p. 11), I now propose to make some remarks upon some of the species. And, first, I shall take the Chrysanthemum named by me the "Chusan Daisy." This was found in a cottage garden on the Island of Chusan, and sent home to the Horticultural Society of London. I well remember writing a letter to the late Dr. Lindley, who was then Secretary, telling him not to despise the modest little flower, as it was probable that great things might be done with it in hybridising independently of its being a very pretty little plant. It reached England alive, but for a time did not attract much attention.

About this time the late Mr. Salter, of Hammersmith, had settled in Versailles, where he was making the culture of the Chrysanthemum a speciality. In his book published a few years ago he thus speaks of the "Chusan Daisy":—"In 1846 a new era commenced in the history of the Chrysanthemum, for at that time Mr. Fortune brought from China two small flowering varieties known as the 'Chusan Daisy' and 'Chinese Minimum.' Although Mr. Fortune admired them in Chusan they were considered too small and insignificant for English taste. The French opinion of them, however, was far different, for immediately upon their introduction in 1847 into the already well-known collection at Versailles the little 'Chusan Daisy' became a favourite. From these two varieties have sprung all the Pompons now in cultivation." So much for the "Chusan Daisy" and for the effect it has produced in the history of the Chrysanthemum.

At that time the Chrysanthemums in England were far superior to those of China. I could find nothing worthy of being introduced except those small varieties already mentioned. A few years afterwards, however, in 1866 and 1861, on visiting Japan I found myself in the very home of the Chrysanthemum. Here not only was the culture far superior to anything met with in England, but the varieties were altogether different. In so far as the culture was concerned, the Japanese were greatly assisted by their climate. What a glorious autumn they have in Japan! The sun shines from morning to evening in a clear sky, with scarcely a cloud to obscure his rays.

The place most famed for its Chrysanthemums in the vicinity of Yeddo is Ah-sax-sau. At the time of my visit the Chrysanthemums were in full bloom, and most certainly would have delighted our English florists had they found themselves so far away from Hammersmith, the Temple, or Stoke Newington. I procured some extraordinary varieties, most peculiar in form and colouring, and quite different from anything of the kind at that time known in Europe, and luckily they reached England alive. I observe the following notice in my diary at the time:—"If I can succeed in introducing these varieties into Europe, they may create as great a change amongst Chrysanthemums as my old *protégé* the modest 'Chusan Daisy' did when she became the parent of the present race of Pompons."

In Mr. Salter's book noticed above he has the following notice:—"In 1862 Mr. Fortune introduced several Japanese varieties, some of which were spotted and striped; others were of fantastic forms called Dragons, and one, laciniatum, was a beautifully fringed white flower, most invaluable for bouquets, having the appearance of a Japanese Pink rather than of a Chrysanthemum." From my journal I quote the following description of these plants:—"One had petals like long thick hairs, of a red colour, but tipped with yellow, looking like the fringe of a shawl or curtain; another had broad white petals, striped with red, like a Carnation or Camellia, whilst others were remarkable for their great size and brilliant colouring."

On the first introduction of these plants they were not appreciated by the florists of this country. But the effect they produced in our greenhouses and conservatories was most charming, and they were highly prized by the public and by artists. At last the opinions of our florists seem to have changed, and the Japanese Chrysanthemums are, I think, generally appreciated.

There is one curious circumstance about these plants which I must not omit to mention. Of course there were many varieties that I did not succeed in introducing; but, strange to say, many of these varieties were raised afterwards by Mr. Salter at Hammersmith from those I had introduced. An old lady who lived near me in Kanaganea used to point to a number of varieties in her garden, and say that they all came from one and the same plant. I had the experience of Mr. Salter, and knew this was not unlikely. I think she was rather surprised when I said I fully believed her. *Robert Fortune.*

TOMATOS ALL THE YEAR ROUND.

NOT many years ago Tomatos were grown only from seeds sown in the spring, just in time to have plants ready for planting out against a south wall early in June. As the seeds germinate quickly and the plants grow rapidly, a few weeks sufficed to have fine plants grown and fairly hardened off for planting out at the desired time, and with this meagre attention good crops have been produced year after year up to a recent period. The appearance of the Tomato disease and the change that has taken place in our seasons (the former I verily believe being the direct result of the latter) has aroused cultivators to a true sense of their position with regard to the cultivation of this esteemed edible. A good aspect in which to plant out the plants early in the summer, and keeping the shoots thinned out and regularly stopped after each successive bunch of fruit was formed, was about the sum total of the labour expended upon Tomato culture so long as the use of the vegetable was confined to the few families who possess walled-in gardens and a staff of competent gardeners. Now, however, things have changed; the vegetable has become, or is fast becoming, a public commodity, and a good many find it pays to grow whole houses of them, and no sooner is this move noticed by private gardeners than they at once take another step to the front by forcing Tomatos in winter, leaving the middle classes to fall back upon American produce, which is sadly inferior to what is grown in private gardens.

It is one of the best paying crops that can be grown, and no doubt when this fact is discovered by the enterprising portion of those whose interest it is to keep in advance of the times the market will become better stocked with English-grown Tomatos at a much lower price than good samples are at present sold. A good sample of Tomatos is now sold at a proportionately higher price than an inferior one, much after the manner that finely finished black Grapes take precedence of brown ones; indeed form, colour and size are the distinctive marks of public appreciation in this as in other branches of either fruit or vegetable trade. This being so there is little doubt that before long Tomatos in winter will be as much sought after as Asparagus, Seakale, and other choice winter esculents.

There is nothing to bar the extension of this rapidly increasing branch of vegetable cultivation "all the year round," providing proper steps be taken at the commencement. It is a difficult matter to obtain through the medium of a seedsman a variety of Tomato that is worth growing in winter. You order two or more varieties that are highly spoken of in public—you sow the seed, grow the plants, and tend them up to the bearing period, only to find that half or more of

your "nurslings" are what are vulgarly termed "mongrels."

It was a disappointment of this kind that first induced me to seek a remedy for myself, by selecting a good strain of seed, and maintaining, if not improving, its character by annual selection. You have no chance at an exhibition with such crack exhibitors as Mr. Miles, of Wycombe Abbey, unless you have a stock of something far beyond mediocrity to appear in public with; and these remarks hold equally good in the matter of market competition, where the good article brings the correspondingly high price. The month of February is early enough to make the first sowing, in a pot or pan of rich mould according to the number of plants required.

The details of cultivation are so well understood, that it is hardly necessary to particularise except with reference to plants that are intended for special purposes. Those who intend growing for exhibition early in the season, cannot do better than time their plants as nearly as possible to come into bearing about the date the exhibition takes place. The first fruits are invariably the best. An average of three months will not be far wide of the mark to allow from the time the seed is sown until the first fruits are ready for gathering. In the early stages of growth plants intended to bear show fruit should be grown "stubby" and vigorous by keeping them near the glass, well ventilated, and in a moderately dry, not over high atmosphere. They may also with advantage be kept in small pots, say from 6 to 7 inches in diameter, until they show flower and set their first batch of fruits if time is a consideration.

Once the plants get into a bearing state over-luxuriance is counteracted, and a fair balance is struck between root and branch. The plants may then be shifted on into pots 10 or 12 inches in diameter, and stout stakes put to each plant to keep them from vibrating, or if there is room for them to stand along the back wall of a vinery they will succeed perfectly in pots from 7 to 9 inches in diameter, allowing them to root into some rich preparation, which should be placed underneath them, and feeding them as their condition will indicate with liquid manure. The plants should be stopped regularly above the flowers as they appear, and of course all superfluous growths and side-shoots are removed in order that the energies of the plants may be directed to the swelling and development of the fruit. With regard to size and colour the former is secured by thinning the fruits, and the latter by exposure to sun and air. As far, however, as exhibiting is concerned, form and colour are indispensable, size being a secondary consideration. Plants required for fruiting in winter should be propagated from cuttings in August and early in September, earlier or later according to locality, by inserting cuttings in small pots, or by potting half-a-dozen cuttings in a 6-inch pot and plunging them in a moderate bottom-heat of from 65° to 70°. After the plants are potted off the same remarks that are applicable to early spring cultivation are equally applicable in winter, with this difference, that they must be grown in a lower and drier temperature as light decreases and the natural condition, instead of improving daily, as is the case in spring, is operating in an opposite direction.

For winter work the back wall of a light airy lean-to house where other forcing is being carried on answers admirably. Shade and moisture are elements that are always inimical to the welfare of rapid-growing subjects, and especially at the flowering stage moisture must be cautiously dispensed, otherwise the plants will fail to set their fruits; although once set the swelling process may be materially hastened by its application, and a corresponding rise of temperature up to the ripening stage, when more air and a drier heat will be required. It strikes me that in future Strawberries and Tomatos will be grown side by side for winter more than they have been; both are useful winter crops, and both hold a high place in public estimation in their respective departments. *W. Hinds.*

CYPRIPEDIUM SPICERIANUM.—We understand that this Cypripedium, which was illustrated in our last issue, was received from India some time ago by Mr. Spicer among a mixed collection of Orchids without any indication whatever as to its habitat. When it flowered for the first time a bloom was sent to Professor Reichenbach, who named the plant in compliment to the gentleman through whose instrumentality it was introduced to British gardens, and from whom Messrs. James Veitch & Sons purchased the stock.

CLOVER AND GRASS SEED.

THE extent of the import and export trade in grass and Clover seeds done by some of our larger London wholesale seed houses is of such an extent, and includes such enormous bulks, as to be absolutely astonishing to those unacquainted with the immense supplies received and distributed. The bulks of natural and perennial and Italian Rye grasses, for instance, are of such an extensive character, including of course the finer mixtures for lawns, croquet and cricket grounds, &c., as to supply statistics of a very interesting economical and commercial character. If it were attempted to give the quantities of seeds passing through some of the warehouses in a year, the figures might be taken as something incredible, though they would be perfectly true nevertheless. The visitor privileged to walk through the spacious floors of the warehouses, towering one above the other to the extent of seven or eight storeys, finds himself at this season of the year hemmed in with piles of bales of grasses and Clovers of alarming height and extent; and the first question that arises in his mind is, "From whence are all these enormous supplies drawn?" We are in a position to give a reply to this question.

All natural grasses are obtained from Germany, from the districts on the banks of the Rhine, the vicinity of Darmstadt, and others where the cultivation of these is largely pursued. Holland has commenced to furnish its quota, and it will be found that, when favoured with good harvests, the Dutchmen will furnish these in larger quantities year after year. Timothy-grass, a valuable grass either for hay or green food, and Alsike Clover, which when mixed with grass is good for permanent pasture or mowing, come from Sweden; and the latter is said to have obtained its name from growing in abundance in the parish of Alsike, in Upland. Red Clover in varieties, white Clovers and Alsike also, are largely drawn from Germany and Austria. Lucerne, which on account of its tap-root succeeds better than the red Clover because of its ability to survive the effects of drought, and Sainfoin, as representing other foliage plants for feeding, mainly come from France, and so do great quantities of Italian Rye-grass. Large quantities of Timothy-grass and red Clover come from the United States of America, and Canada, and some white Clover and Alsike also. It is from Scotland and Ireland that the perennial Rye-grasses are obtained. This list gives a general idea of the main sources from whence these valuable supplies are drawn.

Where do they go to? is a matter of equal interest and importance. Large portions are consumed at home, and enormous quantities go abroad. The shipping trade, which is done to an extent that would savour of the romantic were its details set forth in the form of statistics, is replete with interest. Extensive shipments are made to Australia, New Zealand, California, Canada, and the United States; smaller but increasing supplies go to the Cape of Good Hope and Natal. Clovers and natural grasses are used extensively in Australia and New Zealand. The landholders in these latter countries appear to be fully alive to the necessity and importance of providing rich, healthy, and nourishing grasslands. In this respect they appear to betray a greater anxiety than do many of our English farmers. Of late years, in these colonies, large tracts of uncultivated land, described as "morass" and "scrub," have been cleared and laid down with the most suitable grasses for cattle and sheep pasturage. In one instance, in Australia, 100,000 acres in one tract have been so treated with the best results; and not only is the laying down of new pastures being actively pursued by the richer colonists, but the renovation of old pastures also, thus giving a good lead to agriculturists. The necessity for the latter process is perhaps greater in the colonies than in the mother country, where the land is less fertile in its natural state; as in course of time the stronger rooting and more vigorous growing grasses assert their natural superiority over some of the weaker kinds, and either the process of depasturage or that of renovation has to be resorted to: the latter resource is necessary to maintain that equalisation of the particular grasses that provide the necessary principles of animal aliment.

In order to give some idea of the export trade done in grasses and Clovers, we may mention that, of the natural grasses, the largest shipments are made of Cock's-foot, one of the most luxuriant of grasses on good soils; Timothy, hard, meadow and Sheep's Fescues; meadow Foxtail—the verdure of many of our rich meadows depending on this grass; the smooth-stalked Foxtail, and Yarrow, the common Milfoil, a subject which is very common to pastures on the roadsides in the country. Many of these are forwarded at the rate of tons each. Of the various Clovers, the white, red, Cow-grass, the perennial or wayside red Clover, and Lucerne, a deep-rooting perennial plant, sending up numerous tall Clover-like shoots. Rape is also largely sown in both Australia and New Zealand to ensure a quick crop, and considerable quantities are annually forwarded to the colonies.

The care exercised in the preparation and shipment of these various articles is commensurate with the importance of the trade. The heavier shipments of these seeds having to cross the Equator, unless each subject is sent in the driest and most perfect condition deterioration of the growing qualities is sure to take place, and consequently the risk of landing valuable consignments in an injured or worthless condition is very great. To avoid this as far as possible, certain precautions are taken. By means of careful trials of growth, seeds of the strongest vitality are ascertained, selected, and alone used. Each kind of seed is divided into small quantities, generally of half a hundredweight each, and these are placed in canvas bags, or, if sent loose, in water-tight or air-tight tanks. Formerly the greater part of the shipments were made in hogsheads, as these were the more easily disposed of when they reached their destination for such uses as water-tanks on river boats, for storing water in fields for irrigation and other purposes, and also for use in households. Italian and perennial Rye-grasses are exported in large quantities, and the demand is found to increase each season.

Such then are some of the details of a very important branch of the seed trade. The competition in this department is very keen, and it is found that the house that does the trade best is pretty sure to reap the greatest measure of support. Rare judgment is required, and a large capital, in order to make purchases and hold stock when it is politic to do so. In proportion as the colonies and America become meat-producing centres for the mother country, so will the demand for these seeds increase. In our own country the farmers are advised to breed cattle in preference to growing corn. One of their own body is found asserting that "by breeding cattle, and producing mutton and beef instead of bare or open fallows, or Wheat, we should, with less anxiety, be better able to face the rent-day, and other demands which are now such a burden on the lands where only corn is grown." *R. D.*

CHRISTMAS ROSES.

NOTWITHSTANDING the severity of the weather during the past winter, with little or no sun to cheer vegetation, we have had an abundant supply of the above-named for some time past, and have still many more showing, with others in various stages of development; so that from present appearances they will continue to yield a succession for at least a month yet to come. The variety grown is H. niger maximus, a robust habited kind that has large thick leathery leaves, and huge crowns which send up immense numbers of blossoms. These have stout stalks about 6 inches in length, and being of such a fleshy nature they take up water freely, thus enabling the blooms to last almost as long as they do on the plants. This enduring power renders them particularly serviceable just at this season of the year, when flowers of all kinds are so scarce; and seeing the great ease with which they may be grown, the wonder is that they are not more cultivated, as all the protection they require in winter is that afforded by an old light or hand-glasses during the sharpest and worst of the weather. This simple covering not only renders them perfectly safe, but makes the blooms more pure by causing the petals to come quite white, instead of being stained with reddish green, as they generally are when left fully exposed.

Besides being valuable for growing out-of-doors to cut from, they are equally serviceable for potting for greenhouse decoration, or the adornment of windows, a position in which they show off their beauties and last a long time in perfection. The best way to manage them is to choose a nice sheltered

border under a wall, or along the front of a plant-house, as there the warmth prevents the ground from becoming frozen, and it is an easy matter in such a situation to place some sashes over them, and block up the ends by means of a mat, and so make the plants as snug and comfortable as if they were in a frame. There is an impression with some that Christmas Roses are difficult to increase, which is a fact so far as raising them from seed goes, as they seldom form any, the pods being generally barren, but like most perennials they may readily be propagated by division, if care is exercised, and the operation carried out without the use of a knife or other instrument to effect the necessary severance. The safest plan is to dig up the clump, and then either shake or wash the soil all away from the roots, when each small crown will be distinctly visible, and may be pulled apart with a root or two attached, each piece of which is then sure to grow. The proper time to set about the work of division is immediately after the plants have done blooming, as just then they are about forming fresh growth, and will stand more liberties being taken with them than at any other season.

Like most subjects of a kindred nature that send up and have to support such a vast quantity of large succulent flowers, this Hellebore requires good soil and plenty of depth of loose open material to work in, which may be afforded by mixing up a quantity of refuse peat, leaf-mould, and sand; and these ingredients, if worked into the ordinary garden soil, will make a bed in which it will revel. As this variety of Christmas Rose has great spread of foliage, it should not be planted nearer together than 18 inches or so. If well watered while making its growth, or given a soaking or two of liquid manure, it will be a great help in assisting the plants to become strong and fine. When required for potting, they should be lifted in November and stood in cold frames, that they may have time to take to the soil, when a few can be placed in a little warmth to bring them on, and so prolong the time of flowering.

The way the blooms look best when cut is by arranging them in bowls, or low flat vases, filled with green moss, where, with some of their own foliage, a spray or two of Lily of the Valley, Cyclamens, and Violets, a most interesting and natural-looking group may be formed. *J. S.* [A fine specimen of this variety, maximus, grown in a tub, and profusely flowered, shown at South Kensington on Tuesday last by Messrs. Osborn & Sons, was very attractive. EDS.]

NOTES ON NEW ZEALAND PLANTS.*

HAVING long been strongly impressed with the notion that on the mountain ranges of New Zealand, and more particularly those of the middle and southern islands—New Munster and New Leinster—many hardy forms of the southern flora might be got that would impart new and highly important features to our forests, pleasure grounds, and gardens, I secured the good services of some friends who, from time to time within the last fifteen years, sent me such seeds from the provinces of Canterbury and Otago as they thought likely to interest me. From these seeds a few generally known hardy plants were reared, as well as the after-named less known kinds that, having withstood the rigours of the unusually severe and long-protracted winter of 1878-9, may be looked upon as sufficiently hardy for our climate.†

1. PLAGIANTHUS BETULINUS (Ribbon-tree of the settlers, and *Houi* of the Maori natives).—Described in Sir J. D. Hooker's *Handbook of the New Zealand Flora* as a lofty tree, attaining 40—70 feet in height, but that its wood is worthless; and by Captain J. Campbell Walker, Conservator of State Forests, in his report of 1877, as "a graceful tree, 30—50 feet high, having white, compact, fissile, but not durable wood." Of several trees that I raised from seeds about ten years since, one that was planted in the open ground now measures fully 15 feet in height, and one on the south wall of my house is 23 feet. Both are of straight handsome growth, bearing considerable resemblance to our native Weeping Birch, especially in the size and form of their lower leaves, but those on the upper branches are three to four times larger. You will see by the branches before you that they are remarkably tough, so much so that they may be used like packing twine in tying; and I have found them very serviceable for fastening the branches of wall trees, not as is usually done with twisted Willows, but by knot-tying. In fact, their toughness is so remarkable that on the occasion of a Botanical Club visit in 1877 the members admitted that they had never seen such toughness in any unmanufactured vegetable substance. Having devoted considerable attention in endeavouring to discover a vegetable fibre capable of being profitably cultivated for paper-making, I some years since felt satisfied that the tough fibrous twigs and wood of the Ribbon-tree would be much more suitable for forming paper-pulp than the native Poplar, Fir, or other trees now in most demand for that purpose, and in this opinion I have been fully confirmed by that of eminent paper-makers and others well qualified to judge. Neither of my plants have as yet flowered, and as their propagation is somewhat difficult as well as tedious; seeds will have to be procured in considerable quantity from the native habitats of the Ribbon-tree in order to ensure its early and extensive introduction to British forest culture. As to the fore-mentioned worthless and non-durable character of its wood, it may be remarked that in young colonies the timber of unknown indigenous trees is generally judged of by its capability of withstanding the weather when employed for fencing and other out-of-door constructions, without regard to or in ignorance of its durability when kept dry; hence it may be presumed that the fissile or splitting properties and toughness of the Ribbon-tree timber may recommend it for making riddle-rims, basket-handles, barrel-hoops, and many other purposes. A keen angler, on testing some small twigs that I gave him, remarked that they would make excellent points for fishing-rods.

2. PLAGIANTHUS DIVARICATUS.—A small shrub, with many slender, spreading, tough branches. In all respects very different from and much inferior to the last, but equally hardy, and would seemingly make good sweeping-brooms and pot scrubbers. As it is only found in salt marshes, where very few shrubby plants thrive, its cultivation in such places might be found beneficial.

3. PITTOSPORUM TENUIFOLIUM (*Kohuhu* of the natives, and the fine-leaved Turpentine-tree of settlers).—"A bush or small tree, 20—40 feet high, with slender trunk." Timber, according to Captain J. Campbell Walker, "adapted for turnery purposes, and difficult of combustion." A plant 5 feet in height, on a south wall, withstood the last winter without injury, but several smaller ones of the same age suffered more or less in the open ground. Its beautiful glaucous, smooth, undulated, evergreen leaves render this an important addition to our ornamental wall plants; and a closely allied species (*P. Colensoi*) has thriven for a number of years in the shrubbery of my neighbour, I. Anderson-Henry, Esq., of Woodend, at Hay Lodge, where they now measure from 6 feet to over 13 feet in height.

4. ARISTOTELIA RACEMOSA (*Makomako* and *Mako* of the natives).—A small, handsome tree, 6—20 feet high. Wood white, very light, makes veneers." Has grown for seven years on a south wall, where its branches have frequently been partly killed down, but were reproduced in the following season without any apparent diminution in vigour. The very elegant, largish, irregularly formed deciduous leaves of this plant fully entitle it to a place on ornamental garden walls. Some plants which I gave to Lady Orde, four or five years since, have proved perfectly hardy in the mild west-coast climate of Kilmory, Lochgilphead.

5. DISCARIA TOUMATOU (the "Wild Irishman" of settlers).—"A thorny bush in dry places, becoming a small tree in damper localities, with spreading branches, and branchlets reduced to spines 1—2 inches long, which were used in tatooing" (Hooker). This curious and very interesting plant has stood in the open ground with me perfectly unharmed for five or six years, as have also plants which I gave to Miss Hope, of Wardie, and Charles Jenner, Esq., Easter Duddingstone Lodge. The seeds from which these were raised were from the province of Canterbury; and one of my plants produced in the middle of last June a number of pretty small white flowers, but these were not followed by seeds, owing, I suppose, to the inclemency of the season.

6. CORIARIA RUSCIFOLIA, and C. SARMENTOSA of botanists (the Toot poison-plant of settlers, and the *Tutu* or *Tua-tutu* of the natives.).—The disastrous cattle-poisoning peculiarity of the Toot have rendered it too well known to New Zealand agriculturists. Having cultivated a number of plants for some years, the seeds of which I had from the province of Canterbury, I found that at the base of a south wall they stood most winters unharmed, and had only the points of their shoots injured by those of unusual severity. In consequence of making some ground alterations at an unfavourable season for transplanting, I lost my Toot plants three or four years since. Although they seemed to thrive well all the time I had them, they never assumed that tree-like form of growth which Sir J. Hooker and other New Zealand botanists attribute to this species, but presented more of a sub-shrubby habit.

7. EDWARDSIA (Sophora) PULCHELLA, and E. GRANDIFLORA (the native Laburnums of settlers, and *Kowhai* of the Maoris).—These two, and the *E. microphylla*, grow to about the size of our European Laburnums, and, like them, have dark-coloured heartwood, which is "valuable for fencing, veneers, &c." Although all very distinct, these three and another have been included under the generic name *E. tetraptera;* and the first, although easily distinguished by its slender, zigzag, flexuose branches, has been deemed identical with the straight-branched and more robust-growing *E. microphylla*. It has grown quite freely with me for the last twelve years on the south side of a 7 feet high wall, which it now overtops with its thickly-branched head; and its seeds have this peculiarity—that while many came up the first season that they were sown, others came up in succession in each of the five following years. *E. grandiflora* was planted out in spring, 1878, when about 2 feet in height; also on a south wall, and it stood the last winter perfectly uninjured.

8. RUBUS AUSTRALIS *var.* CISSOIDES.—The leaves of this variety have the peculiar appearance of being almost exclusively composed of rigid, prickly midribs. It and several other varieties form thick, rambling, very prickly, various-sized bushes, and are all about equally hardy, standing our severest frosts in moderately sheltered dry places. They are termed "Lawyers" by the settlers, and *Tataramoa* by the Maories.

9. LEPTOSPERMUM SCOPARIUM (the Tea-tree and Brown Myrtle of settlers, and *Manuka* of the natives).—A pretty white-flowered, large evergreen bush or small tree, the leaves of which are used as tea, and the twiggy branches for brooms. Among a number of three-year-old plants in the open ground several almost escaped injury, while others were more or less killed down. Like No. 4, it appears to be perfectly hardy in our west-coast climate.

10. FUCHSIA EXCORTICATA (*Kohutuputu* of the natives).—This once common inhabitant of our greenhouses, although never entirely killed, has its shoots so frequently cut down as to prevent it from flowering, and gives it a sub-herbaceous appearance.

11. FUCHSIA PROCUMBENS.—This pretty little trailing plant, which within the last few years has become common in our greenhouses and flower shows, has stood on a rockery for the last three years, and appears quite hardy.

12. ACIPHYLLA COLENSOI (the "Wild Spaniard" and "Spear-grass" of the settlers, *Kurikuri* and *Papaii* of the natives).—In Sir J. D. Hooker's *Handbook of the New Zealand Flora* this extraordinary evergreen herbaceous plant is described as forming a circular bush, 5—6 feet in diameter, of bayonet-like spines, impenetrable to men and horses, having 6—9 feet high flowering-stems, covered with spreading, spinous leaflets. In another description its leaflets were stated to be as long, broad, and rigid as British

* "Notes on New Zealand Plants that withstood the severe Winter of 1878-9 at Rait Lodge, Trinity, near Edinburgh." A paper read at the December meeting of the Botanical Society of Edinburgh, by William Gorrie, of Rait Lodge.

† The minimums for the seven months of 1878-9 in which the temperature fell below the freezing point were as follows:—First column from observations taken at Edinburgh by the Scottish Meteorological Society with thermometer protected from direct radiation by louvre boarding, in the usual manner; and second column from observations at the Edinburgh Botanic Garden, by a thermometer fully exposed to direct radiation:—

	1.	2.
November, 1878	26.5	24
December, ,,	9°	9°
January, 1879	16.°5	12
February, ,,	21.4	19°
March, ,,	17°	16°
April, ,,	28.7	26°
May ,,	29.2	—

bayonets, and a great deal sharper. Induced by these descriptions I procured a number of packets of "Wild Spaniard" seed in different years, but only one of those packets produced plants, and that after they had lain in the soil over one year. Although a real umbelliferous plant, it has more an appearance of some of the dwarf Palms; and an eminent botanist to whom I gave a plant, had it included among such in a list of his varieties which he afterwards sent me. The Carrot-worms knew better; for on looking at my pot of seedlings one morning I found that they had destroyed more than the half of them. Planted on rockeries where fully exposed, several plants have stood uninjured for five or six years. The strongest of these flowered last summer, when it sent up a flower-stem nearly 4 feet in height; but owing, I suppose, to the very wet and cold weather, it damped or rotted off without perfecting seeds.

13. GRISELINIA LITTORALIS.—According to Capt. J. Campbell Walker, this in its native localities is a handsome tree 30 to 40 feet in height, the timber of which is hard, compact, and of great durability, valued for fencing-posts, sills, boat-knees, &c. A plant, now about 6 feet high, has stood in the open ground without injury for eight years. As as ornamental broad-leaved evergreen it is superior to the common Bay Laurel, and is decidedly hardier than either it, the Laurustinus, or the Aucuba japonica; hence its cultivation is being rapidly extended. Another species, *G. macrophylla*, has been repeatedly killed in the open air, even although having the protection of a south wall; but its much larger and very handsome foliage entitles it to a prominent place among plants for house and table decoration.

14. COROKIA COTONEASTER (*Korokia* of the natives).—A low, spreading evergreen shrub, with thickly interlaced small tortuous branches. Two varieties of this curious and highly interesting plant, trained on a south wall—the one about 5 and the other fully 7 feet in height—were uninjured, and last spring both were thickly clothed with a profusion of small bright yellow flowers. In each of the last four seasons they have borne a few oblong bright red berries, which may be produced in much greater abundance as the bushes become older. Last winter some plants in the open ground were considerably injured, but these sent up numerous young shoots in summer.

(*To be continued.*)

PLANT PORTRAITS.

APHELANDRA PUMILA, Hort. Bull.; *Bot. Mag.*, t. 6467.—A short-stemmed species, with large cordate ovate-oblong acute leaves, purplish bracts, and orange flowers. Brazil.

BÆA HYGROMETRICA, Brown, *Bot. Mag.*, t. 6468.—A Gesneraceous plant, with tufted leaves thinly covered with coarse white hairs, ovate acute at both ends, crenate serrate; peduncles leafless, erect, with a few irregular violet flowers at the top. The capsule is elongated and spirally twisted. The plant is a native of North China, the headquarters of the genus being in the hills of East Bengal and Birma, but other species are found in the Philippines, North Australia, and in an island of the Western Pacific—an extraordinarily wide distribution.

CYCNOCHES WARSCEWICZII, *Foral Mag.*, t. 381.—The very curious dimorphic Orchid figured in our columns, p. 493, vol. xii.

DAHLIA JUAREZII, *Floral Mag.*, t. 383.—See *Gard. Chron.*, vol. xii., p. 433.

GLADIOLUS BRACHYANDRUS, Baker, sp. n., *Bot. Mag.*, t. 6463.—A native of South-east Tropical Africa, with short leaves, and racemes of erect, funnel-shaped, reddish flowers, with unequal pointed segments. Edinburgh Botanic Garden.

HIBISCUS ROSA SINENSIS, *Revue de l'Horticulture Belge*, December.—The varieties figured are those named Denisoni (A), and cruentus (B).

HIBISCUS ROSA SINENSIS SCHIZOPETALUS, *Garden*, Nov. 29.—A coloured figure of the remarkable plant figured by us at p. 273, vol. xii.

LUZURIAGA RADICANS, Ruiz et Pav., *Bot. Mag.*, t. 6465.—A Smilaceous perennial, with slender wiry stems, sessile, glabrous, ovate lanceolate leaves; nodding flower-stalks, shorter than the leaves; flowers 1½ inch in diameter, regular, star-shaped, pure white; anthers yellow, connivent into a cone. Native of Chile. Thrives well in the Temperate-house at Kew, and would doubtless be hardy in some localities.

NECTARINE GALOPIN, *Florist*, t. 504.—Fruit large, globose; skin thick, yellowish-green, flushed on the sunny side with reddish-violet; flesh greenish, juicy, melting, piquant, perfumed; glands reniform. Raised at Liège by M. Galopin. A free grower and a good cropper.

NEPENTHES OUTRAMIANA ×, *Floral Mag.*, t, 384.—Pitchers green, brightly mottled and blotched with crimson, wings ciliate, dentate. It is a cross between N. Sedeni and N. Hookeri.

PELARGONIUM (Decorative) VOLONTÉ NATIONAL, *Floral Mag.* 382.—Flowers roundish; petals undulate, two upper with a deep shaded rose blotch, three lower with paler blotches.

PELARGONIUM (Ivy-leaved) ST. GEORGE, *Florist*, t. 503.—A cross between P. peltatum as the seed parent and a zonal variety which furnished the pollen. The leaves are of the Ivy-leaved section, the flowers circular, bright salmon-red. A cross as interesting as it is beautiful.

MR. LADDS' BOILER.

THIS (fig. 16) is the boiler which Mr. Philip Ladds uses in his immense establishment at Bexley. No other form of boiler is here employed for heating the whole of his houses, which collectively represent a glass surface just upon 9 acres. It is a horizontal tubular, made of 2-inch pipes socketted into hollow water-spaces, which form the ends. As will be seen, these water-tubes act as fire-bars, and enclose the fire-space on each side as well as immediately above the fire, added to which there are two other additional series of pipes above those immediately over the fire. The fire is made to traverse each course backward and forward the length of the boiler by means of tiles laid on the top of the pipes in such a way as to direct such portion of heat as leaves the fire-box immediately into contact with these upper tiers of tubes. The boiler is 6 feet in length. By the use of these tiles the heat is made to pass in absolute contact with each of the upper series of pipes—in all to an extent of 18 feet; in fact, by this very simple division of each tier of pipes the boiler becomes absolutely a flued tubular. Its great advantage above that of other horizontal boilers composed of water-tubes is that the heat is thus compelled to traverse and is brought in immediate contact with the whole surface of the pipes, and has not the chance as it escapes from the burning fuel of making its way right through them and into the chimney, as it would if the tile divisions were non-existent—a fault which most other horizontal tubulars have hitherto had more or less.

Mr. Ladds buys the castings, and has them put together by his own men. The tubes are all put in with Portland cement—the packing being hempen cord material, something like an ordinary clothes line, not tar rope. Mr. Ladds finds that if the latter is used the tar destroys the cement. The boilers heat 3000 feet of 4-inch piping each, and some of them over this amount; he sets them mostly three together in each stokehole side by side, each enclosed up the sides with only 4½-inch brickwork, with a cavity betwixt each boiler as well as on the extreme outsides of about 2 feet 6 inches, so as to readily admit of the introduction of a new tube, should one happen to be required, as now and then occurs through getting corroded by deposit from the water used. Valves are employed, so that each boiler can be shut off from the other, as well as from the series of pipes which they heat.

If a tube happens to require replacing, from the facilities provided for getting at it, it is done in a few hours through the light brickwork with which its sides are enclosed, as well as the very simple covering over the tops of the boilers. This latter consists of about 9 inches of ashes put on the tiles which cover the topmost tier of pipes. On the ashes are laid ordinary inch-boards, which rest on the walls that enclose each boiler, which for this purpose are carried 9 inches above the tiles. The boards are used in separate lengths across each boiler, and also separate lengths for the cavities, which, as will be understood, permits of any particular point that may require it being got at without disturbing the whole, as would be unavoidable if the boards were entire, running right across the boilers and the cavities. On the top of these boards is placed 8 or 10 inches more ashes. Wood, as is well known, is one of the best materials that can be employed as a non-conductor, and its effect here is most marked, as the warmth on the top of the ashes is scarcely perceptible. At first sight it would be supposed that the boards so near the fire would ignite, but they are not found to do so, which is one of the best proofs that the heat from the fuel is absorbed by the water before it reaches the chimney.

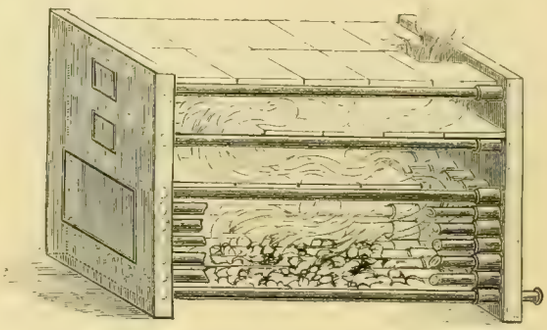

FIG. 16.—MR. PHILIP LADDS' BOILER. (SCALE THE SAME AS IN FIG. 17.)

In addition to these boilers being cheap they consume little fuel, and are extremely powerful, which is evidenced by the return pipes which, after traversing the large houses here—over 300 feet in length—seem very little reduced in heat, when felt by the hand, as compared with the flows—a circumstance that cannot possibly occur without sufficient boiler-power to cause a rapid circulation. Something similar to this boiler has been used by others, but apparently it never became so much known as to bring it much into use. *T. Baines.*

MR. BECKWITH'S BOILER.

THE boiler here illustrated (fig. 17) is the one designed and used by Mr. Beckwith, of Tottenham, who, as is well known, is one of the most extensive growers of plants for market. As will be seen, it is a very large one, and is immensely powerful—so much so, that I am not aware of anything in existence at all approaching it. It is made altogether of 3-inch pipes, cast with a smaller core than ordinary, so as to give increased strength and thickness to them. They are socketted in the usual way into three hollow water-spaces, or, as more usually termed, coil boxes—the first of these, which, as shown in the illustration, is a square hollow water-way or rim, forming the front of the boiler, with a single row of pipes on each side, the top and the bottom. The back of the fire-box, which is 4 feet 6 inches in length, is formed by another hollow water-way, in which the opposite ends of the pipes, which thus enclose and form the fire-space, are similarly socketted.

The extension of the boiler beyond the furnace is 13 feet 6 inches, and consists of what may be described as a stack of water-tubes nine deep and seven

wide, socketted into the second water-space, already mentioned, that forms the back of the fire-chamber, and into the third of these hollow water-boxes at the extreme end, giving a length of boiler of 18 feet in all. The whole rests, as shown, on three brick piers, running right across and immediately under the three hollow water-spaces. The current of heat which leaves the fire-box is directed through the entire length of the stack of tubes in the 13 feet 6 inches space beyond, and to force it to descend to the lower portion of them there is a division midway, composed of brickwork, extending across the whole from the top downwards to within some 10 or 12 inches of the lower series—without which, as will be easily understood, the action of the current of heat would in a great measure be confined to the upper coils of the tubes. After being in this manner forced down through the first half of the tubes beyond the furnace the current finds its way upwards through the second half to the chimney shaft.

When set the boiler is enclosed from end to end with 4½ inch brickwork with cavities on each side of about 2 feet 6 inches, formed by outer brick walls so as to effect any repairs that might want doing. All the joints with which the fire comes immediately in contact are made of one-fourth iron borings to three-fourths Portland cement alone. The return water enters at the bottom at the furthest end, the flows are of course from the top, and at each end of the boiler. It may be well to notice that the depth of these boilers from top to bottom is about 12 inches more at the back than the front, and from the natural inclination thus given to the lowest pipes to rise gradually from the back, where the return water is admitted to the front of the boiler, with a corresponding rise from front to back in the top pipes from whence the flow water proceeds, the arrangement helps the circulation. As will be easily understood, boilers of this description require to be put together in the place where they are to stand. They are in reality home-made, as Mr. Beckwith simply buys the materials, and has them put together by some of his own men.

The enormous power of these boilers may be judged from the fact that Messrs. Beckwith, in the immense quantity of plants they force, in all probability keep up a higher temperature in a proportionately greater number of large houses than any other public or private establishment in the kingdom. In the whole of their houses there are over 7½ miles of 4-inch piping, all of which is heated by seven of these boilers, consequently there is considerably over a mile of piping to each. The first of these boilers has been in work sixteen years, and I understand has not had so much as a single pipe replaced, or a joint made good in any way. The complete absorption of heat before reaching the chimney can be easily seen through a little contrivance that Mr. Beckwith has devised for testing this. At the bottom of one of the chimney shafts, a foot or two from the end of the boiler, is inserted a small iron box-frame, something like a soot-door for cleaning out the flue of an ordinary boiler, and which can be similarly opened and closed; during severe frost, when the fire is going at full swing the heat inside the chimney can be comfortably borne by the hand thrust in here. The unusual power and economy in fuel of this description of boiler is unmistakably owing to their being horizontal, and to their great length—the latter an absolute essential, hitherto insufficiently kept in view in the construction of garden boilers. The small quantity of fuel required to drive these seven boilers would scarcely be credited; yet I may state that of coal, coke, and breeze, the amount is in all six hundred and fifty tons per annum, which gives to each boiler ninety-three tons a year, or only an average of a ton and three-quarters weekly.

Others of the market growers are adopting these boilers, in some cases slightly modified and reduced in size, according to the requirements of the respective places where employed. Mr. Rochford, of Page Green, Tottenham, has two of them at work, but much smaller so far as the number of tubes goes. His fire-bars are of 2-inch tubes socketted into the front hollow water-space, with syphon ends at the back, resting in the brickwork that forms the back of the furnace, which furnace is 4 feet 6 inches long by 20 inches wide and 20 inches high; the pipes, two in number, which form each side of the furnace, are also socketted into the front water-way, and run right through the wall at the back of the fire-space, and 9 feet beyond it, where they are inserted into another hollow water-way; the top of the boiler consists of a double series of pipes, nine in number, angled, and, like the sides, running the whole length, are also socketted into the front and back water-ways: these tubes, which form the sides and top of the boiler, are all strong 4-inch pipes, such as used by the gas companies. Like Mr. Beckwith's boiler, there is midway, in the extension beyond the fire-space, a brickwork division extending right across the pipes, so as to force the current of heat again to the bottom, from which point it rises through them to the extreme end, where it enters the chimney.

Nothing could be more simple than this boiler, it merely consisting of the 2-inch pipes acting as water-bars, 4 feet 6 inches in length, and of thirteen 4-inch pipes, which form the sides and top of the boiler running the whole length, 13 feet 6 inches, and the two hollow water-ways back and front, each about 6 inches: giving 14 feet 6 inches for the extreme length. One of these simple contrivances is now heating effectually 12,000 feet of glass without the slightest strain. So easily is the work done, that Mr. Rochford assures me it consumes no more fuel than a common 3-feet saddle usually requires, and a great portion of that which he uses is breeze. The second boiler will shortly have as much glass to heat as the one described. *T. Baines.*

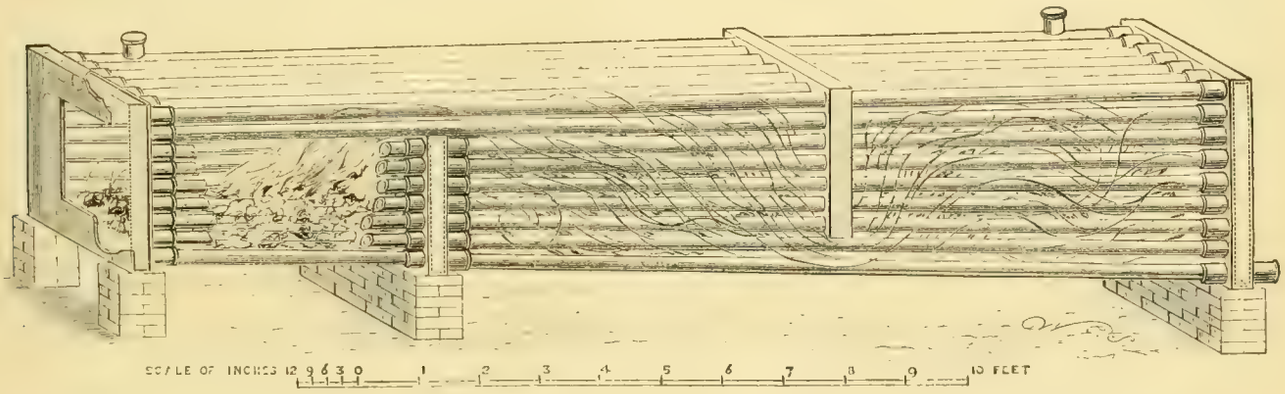

FIG. 17.—MESSRS. BECKWITH AND SONS' BOILER.

Forestry.

THINNING SCOTCH FIR PLANTATIONS.—I have read with care Mr. Smith's remarks upon my last article on Forestry, and am quite satisfied with both the letter and spirit of his remarks. I have also read the quotations, and do not find any of them, to my mind, sufficiently clear and explicit on the point. They all indicate what is desirable, possible, or probable, but none of them give data sufficiently substantial and positive to warrant any one basing important calculations upon them; and I am sure Mr. Smith would not risk his capital in an investment so vaguely described. The quotations are chiefly from essays contributed to the Scottish Arboricultural Society, and the writers had in view the gaining of prizes. The late Mr. Thomson, it will be observed, with one compound blow cut the round and handsome ideal sum of £300 of somebody down to £100; and another, and by no means severe or unnecessary stroke, would have brought the figure down to ordinary capacity.

Mr. Grigor, in his excellent treatise, where he quotes the value of the plantation at £50 per acre, probably included its value as a shelter producer; and as I know the plantation well to which he refers, I incline to this belief. I wish to state, however, once for all, that I am not inclined to discuss men, either living or dead, neither am I disposed to criticise books: to do the former is hazardous and dangerous, and to undertake the latter would involve a task analogous to what Solomon says of making them. The case under dispute is whether a Scots Fir plantation at fifty years' growth, upon the poorest description of moorland, is worth £131 13*s.* 4*d.* per acre as a marketable commodity, or even half that sum. My sole reason for disputing it is because I have never seen it, but, as Mr. Smith very justly remarks, others may have met with such subjects though I have not. What has been, I have no doubt is and will be, and therefore I hope to hear through some source that such plantations actually exist in verity, and that I may have the pleasure of seeing them. Having from time to time, as I had opportunity, valued the woods and plantations under my charge here, I annex a few examples taken at random from my reports, and shall be very glad to learn how they compare with others which have been carefully inspected and valued under like circumstances. No. 1 is what is termed a mixed Fir plantation, being composed principally of Scots Pine, with a small mixture of Larch, Norway Spruce, and a few hard-woods on the margins. The plantation was formed in 1826, and comprehends in round numbers 63 acres. At the date of valuation (1869) it contained an average of 290 trees per acre, namely, 266 Scots Pines, twelve Larch, four Norway Spruce, and eight various. The value of the whole plantation was £1044; its state of growth fair, making annually 17*s.* per acre; the transferable value was £16 per acre, and prospective value, when sixty years old, £26 per acre. This plantation, having been several times thinned, and now being forty-three years old, is understood to have repaid the original cost; hence, in making up the transferable value, no allowance is made for such original outlay, but the value computed at the annual rate of growth. This plantation was thinned in 1870, the year after the valuation was made, and 3720 trees taken out of it, which on being sold by auction realised £108 5*s.* 6*d.* The cutting, lotting, and preparing for sale cost £23 6*s.* 1*d.*, and the sale itself an additional £5.

Draining.—When the plantation was formed 7860 yards of surface-drains were cut, and these, having filled up, have been twice cleaned out: the fence with which it was enclosed was a turf dyke 3432 yards in length, and this has also required repairing from time to time.

Roads.—Openings termed green roads were formed for clearing the thinnings, extending to 1290 yards. Since about twenty-five years' growth the plantation has been let for grazing purposes. The rent at first was £5, and now it is £11 per annum for the whole, and increasing. It will be seen that the highest attainable value of this plantation is estimated at only £26 per acre—a small sum for a plantation whose annual value of increase of growth is 17*s.* per acre. This is explained by the circumstance that a considerable number of deaths occur yearly, especially of the Larch, the soil being too clayey and damp for Pine or Fir attaining age and perfection.

No. 2 is another mixed Fir plantation, planted in 1844, containing 41 acres, and comprehends 345 Scots Pine, fifty Larch, five Spruce, equal to 400 trees per acre in all. The present market value of the whole plantation is £326; average annual growth 300 lineal feet per acre, value 12*s.* 6*d.*; transferable value, £8 per acre; and prospective value, when sixty years old, £29 5*s.* It is let for grazing purposes at £16 per annum.

No. 3 is a mixed Fir plantation, planted in 1837, and comprehends 14 acres. In 1868 it contained 330 trees per acre, namely, 282 Scots Pine, forty-one Larch, two Spruce, and two various, and worth altogether £128 5*s.* Annual growth value, 27*s.* per acre; transferable value, £9 per acre; and prospective value at sixty years' growth, £56 11*s.* It was thinned in 1869 to the number of 800, which realised by auction sale £15, equal to about 4½*d.* per tree; cost of cutting, lotting, and sale, £2. *C. Y. Michie, Cullen House, Cullen, Jan.* 12.

Notices of Books.

Hardy Florists' Flowers: *their Cultivation and Management.* By James Douglas, F.R.H.S., Gardener to Francis Whitburn, Esq., Loxford Hall, Ilford, Essex. Published by the Author.

This is a handbook of the culture of florists' flowers, especially relating to those hardy ones which are within the reach of everybody who cares to grow them. Such a book, alike concise and trustworthy, was much needed, now that the taste for these flowers is spreading amongst the general public, and now that new recruits may be expected to be enlisted in the cultivation of special flowers. Those who are commencing the collection of this class of plants will find such a guide as this invaluable, and will welcome it accordingly. It is the amateur who has not yet bought his experience, and the professional gardener who has not come in the way of these subjects, and who consequently has no clear practical knowledge of the technicalities incidental to the successful growth of many of them, that the information contained in these pages will be found specially useful. It is to meet the want, the growing want of this information, as the author tells us, that he has thus strung his thoughts together, and committed them to print.

The Rev. Mr. Horner well observes, in the course of a few introductory pages contributed to Mr. Douglas' book, that:—

"The spreading interest in what are known as florist-flowers will lead, it is hoped, to their gaining the favour and influence they deserve to hold in the floricultural world. Floral fashion may be to blame for much, but if there has been really a forsaking and forgetting of florist-flowers, a heartless fashion has perhaps been least amongst possible causes. For these special flowers have not found a home in formal gardens, where play of changeful fancy was likely to displace them. They were never in the hands of those to whom flowers are mere masses of so much colouring matter in natural paints; for whom garden arrangement, forms and tastes must ever alter—as though the garden were a huge mechanical optical toy, setting forth (like the child's kaleidoscope with its magic stained-glass flower-beds) a new combination of its colour-sets at every periodic twist of fancy. A touching history, if it could be written, would be the nurture and ministry of florist-flowers. They have been the delight of many a man in whom the love of Nature was inborn and inextinguishable, but whose means were very spare, whose leisure time was very scant, and whose advantages in pure air and light and garden space were very poor and cramped."

On such as these did the spring smile in his Polyanthuses, his Auriculas, and his Pansies; and on such as these did the summer pour forth its bloom of Tulips, Pinks, Ranunculuses, Carnations, and Picotees; and thus through one or more of these media the love of Nature found expression, and enough to live upon.

Mr. Douglas has done good service to the floral cause by contributing to its literature at this juncture a handy little volume, which will prove "a guide to the stranger; a remembrancer for him who may not, since long ago, have been able to tread the floricultural paths he loved of old." Both may repose confidence in the directions and instructions of one who has had the heart and the opportunity to grow skilful in the culture of the flowers of which he treats, and who has proved his right to an honourable place amongst the floral fraternity by his position on the prize lists at the floral exhibitions.

The volume comprises chapters on all the more popular of our old hardy florists' flowers, as the Auricula, Polyanthus, Pansy, Tulip, Pink, Carnation, Picotee, Hollyhock, &c.; on some of the more modern subjects, as the Gladiolus, Pentstemon, Phlox, Pyrethrum, &c.; and on one or two other general favourites, as the Dahlia, Chrysanthemum, &c. The increase, cultivation, and exhibition of these are briefly but clearly treated on, and a selection of choice varieties is added as a guide for the purchaser. There are several illustrations, some from our own pages, scattered through the work, and the printing and get-up leave nothing to be desired. Thus, we have in *Hardy Florists' Flowers* not only a trustworthy but a tasteful and presentable little volume.

Vegetables, and How to Grow Them. By Joseph Lansdell. Leicester: H. J. Marshall.

This small *brochure*, as stated in the preface, is a condensed work of the practical experience of the author in growing vegetables for twenty years in some of the most noted gardens of England, and is intended for the use of amateurs.

From a perusal of this little work, there can be no doubt of the sound, intimate, and practical knowledge which the author possesses of the subjects on which he writes, and there is much useful information to be found in its pages. The management of the ground, rotation of crops, and modes of cultivating the various sorts of vegetables, &c., are of the very best, and, carefully followed, would insure success; but it is more the ordinary practice of the professional gardener that is detailed, than simple rules for amateurs to follow. For example—in the planting of Asparagus our author states that, to avoid the roots being exposed, it is best to have three men—the first to take up the plants, the second to place them, and the third to cover or plant them.

It seems a pity the author should not have had this little work better revised before publication. There is scarcely a page free from some stupid or amusing blunder or miss-spelt word, that completely spoils the whole. For instance, in speaking of the rotation of crops, what can be understood by "No one kind of vegetable should be planted on the same ground unless it is Potatos"? And again, in speaking of Lettuces, "Where slugs are troublesome, *they* should be watched night and morning." "A good plan is to take a flower-pot half full of fresh lime, and put them in as you catch them"—rather a sluggish occupation if followed literally. "Borecoles are to succeed a crop of Peas or *Gooseberries*"—as if Gooseberries were a rotation crop; offset Onions are to be "sown thickly, in the same way as *pickles*;" and, amongst Onions, "Covent Garden pickles is a good one."

The mistakes in spelling are very numerous—for instance, "bulb*u*ous" for bulbous, "Castle *Hardy*" Beet for Castlenaudary, "Scrymar's" for Scrimgeour's, "Ayrton Castle" Leek for Ayton Castle, "large yellow Rorton" Leek for large yellow Roiton, "large Rowin Leek" for large Rouen, &c.

—— *Bulletin de la Fédération des Sociétés d'Horticulture.*—The volume of the *Bulletin* of the associated horticultural societies of Belgium for 1878 is before us. It is largely occupied with statutes and official reports of the societies constituting the Federation, including a full report of the last quinquennial exhibition at Ghent. In addition there is a compete list in French and Flemish of Belgian fruits; M. Morren's useful "Correspondance Botanique"; and a detailed report by M. Delchevalerie on the horticultural section of the Paris Exhibition.

—— *Annuaire de l'Horticulture Belge.*—A useful little publication, intended for the special requirements of amateurs. The contents are very varied, and there are numerous illustrations, some of which, however, are rather coarse in execution, and have been carelessly printed.

—— *The Biographical Encyclopædia of the Nineteenth Century.*—A recent part of this beautifully got up publication contains a finely executed portrait of Hon. Marshall Wilder, and a sympathetic biographical notice.

—— PUBLICATIONS RECEIVED.—*Proceedings of the Academy of Natural Sciences, Philadelphia.* Part II. April—October, 1879.—*The Sizing of Cotton Goods, and the Causes and Prevention of Mildew.* By William Thomson, F.R.S. Edin., &c. (Heywood, Manchester).—*The Trees and Shrubs of Fife and Kinross.* By John Jeffrey and Charles Howie.

Garden Operations.

KITCHEN GARDEN.

CAULIFLOWER.—The delicacy and excellence of this vegetable chiefly depend on the rapid and vigorous growth which the plant makes after it has once started. This circumstance, when considered in conjunction with other points, such as the nature of the plant and the mode of cultivation, renders it a subject which requires more than ordinary attention on the part of cultivators generally. Like all the rest of the Brassica tribe of plants, the Cauliflower requires soil of the very best description, which has been well cultivated, is moderately deep and highly enriched, and for a igeneral crop an open space is to be recommended. In the first instance the primary object in cultivation is to obtain a supply of it ready for use by the time the crop of Broccoli is either exhausted, or its quality has become so greatly impaired, and itself so unpalatable as to be unfit for certain purposes; and secondly, to continue a subsequent supply as required throughout the rest of the season, which only terminates when frost comes and renders a continuance utterly impracticable.

I may here remark that it is the extreme prolongation of the season of certain culinary subjects which, under such changeable and conflicting circumstances as those to which we are exposed in this climate, is the cause of almost ceaseless anxiety and attention in order to attain the end required. In our endeavours to meet these requirements from year to year, the autumn seed-beds are here prepared on an open space where the soil is rich, and the seeds are sown about August 20. As early kinds we prefer Frogmore Forcing and Early London, with Walcheren as a late sort. We also grow another very excellent variety, which is not yet in commerce, named Bailey's Selected: this, undoubtedly, will prove to be the best extant. When the plants are ready, the most advanced of the early sorts are carefully lifted, and potted firmly in rich soil in 60-sized pots, and placed in an open frame where protection can be afforded. By-and-by these plants form the early section, and are planted out under hand-glasses, at the base of south walls, and in other sheltered places which have been prepared for them. By about the first week in February the next or second section of plants is taken from the same beds, and pricked out into prepared stuff, somewhat, adhesive and rich for lifting purposes. These plants are intended for the general crop, and are not transplanted until about the first week in March, when they are placed with all the material possible adhering to them, about 2 feet 6 inches apart every way, on an open flat, in some of the best ground at command. The third and last section of plants, which we obtain from the same beds, are the smaller plants; these are put into 60-sized pots, and kept as cool as possible during the winter months, and afterwards are removed in the pots to the back of a north wall, and subsequently planted out towards the end of May. On this occasion part of the plants are planted on north borders. By these means we have been able invariably to meet all demands for this vegetable until such time as others come in from the early spring sowings, which should be made first in a frame or in a sheltered corner early in February, and another out-of-doors about the end of March. These plants undergo the same preparation by being pricked out in the first place, and then transferred to where they are to be grown afterwards. We find that by this process the plants become strong and sturdy, and capable of withstanding the attacks of those pests which under other conditions are so troublesome to this tender subject.

The after-cultivation consists of merely stirring the surface soil occasionally about the plants until the mulching material is applied, which should be done before vigorous growth proceeds, after which all that is required will be copious supplies of water whenever dry weather prevails. When the heads begin to appear shade them from atmospheric influences by covering them with some of the larger leaves off the

plant, and in the autumn months, if frost is expected, they should be taken up with a ball of earth attached and placed out of the reach of frost until they are wanted for use. In addition to the varieties which we have already named we can also confidently recommend for autumn use Veitch's Autumn Giant and Dickson's Eclipse—the latter kind here has proved to be very true in its character and invaluable as an autumn kind, so much so that this year we are trying it beside such sterling sorts as those which we have before named.

Ordinary matters which will now demand attention in this department will include the making of successional sowings of Peas, Beans, &c., and to the arrears of any kind of work which has been neglected, which will need immediate attention in order to be ready for the purposes for which it is wanted at the time required. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

ORCHARD HOUSE.—When writing last on this subject, it was stated that the trees for late houses wintered out-of-doors were being moved into the house. They are now under cover, the pots washed clean, the trees all looked over to remove dead wood, of which there is none on the young trees, and but little on the old ones; and it may here be mentioned incidentally, that when some of the branches die back on old trees and continue to do so during the season, it shows that they are not vigorous enough to produce good fruit, and that they must be replaced with young ones as soon as they can be prepared. "Maiden" or trees one year from the bud may yet be potted, if this was not done in the autumn.

There is one side of orchard-house culture that I have not looked at in these notes, and that is the profitable one. In the first place there are quick returns. A pot tree the third season from the bud will produce a fair crop of as good fruit as can be grown by any other means, and if it is ripened earlier than out-of-doors fruit, it will command a ready sale. Strawberries ripened on shelves near the glass in orchard-houses are of splendid quality, and may easily be ripe two or three weeks earlier than those out-of-doors. Lettuces and other vegetables may be produced early and of good quality from the borders; and when all is done that can be done in the production of fruit and vegetables, the house may be cleared in October for a display of Chrysanthemums—not to produce cuttings or plants for sale, although there could be no objection to include this, but to produce cut flowers late in the season, and for this purpose only those that would command a ready sale should be grown. That the above system of management may be successfully and profitably carried out I am certain.

In the late house we admit plenty of air at present, and we are rather careful as to watering the trees at the roots; they are not watered until they really want it, and then enough is given to thoroughly moisten the ball of earth. A look-out must be kept for sparrows—in bad weather they like the dry warm air of the orchard-house, and repay us for the shelter by eating the flower-buds as soon as they show colour; it may be necessary to place netting over the ventilators to keep them out. The glass and woodwork of our house, too, is quite coated with the "blacks" after the last fog, and it ought to be washed thoroughly; this is even more needful in the house where forcing has commenced, as the swelling buds require all the light at our command at this season of the year. In fact, we never have too much light for Peach trees in England. *J. Douglas, Loxford Hall.*

ORANGE HOUSE.

We are now gathering very large and good flavoured fruits of the St. Michael's variety. It is not quite so full of juice as we have had it in other seasons, but is certainly better in that respect and of superior flavour to the foreign fruit. It is best to place the trees in a cooler house when the fruit is quite ripe, and as soon as it is gathered the trees may again be placed into heat, or they may be kept in a cool dry atmosphere for a month or six weeks. This plan may be pursued when the fruit has ripened in a Pine or Cucumber-house; but if the house is entirely devoted to Orange culture the temperature may be lowered for a few weeks, and the atmosphere be kept rather drier than usual. A period of rest such as the Vine requires is not necessary for the Orange tree. The way in which the blossoms burst into full beauty before the ripe fruit has been gathered shows this; and I have obtained crops from trees for three successive seasons plentiful in quantity, of large size and excellent quality, that had been kept in a high temperature all the time. Some of the trees will blossom this month, and it is desirable to keep up a temperature of 60° at night for them and a rather dry atmosphere. *J. Douglas, Loxford Hall.*

PEACHES AND NECTARINES.

Early houses, where space is limited, offer great temptations to the gardener who has Strawberries or Tea Roses, and other subjects requiring gentle excitement. These advance very well together until the Peaches come into bloom, when it often happens that the pot plants are removed to another structure and frequently leave a legacy in the form of greenfly behind them. To secure freedom from these pests during the blooming period, and to prevent their spread into other houses, the Peaches should be carefully fumigated before the flowers begin to open. It is just possible that constant syringing may have kept the enemy out of sight only to appear in troublesome numbers when the dry warm fertilising period arrives; and as fumigating injuries delicate flowers, every Peach-house, whether it be used for pot plants or not, should be smoked when this stage has been reached. Where forcing was commenced in November the buds on the most forward trees will now be opening. If fermenting material has been used, the moisture given off, combined with the occasional damping of paths and walls, will produce suitable atmospheric conditions for the present.

Some growers adopt the plan of fertilising their Peaches with a camel-hair pencil, others apply the syringe or a hive of bees; I give preference to the pencil, as the latter have disagreeable propensities. The foundation of a good set of fruit, however, depends more upon the work of the past autumn, and the present state of the roots, than upon detailed management at the time the trees are in flower. The cautious cultivator will of course adopt some method for securing his end, and I am doubtful if there is any plan better than the use of the brush on fine days, the ventilators being kept open as much as possible, unless the weather is very severe, with sufficient fire-heat to maintain a temperature of 50° by night to 60° by day, with a few degrees above or below these figures on bright days or severe nights. Succession houses that have been recently closed will require precisely the same treatment as that recommended for the early house; syringe freely on all favourable occasions, force with constant ventilation, and fumigate before the flowers open. *W. Coleman, Eastnor.*

PLANT HOUSES.

ORCHIDS.—Members of the Miltonia family should now be examined to see if any of the plants are in want of more root-room, as the present time is the proper season to repot them. M. Clowesii and M. Regnellii, both strong-growing species, are best grown in pots in equal parts of fibry peat and sphagnum. The pots should be at least two-thirds full of drainage. Keep the plants well elevated above the rim of the pot, with the base of the bulbs just touching the compost, so that the young breaks now pushing will be free from anything likely to rot them. Plants that do not require more root-room should have the surface of the old soil carefully picked out to the depth of an inch. The space thus made should be filled up with a layer of broken crocks and charcoal and a top-dressing of peat and sphagnum. A very important item towards success in growing these two Miltonias is to see that the numerous small roots now pushing from the last made growths are in no way injured or devoured by insects. The dwarf-growing M. spectabilis and M. Moreliana are best grown in pans, and as they extend themselves rapidly in every direction they require considerable rooting room. Old plants which have grown bare in the centre may now be broken up. All spent bulbs should be cut away and the growing pieces made up afresh. Those pieces which have but few roots to hold them steady must be pegged down to the compost, as they will never succeed if the least loose. With the peat and sphagnum use liberally small pieces of crocks and charcoal. M. candida, with its beautiful and rare variety, grandiflora, may be treated exactly the same as M. Clowesii, but a fortnight hence will be soon enough to repot it. The white-lipped M. cuneata must not be disturbed at the roots now, as its spikes will be far advanced. This plant is not so much grown as it deserves to be; its best form is certainly a first-class Orchid. The whole of the Miltonias mentioned will grow thoroughly well in a rather shady part of the intermediate-house. When grown in a very light position their foliage becomes far more yellow than is desirable. Frequent waterings must be given when throwing up their flowers; at all other times the compost should be kept moist.

Any plants of Vanda cœrulea which require more root-room should at once be seen to, for already a more rapid growth has commenced, and in a week or two young roots will be numerous. Nothing suits this plant better to grow in than an upright Teak rod cylinder. The rods should be kept at least half an inch apart, which will allow a free circulation of air amongst the roots, and for this Vanda should be about 15 inches long. The lower leaves of the plant need only just clear the tops of the rods, and with the exception of a thin layer of sphagnum at top, nothing more is necessary for the roots but crocks and charcoal. Plants that do not require more room must have all the old sphagnum picked out previous to being refurnished with fresh. Abundance of water must now be given at the roots. If at any time cockroaches or woodlice harbour in the cylinder, plunge it for a few minutes in water, when they will rise to the surface and may be easily destroyed.

The following species of Calanthe, namely, C. veratrifolia, C. Masuca, C. Dominiana, and all others of the evergreen section, will now be in the middle of their growing season, and will take frequent large supplies of water with an occasional dose of weak liquid manure. The members of this family are frequently troubled with brown scale, which must be kept under by sponging. A liberal shift should now be given to pot-bound plants of Cypripedium Sedeni, C. Schlimii, C. purpuratum, C. Harrisianum, C. insigne, and its varieties. The pots should be one-third full of drainage, secured by a layer of sphagnum. Lumps of peat mixed with a little sphagnum, and a moderate quantity of broken crocks and charcoal, will grow to perfection any of the above species. Water at all times of the year must be freely given. For the want of water and root-room many Cypripediums look anything but flourishing. Plants of Zygopetalum maxillare that have covered their blocks of Tree Fern stems, must now be seen to, as they will be starting into growth. We simply wire the old block on to a larger one, and the plant soon takes hold of the added portion. This Zygopetalum must never be in the least dry. So soon as Z. Mackayi and Z. crinitum pass out of flower let them be either repotted or top-dressed: fibry loam, and plenty of crocks and charcoal mixed with it, will suit either to root in.

Imported plants of Lælia anceps and L. Dawsoni should be potted at first in nothing but broken bits of crocks and charcoal. No water must be poured over the bulbs or rhizomes, or they will rot. Water once a week may be poured through the crocks to keep them moist, which will induce the plants to make fresh roots. The atmosphere immediately surrounding these imported plants should be well charged with moisture. Both plants require a light position in the Cattleya-house. Plants of Dendrobium Ainsworthii, D. crepidatum, D. crystallinum, D. Boxallii, D. primulinum, and others, which have pushed out their flower-buds, will now require a more generous treatment in every way to enable them to properly develope such buds. In every case get the plants well to the light in the East Indian-house, so that the colours of the flowers may be clear and rich. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

At the time of writing the weather is comparatively mild, and the ground in good working condition, so that such groundwork as altering walks, flower-beds, lawns, &c., may be pushed forward. Ground may also be levelled and turf relaid or renewed, the best turf that I have found for the purpose being that on which sheep have grazed. Prune and train climbers on walls. Some of the best climbers that I have found to suit town are Ampelopsis hederacea and Veitchii, Passiflora cœrulea, Rose Gloire de Dijon, and Wistaria sinensis: these are on a south wall—the latter is a very shy bloomer here.

Of plants suitable for forming permanent edgings of flower-beds Euonymus radicans variegatus stands the best, and is the easiest kept in order. Next in rotation is Euonymus flavescens and Euonymus japonicus variegatus, but this has a tendency to go green; and Euonymus latifolius variegatus, which is rather tender.

In wintering Echeverias, the best mode of procedure with this succulent—invaluable for bedding purposes—is to make up a two or three light box, as the requirements may demand, and put 6 inches of drainage in the bottom in the following manner:—3 inches of brickbats, 3 inches crocks or clinkers, with a coating of rough soil on the top to keep the drainage open. Take the Echeverias up in the beginning of October, selecting a dry day for the purpose, take off all offsets, and shorten the stems a little; place them in close together, working a little gritty soil amongst them. Do not give them any water till spring, when take the opportunity of a bright sunny morning: water early so that they may get dry before night. Cover them up well at the approach of frost, and as soon as it is gone the covering should be taken off, and they should have all the light and air possible; if the covering is left on too long they become blanched, which makes them very tender, and when exposed to the air and light they often turn black. By this mode many hundreds may be wintered in a small space with very little trouble.

Lobelias should now be brought into heat to start, and a hotbed be made up of leaves and manure for striking the cuttings; they strike far better with me here in a frame plunged in a hotbed, than in the regular propagating-house. Two of the best old sorts that I have found to suit here are Lobelia speciosa for a dark blue, and Blue King for a light blue, for ribbon borders. *Wm. Gibson, Royal Hospital Gardens, Chelsea, S.W.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Jan 19	Sale of Japan Lilies, Cape Bulbs, and Roots, at Tokenhouse Yard, by Protheroe & Morris.
WEDNESDAY,	Jan. 21	Sale of Miscellaneous Stock, at Stevens' Rooms.
FRIDAY,	Jan. 23	Sale of Lilium auratum, &c., at Stevens' Rooms.

WE all of us know by observation, if not experience, the ill-effects produced by the abuse of fermented liquors. It will not be altogether surprising to learn that various diseases to which the human frame is liable are or are plausibly supposed to be due to some process of fermentation, or to the consequences thereby engendered. Less generally known is it that the process of digestion in animals, as also in the leaves of the so-called insectivorous plants, is accompanied by a similar phenomenon. But there are ferments and ferments, and the character of the changes they bring about varies according to their nature. The whole subject of fermentation is very complex, and just now of special interest and importance, not only from a purely scientific point of view, but also from the standpoint of practice. Thousands of people are ready to sneer at what they would consider the time wasted in observing Bacteria and fungi of microscopic minuteness, because from want of training they have never come to appreciate the value of knowledge for its own sake. Tens of thousands, however, would be able to appreciate the importance of such observations when it is made known to them that the knowledge so acquired is immediately available in the prevention and extinction of certain forms of disease. In surgical practice, for instance, no greater boon—not even the discovery of anæsthetics—has been conferred than that with which Mr. LISTER's name is connected, and which is based simply on the prevention of the access to wounds after operations of those minute organisms which have, by his experiments and those of others, been proved to set up fermentation in the fluids of the body, and consequent fevers, pyæmia, and other more or less fatal complications. To have well-nigh abolished the ill-effects of these malignant visitors to the hospital wards is no mean result of what some might consider laborious trifling.

A pamphlet of Dr. HAGAN, Professor of Entomology in Harvard University, Cambridge, Mass., which was commented on by Mr. MCLACHLAN at the last meeting of the Scientific Committee, draws attention to another phase of the subject which has special interest for the gardener. Dr. HAGAN's notion is, that obnoxious insects of all descriptions may be killed by the application of the yeast fungus. Every one must have observed unfortunate flies sticking to the window-panes in autumn and invested with a fine tuft of delicate cobweb-like threads. Those threads are the spawn of a fungus, which has caused the death of the fly by its rapid growth. The extremely minute spore, or, as we may popularly term it, seed, is deposited on or in the body of the fly, germinates therein, feeds on its substance, and speedily kills it. If, then, under what we may call natural circumstances flies may be killed by fungi, why may not flies and other creatures whose presence is undesirable be killed of set purpose by like agency? We need not enter into details as to the kinds of fungus alluded to in Dr. HAGAN's pamphlet. There are doubts and conflicting statements as to this point. What is asserted positively is that mould (or mildew) introduced into mash produces fermentation and the formation of a yeast fungus, which kills insects. A Prussian naturalist, Dr. BAIL, has, it seems, proved by numerous experiments that healthy insects brought into contact with mash and fed with it are directly infected, and with fatal consequences. A small drop of blood taken with the point of a needle from the body of a house fly so fed has been seen under the microscope to be teeming with spores of the fungus. Dr. HAGAN proposes to turn this to practical account by using beer mash, or diluted yeast, by means of a syringe or a sprinkler. Plants infested with greenfly, for instance, may be so treated. Nevertheless, says the Doctor, "I should not be astonished at all if the first trial with this remedy would not be very successful—even a failure. The quantity to be applied, and the manner of the application, can only be known by experiment, but I am sure that it will not be difficult to find out the right method. I myself have more confidence in the proposed remedy, since it is neither an hypothesis nor a conjecture, but simply the application of true and well observed facts." The Doctor adds a supplement to his paper, showing how various experimenters have tried the experiment, but we are bound to say with no great measure of success, amply sufficient, however, to justify further experiment. The application of diluted yeast to greenhouse pests is so easy that we may hope with Dr. HAGAN that numerous trials will be made, and that the remedy "may prove to be a great benefit to horticulturists." It seems like setting a thief to catch a thief, but it may be none the less effectual for that.

WHILE the seedsmen, owing to the defective harvest of 1879, are very properly recommending their customers to sow their seeds much more thickly than usual in consequence of many of them being imperfectly matured, it is well to caution gardeners of all degrees not to be too anxious to sow early. If the vitality of the seeds be of a less reliable character than is generally the case, it is obvious that, in order to give them as good a chance as possible of germinating in a satisfactory manner, that they be sown under conditions most favourable to this result.

There is a great, an almost feverish, anxiety with some gardeners to sow early. If we are favoured with a bright day or two in January there are thoughts of sowing Beans, Peas, Lettuces, &c. In cases where the soil is light, early, warm, and well-drained, sowing can be pretty safely done in January, provided the weather be suitable for the proper carrying out of this operation. If the soil be heavy, late, cold, and retentive of moisture, it is like courting failure to sow before Nature has had time to do her share in preparing the ground for the precious seed.

Many sowings of seeds made in the spring of 1879 perished because of the uncongenial character of the soil. Our misfortunes should teach us wisdom, and the lessons of failure should be to make the gardener careful—exercising the virtue of forethought, and waiting patiently till the conditions were most favourable to the well-being of the crops. It is all the more necessary these virtues be exhibited at a time when it is important to take more than ordinary care in sowing for the season on which we are now entering.

—— THE GARDENS AT BLAIZE CASTLE. — To-day we give another illustration (fig. 18), from the pleasure grounds of Blaize Castle (see p. 49). The present view is of a dell with a pool in the centre, in which hardy aquatics are grown, and the surrounding banks clothed with suitable plants, interspersed in summer with Agaves, Yuccas, and others of like description, forming a cool and agreeable retreat. The gardens and pleasure grounds are well kept by Mr. LODER, who has been gardener and general manager here for thirty-five years. He is an old Syon House man, whose love and knowledge of his profession are such as to make his acquaintance most enjoyable, especially to those connected with the pursuit. The grounds, we understand, are open to visitors every Thursday by previous application to Mr. LODER. Those who visit the place should not leave without seeing the Henbury Cottages, built by the late Mr. HARFORD for his old servants and other deserving individuals with limited means. They are ten in number, all detached; their construction and the position they occupy is such as to give the whole a most picturesque, snug, and home-like appearance. They are very commodious, all or nearly all dissimilar, placed irregularly on a broad grassy slope well sheltered by trees, and by their arrangement there is a privacy secured not usual in dwellings of this description.

—— THE ISLAND OF SOCOTRA.—On Friday evening last, Professor BAYLEY BALFOUR left London *en route* for Aden, from which he hopes to reach Socotra, the exploration of the natural history of which has been entrusted to him by the committee of the British Association. Professor BAYLEY BALFOUR carries with him strong official recommendations to the Government of Aden, which is a dependency of India. He will have to rely on chance facilities for reaching the island, from which, however, he, with his collector and attendants, will be fetched away in April by the Assistant-Resident, Captain HUNTER (who sent the Somali Dracæna and Myrrh plants to Kew), when he makes his accustomed visit in the Government steamer to pay the annual subsidy to the inhabitants, by which their adhesion to British interests is secured. The results of Professor BAYLEY BALFOUR's mission are anticipated with much interest, as hardly anything is known of the natural history productions of the island, which the traveller HILLDEBRAND failed to reach. The zoological collections will be deposited in the British Museum, while the botanical will be sent to Kew. Mr. ALEXANDER SCOTT, of the Edinburgh Royal Botanic Garden, who was strongly recommended by Mr. SADLER, accompanies the expedition as chief collector.

—— CEYLON: COFFEE-LEAF DISEASE.—Mr. H. MARSHALL WARD left London at the same time as Professor BAYLEY BALFOUR (whom he will accompany as far as Aden), *en route* for Ceylon, to take up his duties as cryptogamist, charged with the investigation of the Coffee-leaf disease. The departure of Dr. TRIMEN, the new director of the Royal Botanic Garden, Peradeniya, is necessarily postponed for a few days.

—— COFFEE-LEAF DISEASE. — We understand that the publication of the book which Mr. MORRIS has undertaken to write, for the Coffee Planters' Association, on the Coffee disease of Ceylon and Southern India may be shortly expected.

—— JAPANESE CURIOSITIES.—The main feature at the meeting of the Scientific Committee, on Tuesday last, consisted in the exhibition of a large and miscellaneous collection of objects collected in Japan by Mr. MARIES while travelling for Messrs. VEITCH. The room in which the objects were displayed was ill-adapted for the purpose, but it was understood that this was a private view for the special behoof of the committees, and that probably, in due time, a public exhibition under more favourable auspices will be made of the objects which have been got together by Mr. MARIES' industry and judgment. By the way, could not Messrs. VEITCH contrive to exhibit some from their rich stores of Japanese and other curiosities at one of the *conversaziones* of the Society, and so add a novel attraction for the Fellows? To show the interest and variety of Mr. MARIES' collection we may note the following particulars. The photographs gave a better idea of the beauties of Japanese landscape than any we have previously seen; the Japanese pictures were curious and excellent in more senses than one; the little tea-pots carved out of the rhizomes of the Bamboo into the form of Nelumbium flowers, &c., were tempting enough to make lovers of the curious break the tenth Commandment. The fans from Formosa consisted of sheaths of the Bamboo, on which were traced artistic designs with great freedom by means of a red-hot wire. We may say *en passant* that the large sheaths of Dendrocalamus giganteus grown at Syon House are utilised in like manner for

fans, designs being painted on them. Bow and arrows from Yesso, used by the aborigines (the Ainos); Japanese war-horn (a huge shell), used by the Daimio of Nanguoka; fossil from Ichang, China, called by the Chinese "pagoda" stone; snakes, various, collected in China and Japan; birds, collected above Hankow, on the Yang-tse river; insects, various, from North China and Japan; Millet (mountain), cultivated in Japan; square-stemmed Bamboo; stone hatchets found on Yokohama Bluff; land shells, China and Japan; hornets' nest, Japan; a Japanese nursery picture; Chinese passport for Formosa; Japanese pictures; recent Japanese botanical work; photographs of Japanese trees; fungi (various), in bottles. These form only a portion of the treasures brought home by Mr. MARIES. His plants comprise numerous interesting and beautiful subjects, which will make their appearance in due time.

—— IMPROVED POTATOS.—A well-known experimentalist asks—"Has it been proved by any competent experimentalist that the Potato can be 'improved' by selection from the tubers? For myself, I offer no opinion, having made no special investigation of the subject. Bud-variation is a known phenomenon, and the Potato tuber is a bud: the thing, therefore, is possible; but far more correct information than any we possess is needed to throw any real light on the subject. A new year lies before us, and it would be well if a few of the rising young Fellows of the Royal Horticultural Society (and old ones, too, for that matter) would take up such subjects as these and work them out, remembering, however, that careful experiment, with the most jealously strict regard to accuracy, will alone avail to bring out any reliable conclusion. The *Journal of the Royal Horticultural Society* would be rendered worthy of its name were we able to record on its pages such work as this, if undertaken aud carried out in a truly scientific spirit. The title of F.R.H.S. would then cease to be, as in too many instances it is now, a *Vox et præterea nihil.*

—— AUBRIETIAS.—No hardy plants appear to have stood the wet summer and the recent severe frosty weather better than the Aubrietia; in cold, wet, shaded spots, where no sunshine falls, and where the wintry winds play with unchecked violence, have been seen large and luxuriant tufts of Aubrietias grown from quite small slips planted out in a stiff soil last winter, that are perfect as hardy foliaged plants. In addition to its possession of the quality of endurance, we have nothing like it for early spring work in our gardens; it it quite distinct in aspect and hue from anything else found there, and rarely perishing from those causes which will destroy numberless other plants. Whether it be the cold and wet of winter, or the heat and drought of summer, it is equally tenacious of existence; and it is almost one of the earliest to bloom, putting forth its flowers ere winter has relinquished the reins of government of the elements.

—— PROPOSED HORTICULTURAL EXHIBITION AT ATHERSTONE.—At the final meeting of the local committee formed for carrying out the exhibition of the Warwickshire Agricultural Society, held at Atherstone last year, in connection with which there was a display of horticultural produce, it was proposed that a meeting be called shortly to take into consideration the desirability of holding an annual horticultural exhibition in the town, as the one held in conjunction with the agricultural show was the first flower show which had been held in the town for twenty years, and was a decided success. From the statistics produced by the local secretary it appeared that there were nearly 700 entries for the horticultural department. The show was entirely got up by the local committee, and the whole management of the same devolved upon the floral committee and the local secretary. As an exhibition in itself it was superior to any previously held in connection with the Society, and it is to be hoped that it will be found practicable to hold an annual exhibition which might with advantage be held in connection with a show of dairy produce and a bee show.

—— FRUITING OF YUCCAS.—The good offices of the moth (Pronuba Yuccasella), at one time considered essential to the fertilisation of these plants, would seem to be by no means always necessary. Mr. VAN VOLXEM tells us that in Rome some twenty years ago he observed numerous candelabra of dry pods on some of the Yuccas, and, amongst others, on those of Y. aloifolia fol. var. From the latter he procured seeds, all of which, however, produced green-leaved seedlings. In Mr. HANBURY's garden at La Mortola, near Ventimiglia, in 1877, several species fruited. The pulp around the seeds has a

FIG. 18.—VIEW OF A DELL IN THE GROUNDS OF BLAIZE CASTLE. (SEE P. 80.)

rather agreeable sweet taste. It seems clear, then, that although the Pronuba does sometimes act as a match-maker, her mediation is not always required.

—— A MIDLAND COUNTIES BEE-KEEPERS' ASSOCIATION has been formed under distinguished patronage, for the encouragement, improvement, and advancement of bee culture, particularly as a means of bettering the condition of cottagers, agricultural and labouring classes, as well as the advocacy of humanity to that most industrious of labourers—the honey bee. Mr. JAMES NOBLE BOWER, of Knowle, near Birmingham, has kindly consented to act as honorary secretary.

—— TWIN-FLOWERED EUCHARIS are not uncommon, but we have rarely seen so perfect an example as one sent us by Messrs. KER, of Liverpool, who received it from Mr. DELAMERE, of Bootle. Messrs. KER tell us it is the third flower produced by the plant, so that there is some hope that the sport may be perpetuated.

—— THE SEED TRADE.—From Messrs. W. H. & H. LE MAY'S Circular we learn that—"Owing to the unfavourable weather which prevailed throughout England last summer, there is an entire absence of new home-grown seeds; but, fortunately for consumers, there is a fair stock of sound yearling English seeds in the hands of merchants and speculators. These remarks apply equally to red and white Clovers, Trefoils, and grasses. The crop of red Clover in America is above the average and of fine quality, and in consequence of the rise in prices, owing to speculative demand induced by the failure of the English crop, large shipments have been made to this market. In Germany red Clover is a fair average as regards both quantity and quality, but of white and Alsike the crop is very small and the quality poor, owing to the heavy rains. In France the crop of red Clover is somewhat below the average in quantity and of poor quality. Trefoil is not more than half a crop, and the quality is poor; Italian Rye-grass yields an average crop of fine quality. The crop of grasses in Scotland and Ireland is considerably below the average in quantity and weight per bushel, but there is a fair amount of heavy seeds still on hand from last year. Taking all things into consideration, it is our opinion that the present prices will not be exceeded if buyers will restrict their purchases to their immediate requirements."

—— THE RAINFALL IN NORTHUMBERLAND.—Mr. DAVID INGLIS, Howick Gardens, Jesbury, Northumberland, sends us the following details of the rainfall at that place in 1879:—Jan., 1.59 inch; Feb., 3.55 inches; March, 0.84 inch; April, 2.15 inches; May, 2.73 inches; June, 3.80 inches; July, 5.56 inches; Aug., 3.63 inches; Sept., 0.86 inch; Oct., 0.91 inch; Nov., 3.06 inches; Dec., 1.14 inch—the total depth for the year being 29.82 inches. In twelve days 6.90 inches fell, and the greatest fall in twenty-four hours was on July 21, when 1.48 inch fell. The number of days on which .01 inch or more fell was 204. In 1877 38.32 inches was recorded, the greatest depth there has been for the last forty years. Howick Gardens are about one mile from the sea, and 130 feet above sea level, consequently much damage from frost is never experienced.

—— JAPANESE PLANTS.—In the list of Japanese plants and bulbs introduced by Mr. FORTUNE, which we published at p. 11, there is an important omission, *i.e.*, Primula japonica and its varieties, which we now supply.

—— THE WOOD TRADE.—Messrs. CHURCHILL & SIMS state in their Circular that "The wood market has participated in the general improvement in the trade of the country which made itself evident in the closing months of 1879. The importation into the United Kingdom, which had fallen off considerably in 1878, shows a still further reduction in 1879, the import having been little more than two-thirds of that of 1877. It should be noted that the London railway sleeper import has been 90,000 loads less than that of 1878; making allowance for this, it will be seen that the arrivals of wood into London for general purposes have exceeded those of any previous year except 1877. The demand, however, has been fully equal to the supply, and the stocks, although considerable, are not in excess of the probable requirements of the trade during the months in which the shipping ports will be closed. While the importation and consumption of the United Kingdom have been declining, the wood trade of London has been increasing. This increase is due not merely to a larger local demand—the port of London continues to grow in favour both with the importer by reason of the excellent dock accommodation it possesses for the storage of stocks, and with the shipowner by reason of the facilities it affords for the rapid discharge of his vessels, which, now that steamers are so freely employed in the trade, becomes a more important consideration than ever."

—— DATE PALM WINE.—As is well known, a kind of wine or toddy is procured from many of the Palms, notably the Palmyra (Borassus flabelliformis), and the Cocoa-nut (Cocos nucifera). From the Date Palm, which is most valued for its fruits, only comparatively small quantities of wine are obtained. In some notes on the Date Palms cultivated in the oasis of Laghouat in Africa, it is stated that Palm wine (the "lakmi" of the Arabs) is furnished by trees which must be at least forty years old, or in full vigour. If the Palm is very old and about to be sacrificed the terminal bunch is cut, but if it is intended to preserve the tree, a circular incision is made below the terminal bunch, which is carefully preserved; the fluid is conducted by means of a reed to an earthen pot. The yield is from seven to eight litres of wine daily. At the end of a month, which period is seldom exceeded so as not to enfeeble the tree, only about three or four litres are obtained. The collection being terminated, the incision is carefully closed with clay or earth. The Palm thus treated and well irrigated will furnish Dates again in two years, and sometimes in the following year. The Arabs of the South use large quantities of palm wine, collecting it daily as a fresh drink. The bottles employed by the Arabs are of thin glass, the corks are tied down with string, upon cutting which they fly out, and the wine effervesces like champagne. Its colour is opalescent and rather milky. The odour is slightly exciting, and its taste at first is very agreeable, and somewhat resembles bottled or sparkling cider. When, however, the wine has lost its carbonic acid it has an insipid flavour. After being two months in bottle the wine appears not to undergo any material change. Its density is the same, but its acidity is rather more marked.

—— THE SHOW-HOUSE AT KEW.—We believe that the present unsatisfactory state of the decorative and purely horticultural department of the Royal Gardens, is nowhere felt more keenly than by the officers at Kew. Something, and indeed a good deal, must be credited to the prolonged repairs to which the houses were subjected last summer owing to the hailstorm, and other causes already referred to in our columns. The organisation of so vast an establishment, dealing with such different and so diverse interests, presents great difficulties in keeping every part up to a uniform standard. We have reason, however, to think that changes have been already in contemplation, which will tend to bring the horticultural department up to the same level of excellence, as is generally admitted to have been reached in the case of the other plant collections.

—— BARKERIA CYCLOTELLA.—This Orchid, which proved so attractive to the *cognoscenti* on Tuesday last, must, as it would seem, be equally or more attractive to certain insects. In any case, on the lip is a reddish-violet spot the size of a fourpenny piece, and pressed down close to it is the column bearing the anther. Any insect alighting on the flower would be attracted and guided by the patch of colour, and in its attempt to get at the honey in the spur must needs lift up the anther so as to squeeze himself in, and, in so doing, inevitably remove the pollen masses. The cut on p. 72 will show this arrangement.

—— DASYLIRION GLAUCUM.—At Handcross Park, Crawley, Sussex, the fine seat of J. WARREN, Esq., a handsome specimen of this well known exhibition plant is now in flower in a house devoted to Agaves, Bonaparteas, and other succulent plants. The flower-spike is 10 feet high, and in general appearance is not unlike a gigantic spike of Celosia pyramidalis, but less feathery, and of an indescribable silvery-grey colour. The plant flowers so seldom in this country, that we hope shortly to give its portrait.

—— EVERGREEN PEACHES.—Some trees this winter seem to justify such an epithet, as, even after all the frost we have experienced, the leaves of some varieties still remain unhurt on the tree. We noticed this at Mr. CUTBUSH'S nursery at Highgate lately, and now Mr. BUNN, gardener at Hanger Hill, near Ealing, sends us a number of leaves as green as in September.

—— JERUSALEM ARTICHOKES.—It has been noticed this season that the lifted tubers of Jerusalem Artichokes are large, much knotted, and uncouth in appearance. This is mainly owing, perhaps, to the wet season, which caused an unwonted growth in the foliage of these Artichokes, and caused them to take on an ugly and ill-shapen appearance, much as Potatos do when strongly grown. Those who grow the Artichoke for market purposes plant it in a stiff loam, and the excessive wet of the summer, causing the soil to run together, interfered to some extent with the regular swelling of the tubers. Some say they are more watery than usual when cooked, which is perhaps another result of the wet summer. An old gardener of many years' practice asserts that while the Jerusalem Artichoke will grow in almost any soil and situation, to have fine roots it should be planted in a rich mellow loam, in an open airy part of the garden. Now-a-days gardeners plant this esculent in an out-of-the-way part of the garden, as if it were of no account or of but little value. It is a very prolific plant, and from a small piece of ground a considerable supply can be drawn if the soil be suitable and some attention is given to the cultivation of it. The crop should be lifted in November when the stalks are quite withered, and the roots laid by in dry sand or housed as Potatos for use during the winter. If it is desired to discontinue the bed every tuber should be diligently searched for, or they will surely grow if left undiscovered in the ground.

—— TRANSPORT OF SEEDS IN THE TIME OF LINNÆUS.—The conveyance of seeds uninjured through adverse climates is still imperfectly understood, though it is now known that many seeds may be safely transmitted in earth which is neither too moist nor too dry. This was the chief difficulty encountered by the early introducers of exotic plants. In looking over some of LINNÆUS' correspondence we find frequent allusion to the various contrivances for packing seeds so that they should retain vitality. JOHN ELLIS, F.R.S., who was the first to demonstrate the animal nature of corals, tried a number of experiments in preserving the germinative power of seeds during long voyages. In one of his letters to LINNÆUS he says:—"I am now smearing over the acorns of the Quercus that bears the cork with a thick solution of gum arabic, which soon dries; others I cover with wax, others I enclose in clay and gum arabic; each acorn is covered or smeared singly. I shall enclose others in clay and tow, or flax, worked up together and then dried. Others I cover with a mummy made of pitch, resin, and bee's-wax, in equal quantities. They are afterwards put into jars, some in sand and some in paper, and some in boxes, and then covered up close and kept cool on board ship. This is the method I propose to bring seeds from China; and am now trying the experiment only for a short voyage to Charlestown, South Carolina, to Dr. GARDEN." Replying to this LINNÆUS informs ELLIS that "Fresh seeds may with great facility be conveyed in the following manner from any distant country. Fill a glass vessel with seeds, so deposited in dry sand as not to touch each other, that they may freely perspire through the sand, tying a bladder or piece of paper over the mouth of the vessel. This glass must be placed in one of larger dimensions, the intermediate space of about 2 inches all round being quite filled with three-parts nitre, one of common sea-salt, and two of sal-ammoniac, all powdered and mixed together, but not dried. This mixture will produce a constant moisture, so as to prevent any injury to the seeds from external heat; as has been proved by experience." This method may have answered in some cases, but it did not meet with ELLIS' approval. In another letter ELLIS states that he had succeeded in raising a number of acorns of the English Oak, which had been preserved in bee's-wax fourteen months. These acorns were put into an earthen vessel, into which the melted wax had first been poured, and before it was hardened the

acorns were put in; being first well dried on the floor of an airy room for a month. Tea seeds, however, that had been enclosed in a coating of wax half an inch thick, failed to germinate after the voyage from China. Subsequently ELLIS was successful in raising many imported seeds of the Tea plant and various other plants, which had been preserved in wax. He found this was the best substance to preserve the vitality of seeds. ELLIS used to send his seeds to AITON at Kew.

—— ORCHIDS IN FLOWER. — The following Orchids are now in flower at Messrs. JAMES VEITCH & SONS', Royal Exotic Nursery, King's Road, Chelsea :—

Calanthe nivalis
,, Turneri
,, Veitchii ×
,, vestita
,, ,, lutea
Chysis Chelsoni ×
Celogyne cristata
Colax jugosus
Cypripedium barbatum
,, Boxallii
,, albo-purpureum ×
,, Dayanum
,, Harrisianum ×
,, Haynaldianum
,, insigne
,, Sedeni ×
,, selligerum ×
,, venustum
,, vexillarium ×
,, villosum
Cattleya Trianæ
Dendrobium endocharis ×
,, formosum
,, nobile
,, Wardianum
Dendrochilum glumaceum
Lælia albida
,, elegans alba
Lycaste Skinneri
Masdevallia polysticta
,, tovarensis
Maxillaria grandiflora
Odontoglossum Alexandræ
,, Andersonianum
,, cordatum
,, blandum
,, cirrhosum
,, grande
,, Pescatorei
,, Roezlii
,, ,, album
,, tripudians
,, Londesboroughianum
Oncidium bicallosum
,, cheirophorum
,, divaricatum
,, Forbesii
,, obryzatum
Phalænopsis amabilis
,, Schilleriana
Pleione humilis
Restrepia antennifera
Saccolabium giganteum
Sophronites grandiflora
Zygopetalum Mackayi

—— TEMPERATURES REGISTERED IN EDINBURGH.—The following is an abstract of a report on the lowest temperatures registered at the Royal Botanic Garden, Edinburgh, from December 1, 1879, to January 8, 1880, by Mr. JOHN SADLER, Curator. During December last the thermometer was at or below the freezing point twenty-three times, and there were registered collectively during the month 230° of frost. From the 1st till the 13th there was hard frost every night. On the 4th the thermometer stood at 1°, or 31° of frost, and on the 13th at 28°, or 4° of frost. On eight mornings during the month there was no frost, although the temperatures were not high. On the 25th the register was 35°, while on the 26th it was 20°, or 12° of frost. In December, 1878, there were registered 265° of frost for the month, and the thermometer was at or below freezing point twenty-nine times, the lowest temperature being on the 14th, when 23° of frost were registered. Since this year began there have been only 2° of frost. The following have been the lowest readings :—January 1, 32°; 2d, 37°; 3d, 34°; 4th, 39°; 5th, 41°; 6th, 43°; 7th, 36°; 8th, 30°, or 2° of frost. The thermometer during the day frequently ranged from 42° to 52°, but although the weather has been extremely mild for the season, spring vegetation has made no start as yet, which is to be accounted for by the decided check it received at the beginning of last month. Christmas Roses (Helleborus niger grandiflorus) are at present in fine flower on the rock garden, along with Crocus medius. In conclusion, says Mr. SADLER, let me express the hope that the present mild weather is the ushering in of that extraordinary "wave of solar heat" predicted by the Astronomer Royal for Scotland in 1872, to begin this year.

—— SCIENTIFIC SERIALS.—Under the auspices of the Harvard University, Cambridge, U.S., Mr. SAMUEL H. SCUDDER has compiled a most useful work, a work indispensable to all persons engaged in scientific pursuits. From a small beginning it developed into a *Catalogue of Scientific Serials of all Countries, including the Transactions of Learned Societies in the Natural, Physical, and Mathematical Sciences*, 1633 to 1876. It forms a large octavo of 350 pages, or rather of 700 pages, for the paper is printed on one side only, thus making provision for additions. Serials devoted to pharmacy, agriculture, horticulture, manufactures, philology, &c., have not been admitted. The plan of the catalogue is geographical. Thus, first international, then Great Britain and Ireland, and so on, concluding with the United States of America and British America. Under each of these heads the serials are enumerated under the names of the places where they are or were published; the names of the places being in alphabetical order. Cross references are given to the locations and titles of societies; and there is an index of titles. The total number of serials enumerated is 4390. We have roughly calculated the numbers enumerated under each heading, and we reproduce them here as they may interest some of our readers. Of course the actual number of scientific serials published in a country affords only an approximate idea of the scientific activity of the population of the country in question, inasmuch as the serial publications of certain important societies outweigh a legion of serials of short duration. The numbers are :—

International	18
Great Britain and Ireland	550
Denmark, Sweden, and Norway	151
Holland	218
Belgium	57
France	715
Spain and Portugal	72
Italy	333
Switzerland	103
Germany	1128
Austria and Hungary	308
Russia	107
Greece and Roumania	7
Asia, south of Russian Dominions	50
Australia, Tasmania, and New Zealand	37
Africa	9
South America, Mexico, and the West Indies	64
United States of America	427
British America	27

From the above figures it will be seen that the German serials constitute more than a quarter of the total, and outnumber the whole of those published in the English language.

—— AROIDS AT SCHÖNBRUNN. — From the *Botanische Zeitung* we learn that there are nearly 300 Aroids at present under cultivation in the Imperial gardens of Schönbrunn, Austria.

—— THE ROYAL JERSEY AGRICULTURAL AND HORTICULTURAL SOCIETY. — The spring show of this Society will be held on May 12; the Rose show on June 23; the summer show on August 11; the fruit show on October 13; and the Chrysanthemum show on November 17.

—— GROWERS OF MARKET PRODUCE.—"Unitas" writes :—"As you have inserted the complaints of market gardeners will you allow me to request all persons interested in the matter to write a few lines, addressed to The Vineyard, Newport, Isle of Wight, in order that a meeting of market gardeners may be called through the medium of the Press, for the purpose of coming to some arrangement, which will bring us into direct contact with the consumer, and enable us to get the profits which ought to go into the pocket of the producer? With this object, I invite every market gardener to address a few lines to 'Unitas,' simply stating his desire to assist in the formation of a Market Gardeners' Association. If this appeal is sufficiently answered, I see no reason, unless something unforeseen occurs, why we should not be in working order before the spring produce comes in, and to a great extent independent of the delays and disappointments of Covent Garden."

—— THE WEATHER.—General remarks on the weather during the week ending January 12, 1880, issued by the Meteorological Office, London :—The weather during this period has been very dry generally, but exceedingly dull and gloomy over England, rather so in Ireland, and at times in Scotland also. The temperature was slightly above the mean in Ireland and the greater part of Scotland, but as much as 4° or 5° below the mean in nearly all other districts. In most places the highest of the maximum readings occurred at the commencement of the period, and the lowest of the minima at its close. The wind was generally anticyclonic—being light from E. and S.E. in the S., light to moderate or fresh from S. and S.W. in the W., and light to moderate from S.W. and W. in the N. At our central and eastern stations calms and variable airs were experienced. The rainfall was exceedingly slight in all districts.

—— GARDENING APPOINTMENTS.—Mr. WM. ROBINSON, late Foreman at The Dell, near Windsor, has been appointed Gardener to L. D. HALL, Esq., Farnham Chase, near Slough, Bucks.—Mr. HATCHER, late foreman to Mr. CLAYTON, at Grimston Hall, Tadcaster, has been appointed Gardener at Dobroyd Castle, Todmorden, which place belongs to the same proprietor, JOHN FIELDEN, Esq.

HARDY FRUITS.

HAVING touched on Apples and Pears, and given a list of the best varieties suitable for amateurs and others to plant, it now remains to treat shortly on Plums, Cherries, Raspberries, Gooseberries, and Currants, none of which are grown to anything like the extent in small gardens they might be were they only so arranged as to make the most of the room and cultivated in a systematic manner. Instead however of this being done it frequently happens that trees and bushes are planted and left to run riot and grow unrestrained till they become mere thickets, impenetrable to sun and air, and without these indispensable factors, fruit, if it shows, cannot ripen properly, and must therefore be deficient in those attributes that make it worth having. It is often said that our neighbours across the Channel manage certain things better than we do, and in the matter of fruit culture we might certainly take useful lessons, as there they plant by the wayside and utilise every spare nook, the result of which is that the population obtain abundant supplies of an article of food conducive to their health and well-being, while here it is at a forbidden price, and thousands of people in every town scarcely know the taste of it. Much of this scarcity arises from the well-to-do buying it instead of growing it for themselves, and from the insecure holding cottagers have of their houses, which debars them from planting even could they afford and were disposed to do so, as on removal they have to leave trees and bushes behind for the benefit of others without any recompense.

If landlords would only give the cottage part of their property more attention, and stock the gardens, what a boon they would confer, especially if they allowed more land that might be devoted to vegetables, as the two crops combined would not only provide better for the tenant's family, but the sale of the surplus would supply the very produce that is so much needed in our half-famished towns, and yield the grower wherewithal to pay his rent. We hear of the agricultural interest being at a low ebb through the low price of corn, and of farms being given up in consequence, and if this depression in that branch of industry should lead to portions of fields being added to labourers' gardens, there will be truth in the old adage that good comes out of evil, for besides the increased supply of produce so much required, men would have home interests and occupation for their children's leisure hours. To become useful members of society there is nothing like early training, as habits acquired in youth stick to us through life, and it is therefore a matter of the greatest importance that they should be of the right kind, instead of such as lead to waste of means and time at public resorts.

PLUMS.

Leaving this part of the subject, however, for abler pens than mine to plead, I return to the point at which I started, and would remark that, in the choice of PLUMS it is necessary to divide them into two classes—the one for walls, and the other to be grown as bushes or pyramids. The latter mode of culture suits very well for the culinary sorts, but those used for dessert require a better climate—at least, that portion of them which ripen late, and one of the very best of these is Coe's Golden Drop, a Plum that should be in every garden. To grow it to perfection it should have a warm, sunny aspect facing south-east or south-west, where in the autumn its fruit colours up splendidly, and if allowed to hang till it just begins to shrivel it is a perfect sweetmeat. In favoured districts this variety likewise does very well as a standard, and as it comes late in that way is often most valuable to afford a succession, and to yield a supply for cooking when others are done. Another grand-looking Plum, and one of first-class flavour, is the Jefferson, and if I were only to grow one kind this would be it, as it is good at all points, and makes a most tempting-looking dish on a table, where its large size and fine rich colour are sure to attract notice. Besides being so noble in appearance, it is a very free-bearing variety, and succeeds well on a wall, having a similar aspect to the one above-named. To come in just before this I would strongly recommend Kirke's, a Plum which, when ripe, carries a beautiful blue-black bloom, the fruit being round, and of large size and most delicious flavour.

If space can be afforded for other kinds, one of the most desirable is Reine Claude de Bavay, and it is quite a sufficient recommendation to this to say

that it is in look and quality a late variety of Green Gage. Of course, this latter must not be forgotten, as who would be without a tree of such an old favourite?—and, although it does fairly well as a bush or pyramid, the fruit is much finer on walls, as there it comes larger, and colours up splendidly on the side next the sun. Excepting Reine Claude Violette, those mentioned are all that any one, even with the largest garden, need care about to grow for dessert, as they ripen at different times throughout the season, and are the very pick of the sorts known, and such as are sure to give satisfaction to any one that may plant them.

Among those for culinary use the Victoria stands first, and this is the one for Villa gardeners and cottagers to plant, as it may be depended on, if the season is anything at all favourable, to bear enormous crops. So free is it in this respect, that I have seen trees weighed down to such a degree that they had to be propped up to prevent the branches from splitting or breaking off; and another recommendation for this particular kind is, that it is a good market fruit, for, being somewhat dry in the flesh, it bears handling well without becoming bruised or damaged in the way those that are softer and more juicy do. Prince Engelbert is another excellent kitchen Plum, that should be largely planted for market purposes, and to grow for preserves. Belle de Septembre is a most valuable late variety, coming into use after the forenamed are over. This is likewise known under the name of Autumn Beauty, and is much grown in the neighbourhood of London, where it is held in high esteem both for its good looks and high quality. These and Early Prolific constitute the best, and will afford a continuous supply the whole season through. Where people make mistakes is in planting too many kinds; instead of doing which, it is far better to keep to such as are known and well tried, for to go beyond this entails loss of time and much disappointment in the end.

METHOD OF CULTIVATION.—Plums succeed well in almost any kind of soil, but do best in that which is somewhat inclined to stiffness, or has a cool bottom. In cases where standards are planted, the right way to treat them is to simply thin out any branches which cross each other or become crowded, that the full influence of light and air may be let in on the remainder; and if this is attended to every autumn they will require nothing else, except perhaps the reduction of the ends of the leading shoots, should the trees grow strong and appear likely to become too large for their position.

In small gardens bushes and pyramids are preferable, and these are modes of training and culture to which the Plum is very amenable. When trained and treated in this way, they may be kept to almost any size desired by simply pinching or stopping the young shoots during the summer, which manipulation, getting rid of this woody growth as it does, induces the growth of spurs that bristle with fruit-buds. Should the soil be too good, and the trees prove unruly on that account, the strong tendency is easily rectified and checked by judicious root-pruning, an operation that should be taken in hand as soon as the leaves fall, as then fresh fibres are formed before winter sets in. Plums, like all other fruit-trees, pay for good attention at first starting, and therefore in planting it is advisable to dig large holes, and to give each plant a barrowload or two of fresh turfy loam, which will push them into bearing size quick; and, to get them to this desirable stage as soon as possible, they should be left to grow pretty much at their will, as to cut back causes loss of time, and leads to no good result; and yet many are very free with the use of the knife when they get young trees home from the nursery. Heading them in then or after is the greatest mistake possible, as they will always break back, and the thumb and finger can be made to do all that is necessary in the summer by removing any misplaced shoot, or nipping out the points of such as appear to be taking the lead.

In growing Plums near towns or buildings, such as farms, the trees require close watching, as sparrows strip them of their buds, and being birds with which we are so familiar, their depredations are seldom noticed or thought of, and many go on year after year blaming the seasons for the loss of fruit instead of these culprits. Being so exceedingly bold, to keep them off is a very difficult matter, but as these hard-billed birds are more a plague than a blessing, the remedy I would suggest is to get rid of the greater portion of them by catching or shooting them when in flocks on the ground, where they may be decoyed by a train of corn when the weather is sharp. Those who may feel indisposed to adopt such means can only escape the loss of a crop by protecting the buds in some way, a good plan of doing which is to syringe the trees with limewash, as that not only renders them safe from the ravages of feathered depredators, but cleanses them from moss and lichen, so injurious to the health of the bark.

CHERRIES.

Like Plums, these succeed in almost any soil, but do best in a free sandy loam where the drainage is good. Unless the trees can be grown on walls so as to be protected in front by a good net it is almost useless attempting their culture, so fond are birds of the fruit. The best kinds for dessert are the Elton, Bigarreau, Knight's Early Black, and Black Eagle, the former of which is very fine and delicious. For tarts there are none to equal the old Mayduke, and to succeed this the Morello is held in great esteem. This kind will grow on any north aspect and makes handsome bushes, but, as observed above, the difficulty is to preserve the fruit. Where many are required no doubt it would pay well to make compact plantations with late Gooseberries between, and net the whole in; and the same with the dessert sorts, if treated as pyramids. By pinching these latter in so as to form plenty of spurs they are very fertile, but Morellos should be allowed to make their young wood full length and kept thinned out.

GOOSEBERRIES AND CURRANTS.

Bush-fruit of this character may be most economically grown by planting them in rows near the margins of walks, to which they make good boundaries and are easy to get at for the purpose of gathering. In the majority of cases, bushes of these are left till they get much too old, and are not sufficiently thinned out at pruning time to bear good crops of well-flavoured fruit. Bad as the sparrows are for denuding Plums of their buds, they are even worse among Gooseberries, which they often completely strip, beginning their attacks just as the buds are on the move, when the ground may often be seen strewn with the parts they reject. The best flavoured and most choice kinds are as follows:—*Reds:* Highlander, Crown Bob, Wonderful, Slaughterman, and Rifleman; Warrington is valuable on account of its late keeping qualities, as it will hang after all others are over. *Whites:* Whitesmith, Queen of Trumps, Snowdrift, Antagonist, Lady Leicester, and Hero of the Nile. *Greens:* Telegraph, Gretna Green, Haspool, Keepsake, Shiner, and Matchless. *Yellows:* High Sheriff, Mount Pleasant, Leader, Criterion, Leveller, and Catherina. Among Currants the red and white Dutch are as good as any, and Lee's Perpetual is the best among blacks. Black Currants delight in a damp situation, and where they can be so accommodated the berries swell to a very large size, and the bushes grow vigorously. In the pruning and management of these they should be simply thinned out in the autumn, and not spurred or shortened back in any way like the others.

RASPBERRIES.

These, too, like partial shade and moisture, and in the culture of these the ground cannot well be too loose and open, their nature being to spread their rootlets near the surface, where they are much benefited by annual top-dressings of manure, which if forked in at all should only be done to a slight extent, so as not to cause any disturbance. Raspberries are therefore best grown in quarters by themselves where they can have wires run along the rows for their support, which in the end is cheaper than stakes, that soon decay and require constant renewal. Where wires are not used the next best things are iron rods, as these, although dear in the first place, are everlasting. To afford Raspberries room, they should be planted 4 feet apart on fresh trenched land, and the rods cut back to near the surface of the ground the first year instead of making any attempt at taking a crop, which only weakens them without giving an adequate return. For general purposes there are none equal to Fastolf, which is large, prolific, and excellent in flavour. The White Antwerp is quite worth growing to afford variety on the dessert table, and the October Red for getting a supply for tarts in the autumn. This variety should be planted in a warm sunny spot, and cut quite down every year, as the fruit is borne at the points of the young shoots that grow during the summer; when to get them strong the ground under them should be heavily mulched.

STRAWBERRIES.

No fruit is more popular, and no plants are more accommodating in their nature, for although they succeed far best in heavy soil, good crops may be obtained by skilful cultivation in just the opposite; but in such cases the plants are short-lived, and require treating almost like annuals, that is, as regards renewal, the crowns if left coming weak and too small to flower. Those who happen to have such a light hungry soil to deal with will find that it can be greatly improved by trenching in a good dressing of clay or marl with the manure, which buried in that way is very retentive of moisture, and therefore a wonderful help to plants when the weather is hot, as then they drive their roots down and search it out, threading it through and through. Amateurs and others not having had much experience in gardening often allow their Strawberry beds to become completely overrun instead of keeping the crowns separate and confining them to rows about 2 feet apart, which is the only way really fine fruit can be obtained, as then it has full exposure and the benefit of the sun, under whose influence it colours up and acquires its proper flavour. When the plants run together in masses they become mere weeds, and are not strong enough to bear a crop that is worth having, the berries being small and inferior in quality. I have seen excellent beds made by pulling old plants to pieces and using the strongest crowns, planting the same triangularly, three in a clump, at from 2 feet to 2 feet 6 inches apart; and if this is done early in August during a showery time they soon become established and bear well the following year. For getting a fine plantation quick there are none equal for the purpose of forming it to those in pots that have been forced which, turned out and kept well watered, bear enormously the next season, and are just the thing for forming beds on light lands where there is a difficulty in getting young runners to grow. Although the soil for Strawberries should be stirred deeply, it is important that it be well trodden and made firm after, otherwise they go too much to leaf, and do not make such full, fine crowns, that alone yield an abundance of blossoms. The practice of denuding Strawberries of their foliage in the autumn, as is often done, is a very barbarous one, and weakens the plants much, besides leaving them without their natural protection, which they stand so much in need of during the winter and spring. To ward off frost it is a good plan to give a heavy mulching of short manure at this season, which will likewise be a great aid in stimulating surface-roots, and sheltering the same from sudden changes of weather. As to sorts, British Queen is one of the best where it succeeds, and next in point of merit are Dr. Hogg, Sir J. Paxton, and Mr. Radclyffe, which partake of the character of the first-named. Keens' Seedling is superior to any of the earlier sorts, and Vicomtesse Héricart de Thury and President are the best to succeed it. For late supply the Elton should be grown, and this is the only one that makes really fine preserve, as its firmness of flesh, fine colour, and sub-acid flavour, render it particularly adapted for this purpose. *J. S.*

VEGETATION AND PRODUCTS IN PUERTO RICO.

IN a very interesting account of the aborigines of Puerto Rico the following fairy-like description of the country is given. "It is not easy," the writer says, "to imagine a more lovely country, or one to which Nature has been more bountiful. Indeed, it is almost impossible to describe the varied scenery of some of the mountain passes in this island, especially early in the morning, when the grey mist lies like a sheet of snow in the valley, and gradually disappears under the rays of the rising sun. One rides through groves of trees laden with golden Oranges and Bananas, to be had for the gathering. Rich pasture lands, studded here and there with beautiful Palms and Cocoa-nut trees, extend to the horizon, wherein the fat cattle are almost hidden by the luxuriant grass upon which they are grazing; Convolvuli and other pretty wild flowers of a hundred hues literally line one's path.

Coffee plants covered with their delicious white blossom, and gently shaded by the larger trees under which they thrive, offer a tempting shelter when the sun's rays become too warm. Rich plants of Tobacco promise future hours of solace to the smoker as he lights his native weed; while vast fields of Sugar-cane serve to vary the shade of the verdure of the plains. Here and there a stray child, destitute of clothing, and wanting none as far as the climate is concerned, escapes from a picturesque hut of Palm leaves to complete the charm of the scene, and to carry one back to the period of the Boringuens; but the smoke issuing from the tall chimney on the distant sugar plantation destroys the illusion, and the cruel negro oxen-driver who goads his overladen bulls with nearly half an inch of sharp steel at the end of a long pole, serves to remind one that it is no longer the Boringuen who is the possessor of the soil."

Regarding the commercial products of the island sugar forms the staple article. There are at present 385 estates and plantations of all kinds. The majority of the large sugar plantations use mills worked by steam machinery, which is for the most part of British manufacture. A few mills are worked by water-power, and on the smaller properties mills worked by oxen are still in use. There are five establishments where the most improved plant and apparatus are in operation for the manufacture of sugar; one of these in particular is on a large scale, complete in every respect, and is equal to the working up of 30 tons of sugar per day. In the central factory a system of railway is employed for the conveyance of the canes to the works and for the carriage of the sugar to the port, which is giving very satisfactory results in regard to the reduction of the cost of labour. In this and another establishment the triple-effect machinery is used, and a superior kind of sugar is produced, which is sold for home consumption at three times the price of ordinary sugar. The molasses are also worked up into sugar. These central factories are yet in their infancy in the island, and upon their success or failure will probably depend the fate of sugar cultivation at Puerto Rico. The majority of the planters complain that at present prices sugar is grown and manufactured without any profit, and even at a loss. It is said to be beyond doubt that sugar-making cannot be continued in Puerto Rico upon former principles. On the other hand, while common Muscovado sugars are thus produced at a loss by the ordinary methods of manufacture, crystallised centrifugal sugars are made at the central factory at a total cost, delivered in the market, of 8*s*. per hundredweight, and that such sugars bring an average nett price of 16*s*. per hundredweight, thus affording a large balance of profit. Notwithstanding all this, it seems there is an enormous waste, and great annual loss in the Sugar-cane produce. The plant itself is described as being almost in its wild state, little or nothing having been done towards improving its natural condition, in augmenting the saccharine richness of its juice, &c., besides the incredible waste in the process of manufacture. In expressing his own opinion upon the future of the sugar cultivation in Puerto Rico, the British Consul says it will no doubt continue to decline, and that its place will be taken, wherever practicable, by Tobacco, the cultivation of which is steadily increasing and fetching very remunerative prices.

Regarding the Sugar-cane disease, it seems that new varieties of seed cane have been introduced from all parts of the world, and planted with satisfactory results. "It appears thus," we read, "to be an established fact that the remedy for the Sugar-cane disease consists in the introduction of new seed combined with an improved state of cultivation."

Of the Tobacco produce there are considerable quantities both exported and consumed in the island. The plant thrives well, and the quality, especially in the Rio de la Plata district, is very good, but it would appear that as yet the preparation of Tobacco, after the harvest, and the manufacture of cigars is not sufficiently advanced for it to enter into direct competition with Cuban Tobacco, though a great deal of the Tobacco grown for export is shipped to Cuba, to be there made into Havana cigars.

The cultivation of Coffee, which is largely grown in Puerto Rico, is thus described:—"From the time that the young plant springs up of its own accord from the fallen berry under the parent tree, until it ceases to bear fruit some forty or fifty years afterwards, it is an object of the planter's solicitude and attention. When the seed-plants are transplanted into new ground it is under Plantains and larger trees of quick growth, which have been prepared ready to afford the necessary shade; as the young plant grows the shade is modified or decreased to suit its strength. The first crop is borne three or four years afterwards, and is gathered in three successive months, each berry being picked by hand one by one. After the outer husk is removed in a mill the inner berry, which is divided in two halves, except in the rare case of *caracoles* or shells, where only one berry is found, is laid out on the drying ground from sunrise to sunset; the berries are then put in a mill, which removes the inner husk. Then they are picked and re-picked until they get into the exporter's hands, when they are all picked over one by one again to suit his market. Those intended for the Mediterranean are put into a mill and polished, a little colouring matter being added when necessary. This picking is all done by women in the merchant's store, a given quantity being weighed out to each picker."

THE TURNER COLLECTION OF ORCHIDS.

All those who visited the Manchester great show at Whitsuntide for the past two seasons will have some recollection of the beautiful bank of Orchids exhibited by Mr. Wm. Turner, of Over Hall, Winsford. Before a collection so beautiful and so valuable can be exhibited there must be some others to draw upon left at home, and consequently it may be an interesting matter to a rapidly-growing Orchid-loving constituency to pass under review the Turner collection of Orchids as I found them at home.

I will not take up space by discussing the particular features of the surroundings of Mr. Turner's modern Hall any further than to say that it is situated on somewhat high ground, overlooking the townships of Winsford and Over, and that, with the exception of these townships, as far as the eye can reach, one sees only purely agricultural Cheshire.

With the exception of a somewhat spacious conservatory adjoining the Hall, the houses, erected quite in proximity, are all devoted to Orchids. They are four in number—1, the East Indian-house; 2, the Dendrobium-house, which does general service in the meantime; 3, the house for cool Orchids; 4, the Cattleya-house. With that number of houses, varying in temperature, in treatment as regards ventilation, moisture, and other matters Orchidal, Mr. Turner finds he can grow (and so can anybody with similar compartments) most of the exotic Orchids that have found their way to this country.

The East India House.

The East India-house is of the usual description, span-roofed, with centre table of stone and side tables of slate, with abundance of piping for keeping the house comfortable in all weather. On the centre table were some very good examples of Vanda suavis with sixteen growths, some good V. tricolor, and a plant of V. suavis Pescatorei, by far the handsomest of the sweet-scented forms, and easily distinguishable out of flower from its vigorous habit. Alongside of these were Aerides virens Dayanum, 4 feet high—which, by the way, still stands conspicuous as one of the best of the Aerides tribe (I mean in its best form), Aerides odoratum purpurascens, Aerides quinquevulnera, Fieldingii, maculosum, Lobbii, and the very rare and beautiful narrow-leaved form of affine, which, notwithstanding its strap-shaped leaves, yields a raceme of great length, and of fine rich colour. Alongside this were one or two well grown plants of Aerides Schrœderi, still very rare, having only been introduced once; plenty of Aerides crassifolium, good as an individual flower. By far the most conspicuous plants, however, in this division, were the Saccolabiums. Nothing could possibly be finer than S. præmorsum Turneri, which every Orchid enthusiast was enraptured with when in blossom at the Manchester show, and it is going on in full vigour, suspended in a basket from the roof. Nor is S. guttatum, Loddiges' var., nor the many forms of Blumei, one whit behind in vigour; indeed, from the grosser growing to such small fellows as S. curvifolium and ampullaceum, which are now so plentiful, and so very pretty and effective when in flower in October, there are abundant signs of vigour, and promise of plenteous blossom. Cypripeds are in rude health, as might be expected, the great leaves of Parishii being like the Scotch Leeks of East Lothian, which the grower averred reached from Mother Earth to his armpits! The pretty white-flowered nævium does not, seemingly, get along so well. I never saw anything like the batch Mr. Bockett had before he transferred his plants to their present dwelling. They were in hundreds of flowers some half-dozen years ago, and such flowers too! Nor is Mr. Turner, seemingly, satisfying himself with the culture of Phalænopsis; there are some good plants of amabilis and of Schilleriana and Lüddemanniana, but in bulk they are not so good as his other plants. He may, however, be complimented on the marvellous display he had of Australian Dendrobes. At the time of my visit they were quite a charming lot of racemes, and of that colour, too, so rare in Orchids. They were D. bigibbum, Goldieanum, and superbiens—all in flower, and the plants in excellent health, which is the exception. Many evidently have succumbed to cold treatment, plenty would go if allowed to get infested with thrips. Among the three species, or, more correctly speaking, two species (for Goldieananum and superbiens are only forms of one species, and, in my opinion, ought not to have been separated) give me bigibbum. It has form and style to recommend it, although the other two are more deeply coloured, but the wavy segments, without any irregularity about them, destroy their appearance if you compare them with a group of bigibbum. Grow that species well, and it is a charming addition to our winter flowering Dendrobes—only take a wrinkle from Mr. Turner, and grow it in brisk heat and keep it clear of thrips or spider.

Another plant which struck me, in fine health and in flower, was the difficult-to-grow Dendrobium Lowii. It is one of the nigro-hirsute section that has baffled many a good grower, and the flower is so exquisite—so much detail about it as to keep a keen eye resting on it for a while—a good laster to boot, and in colour a match for Cattleya Dowiana. It had a pseudobulb a yard long, and seemed to be going along all right. A really first-rate thing of modern introduction is Dendrobium album, as wax-like in flower as an ivory Angræcum, and as sweet in the perfume as a Tea Rose—a good flowering subject as well, and not a bad grower. A far more difficult species alongside of it was D. Macarthiæ. This seems to be going the way, if not of all the earth, at least of D. Fytchianum, and two lovely subjects they are, but we require them to be introduced statedly, like Epidendrum bicornutum, or Cattleya superba, else they might disappear out of our collections. Here, too, was the rare Grammatophyllum Ellisii, with rather handsome glaucous leaves, and not unlike a Cymbidium in pseudobulb with its prominent sheaths. Another formidable looking fellow, which you have had some correspondence about, is the giant of Bolbophyllums—B. Beccarii. It is not unlike a stiff-leaved succulent, and might do duty for an umbrella at a pinch—its leaves measuring 16 × 10 inches.

The Dendrobium House.

Passing out of that house the adjoining one is chiefly filled with table plants and Ferns, with Dendrobiums resting, such as masses of Schrœderi, lumps of Falconeri in fine condition, a few Wardianums and chrysanthums, with some very finely grown examples of Cattleya gigas without spot or blemish, only refusing to show flower-spathes; and some other fine things. In reference to Dendrobium Wardianum it might be said that Mr. Turner is particularly careful not to expose it to too much cold, nor to prolong its resting season beyond what is judicious. There seems to be a lot of that favourite Dendrobe "going back," which is doubtless partly due to its habit of continuous growth, more like chrysanthum in this way than nobile. Moreover, it is a Dendrobe like Dalhousianum, in respect of its great objection to cold and over-much moisture in the height of the growing season. Put that and that together and we have a very palpable reason for non-success in its culture—such is my opinion at all events.

The Cool Orchid House.

The house for cool Orchids has been recently put up, and is one of the north-exposure houses not overheated. It is about 50 feet long, and contains plants in variety in the height of vigour. The plants in this house are not the specimen size of those in the other houses; yet there are some masses of Odontoglossum Alexandræ, a smaller lot of O. Pescatorei, a large and very fine lot of O. cirrhosum, which by the way is one of the most generally useful Orchids for families that require a quantity for cut-flower purposes—moreover,

too, in some of the denser panicled sorts there is very much to admire. I do not care much for the long lanky flimsy-substanced sorts, but the species is a welcome addition to our best Odontoglots—although it will never vie either with the Princess of Wales' nor yet Pescatore's Odontoglots for anything that is wanted in first-rate family decoration. O. Hallii and triumphans, gloriosum, hystrix, and particularly nebulosum, were as good as possible at the size; nor must O. Cervantesii and Rossii be omitted; in quantity they are most effective and intrinsically beautiful—fine little growing fellows for the gorgeous Sophronites grandiflora and coccinea, and occupying little space. Masdevallias, too, come in for a share of admiration. In colour the best of them are very captivating. Here they are in hundreds—Harryana and the best of its varieties, Veitchiana, ignea, Lindeni, which in its best form can scarcely be approached for loveliness of tint, and if they are combined with the grotesque forms of M. bella, Chimæra, nycterina, gongora, maculata, and a troop of others, they form a most interesting section of cool Orchids, and with care they are easily cultivated. For a real paper-white Orchid, Masdevallia tovarensis stands alone; there is nothing wax-like about it, as one sees in the white Lycaste, the white Lælia, the white Cattleya, but a sort of paper-like transparency; and it is free, very free, in flowering, only there are two varieties about—a big and a little flowered one; other points being equal, the biggest is the best. This house was well moistened, and if the plants are carefully wintered they will be a fine lot, and give plenteous efflorescence as the season advances.

THE CATTLEYA HOUSE.

The Cattleya-house is span-roofed, with high sides to suit specimen plants, a table being on each side of a central path, and contains many very well grown and valuable plants. It is about 70 feet long; and, although chiefly tenanted with Cattleyas and Lælias, yet evidently proves an agreeable home for many other species. Among the allies might be named a good plant of the pretty Trichosma suavis, a plant of Polystachia-like growth, emitting a short spike of white and chocolate flowers so marked as to be not unlike a linnet's egg—very sweet. Cypripediums Stonei and caudatum, two invaluable plants for competing purposes—the first rather difficult to catch—are here in very fine order, the latter with about thirty growths. Another plant one seldom sees in anything like condition was very good—Dendrobium Jamesianum. This is the same thing that was first introduced as moulmeinense, differing chiefly in the deep orange throat from infundibulum. Both these species have fallen victims to too much heat; pity it is, for their flowers are not only superbly beautiful but of great endurance. Pilumna fragrans is to be seen here good, but it is scarcely possible to see a bad plant of this easily-grown and free-flowering species, which is quite as fragrant as its name implies. Cymbidium eburneum is in quantity and showing plenteous flower-spikes. Among the Lycastes the charming white form is here in a good plant, and if prices of this rule as they did in Edinburgh over the Milor plant it is a valuable morsel. Odontoglossum citrosmum in many plants, and, I understand, in five varieties, is pleasant to look upon, the leaves in most of the plants being without blemish at the extremity—more the exception than the rule, as all growers know, and it is not easily accounted for. Dendrobiums suavissimum and clavatum, side by side, were particularly noticeable; the one fat and plump, the other lean and spare—both in fine vigour. Odontoglossum vexillarium was superbly cultivated, three plants having eight-and-twenty leafy growths: grand these will be if the growths can be conserved to yield of their freeness of blossoming spikes. Scores of Odontoglossum Roezlii were growing on shelves close to the glass as free of blemish as it was possible to be—not a thrips mark, all growing luxuriantly; indeed, I never saw such a lot so unexceptionally fine. Oncidium Weltoni, with its one or two *aliases*, appeared well among the lot; and so did Vanda cœrulea, with three fine growths, in fine health, but not in so good variety as I have several times seen. Another very fine subject in good order here is Oncidium Marshallianum; this is possibly, when in first-rate variety and in health, the chief of all the yellow-ground Oncidiums. Another very distinct Oncid that took the eye is phymatochilum, so distinct in its leaves, and so very pretty when in flower with its myriads of insect-like blossoms. There were many plants suspended, but what struck me most was healthy plants of Barkeria spectabilis and elegans, which usually grow less and less every year.

Among the Cattleyas was one grand plant of aurea with sixteen pseudobulbs and two growths; undoubtedly, if we look at its condition, one of the best of that species in cultivation. It is of the Dowiana type, but as I used to grow it, it appeared to me (and looking at this plant I am justified in the observation) to be of easier cultivation than the species to which it is compared. There were also several plants of labiata Pescatorei and labiata macrophylla, many of Mossiæ, one of Wagneri, many Trianæs and Warscewiczii, and a so-called Trianæ alba, some splendid pieces of Mendelii, still one of the best; several Skinneri and one Skinneri alba, some good Warneri, maxima, Dawsoni, a particularly good piece of bulbosa, many Regnelii, Schilleriana, and superba, as well as marginata and marginata Dayana, lobata, Leopoldii gigas, most of them in good condition. and many of them in very fine plants, contrasting well with the taller Lælia purpurata and Brysiana, the latter a magnificent specimen; also very good plants of anceps and some of its giant forms. Among the rarer Lælias I noted gigantea, a very good form of elegans, and several of the latter, including Turneri, also Lælia purpurata Williamsii, Wolstenholmiæ, elegans-like in habit but very distinct in efflorescence, and very scarce; also Stelzneriana and Warneri, both forms of elegans but chancing to bear specific names—very pretty and very rare notwithstanding.

These form the chief of a selected lot of Orchids of all kinds, and Mr. Turner is to be congratulated on being the fortunate possesser of such a fine group. He both knows and prizes his plants as well as any amateur in this country. This is to be expected from the knowledge he gained while the Pendlebury collection, famous until it was dispersed, was in existence. He is ably seconded in all matters bearing upon cultural routine by his young and enthusiastic gardener, Mr. Bolt, who seems unwearied in his energies and unflagging in his perseverance to keep all things in proper order. *James Anderson, Meadow Bank.*

PALMS OF JUAN FERNANDEZ.

JUAN FERNANDEZ is only 10 miles in length, and 20 square miles in area, and from this elevated point nearly the whole extent of the island could be overlooked; yet this tiny spot of land contains birds, land-shells, trees, and Ferns, which occur nowhere else in the vast expanse of the universe but here or in the neighbouring Mas-afuera. One could almost count the number of trees of the endemic Palm (Ceroxylon australe), and estimate the number of pairs of the endemic humming-bird existent at a bird for every bush. Two of the species of land-birds, and all the twenty species of land-shells of the island, are endemic. The temperature at the Monument at 11 A.M. was 65° F. A small bat, possibly disturbed by the sound of the gun, was seen to fly past. The common Sow-thistle (Sonchus oleraceus), the ubiquitous weed, has climbed up the pass, and grows by the Monument. The endemic Palm has been almost exterminated, excepting in nearly inaccessible places, as on a rock above the Monument, where a group of the trees can be seen but not reached. The terminal shoot of the Palm, especially when cut just before the tree flowers, is excellent to eat, the developing leaf-mass being quite white, and tasting something like a fresh Filbert. It seems to me more delicate than that of the shoot of the Cocoa-nut. The guide knew where there was a tree remaining in the woods, not far above sea-level, and I went with him to it, hoping to find it in flower. As it was not, I cut it down for eating, for the guide was only waiting to let it develope further before felling it for that purpose himself. A few seedling Palms grew near by; Palms of the same genus occur in the tropical Andes. Most remarkable in appearance amongst the Composite endemic trees are the species of the genus Dendroseris, allied to our Chicory. The specimens which I saw in flower were rather large straggling shrubs than trees, but with thick woody stems and branches from 10 feet to 15 feet in height. The leaves are very like those of a Dandelion in appearance, and the stem when split open has a curiously jointed pith, which has just the smell of a Dandelion root, and would no doubt yield Chicory. It pours out, like the Dandelion and allied plants, a milky juice when cut. *Notes of a Naturalist on the "Challenger," by H. N. Moseley.*

Home Correspondence.

Horticultural Boilers.—This subject, like many others that come under discussion, has got away from the real question at issue, which, as first broached by me, was as to the mer ts of improved saddles as compared with upright tubulars. Taking the matter in its broad sense, it was in reality horizontal *versus* vertical. My objection to the upright or vertical tubular boilers was based on the fact of their being costly in the first instance, costly in the setting, more than all others subject to crack, and above all, on the extravagant consumption of fuel inseparable from the position they stand in relatively to the fire burning within them. And despite what has been advanced by the few who have expressed their approval of them, there has been ample evidence forthcoming to substantiate what I have said in giving preference to the saddle or horizontal form of boiler. How stands the case? These upright tubulars have now had over thirty years' trial, they have been largely used, and the evidence of independent individuals extensively engaged in erecting hot-water apparatus, such as Messrs. Warhurst, Moncur and Mackenzie, Lascelles and Bramham—and whose testimony by the way is in accordance with that of all others similarly engaged, who do not happen to have some favourite of their own—is simply this, that the public by using some or other of the improved saddles, or horizontal form in the proportion of ninety-five per cent., at once give a verdict that is incontrovertible, and sufficient to satisfy those who are unprejudiced. But to enable the saddles or other horizontal boilers to extract the full amount of heat possible from the fuel, it is essential that they should be made much longer, even I would say double that which has hitherto generally been deemed sufficient. Messrs. Weeks say they have rebutted by facts and figures every statement that I have made. They have attempted to explain away what I have adduced, yet the facts remain unshaken, as any disinterested observer can have no difficulty in seeing. But statements have been made in connection with this subject and pass for facts, enough to make any one doubt the evidence of one's senses. Those who have taken the trouble to read this correspondence will have noticed the triumphant reference to Mr. Bull's new establishment, Ashburnham Park (p. 534, vol. xii.), where it is related how three "of the most approved form" of saddle boilers failed, and were replaced by three other saddles of a different kind, which likewise would not answer, and were taken out to make way for two upright tubulars. At p. 769, vol. xii., Messrs. Weeks describe in the most glowing terms how these two last accomplish the work, and invite those interested to go and see them. I availed myself of this invitation on the 13th of the present month, and, like all who visit Mr. Bull's establishment, met with the most courteous attention. I was shown the boilers, and found them standing as described. But were they doing the work alone and unaided? Nothing of the kind. Standing right between them is still one of those big much-maligned saddles; it was going as hard as a clean bright fire could drive it, the water singing in it in the way that only takes place when the fire is pushed, and evidently doing its full share, and this although the wind was quite still, and there was no frost. After what has been said about the heating of this place, standing in front of the three boilers—not two as we have been led to suppose—I was going to say I was amazed, but in reality I have ceased to be surprised at anything connected with this boiler business. *T. Baines.* [This discussion must now be closed. EDS.]

Brussels Sprouts not Sprouting.—One of the most provoking and inconvenient features of the past erratic season, is the failure of Brussels Sprouts. Whether this is owing to the excess of rain during the growing season, the low temperature, or absence of sunshine, or any deterioration of the seed arising from a succession of bad seasons, it is difficult to say. The fact that all Brussels Sprouts have not refused to sprout rather favours the latter hypothesis. Singularly enough, too, the imported, which is generally the best variety, is that which has most generally failed this last year. What is known as English or London seed in the trade, has sprouted better than the Imported. This is a very mild way of putting it, for in several cases that have come under my notice the imported Sprouts have failed to sprout at all. This has been the case with my own. These were sown in heat in February, carefully nursed up, and put out strong plants at the end of May—a plan that has usually proved very successful in getting the Sprouts in early in October. This year the plants grew as well, though rather taller than usual, but have simply, taking them as a whole, refused to sprout. Were this an isolated instance it would not perhaps be worthy of notice; but it is not so, and the cause of this failure to sprout may be worthy of investigation. It can hardly be put down

to inferior quality of seed, for the seed is from a firm that has long held the first place for the excellence of its culinary vegetables and the extreme care with which they are selected. I have had Brussels Sprouts from the same firm for a quarter of a century, and never failed before. Can it be that imported seed is more susceptible of injury from a cold and sunless season than English grown? The Sprouts that have failed to sprout have the embryos of Sprouts in plenty on their tall stems; these, however, have simply failed to develope into usefulness. *D. T. Fish.* [Climatal causes would seem to have brought about the arrested development. EDS.]

Picea lasiocarpa.—There has always been some confusion about the synonyms of this tree. The late Mr. John Standish, from whom in his nurseries at Ascot I have had many a lesson in the distinctions and habits of coniferous trees, used to be considered a good authority, getting his information as he did from headquarters. I have several fine specimens bought from him ten years ago under the name of P. Lowiana, for which he used to give P. lasiocarpa and P. Parsonsi as synonyms. I have also some trees bought from him as P. grandis, apparently quite a distinct tree, the foliage of which at first sight is hardly distinguishable from that of the common Yew. He used to say, however, that these two trees were so nearly allied in their cones and other characters that botanists were in doubt whether one was not a variety of the other. At that time certainly, if not now, there was on the grass behind one of the museums at Kew a specimen of Standish's P. lasiocarpa labelled P. grandis. [Still there.] Mr. Standish's nomenclature, however, agrees with that adopted at Elvaston Castle, where there are very fine specimens of both trees, and with the trees sent out from Elvaston Nurseries by Mr. Barron, and I think it is generally followed in gardens. At Dropmore, however, there is a very fine P. grandis, which Mr. Frost always shows as P. amabilis; also a P. amabilis which he names P. grandis. This is evidently a mistake on his part, though I have failed to convince him of it. *C. W. Dod, Grange-over-Sands, Jan.* 10.

Dean's Early Snowball Cauliflower.—From what I had heard in praise of this Cauliflower I was induced to give it a trial in 1879, and I must say that it is the most useful variety I have ever grown. My man, who has had charge of the kitchen gardens here for nineteen years, was so pleased with it that he asked my permission to allow him to show it to some local cultivators, who take great pains to grow good Cauliflowers and succeed in doing so, and they pronounced it to be the best and most distinct Cauliflower they had ever seen, being dwarf, very early, firm, and white, and coming into use at a time when there are few Cauliflowers in the garden. It must not be confounded with the Early Dwarf Erfurt, which is of taller growth and longer in turning in fit for table. It is therefore very important to have Dean's Early Snowball Cauliflower quite true. *T. King, Devizes Castle Gardens.*

Sternbergia lutea.—Frost and snow appear to have no deterring influence on this Amaryllis, for no sooner has the latter disappeared from off the surface of the earth than the yellow flowers of the Sternbergia are seen unfolded amidst the deep green foliage while all else is bare around, except where clumps of Christmas Roses are growing, the two seeming to vie with each other as to which shall peep out of their prison house first. The latter is generally the most successful, and right welcome it is with its large salver-shaped blooms so useful for cutting. Soon we shall see the Aconites pushing through and other harbingers of spring, that do so much to make borders gay and pleasant looking after the long and dreary season we have just passed through. I would just add how much more the effect of all these bulbous plants is heightened if the soil be neatly raked before they get more advanced, as then there is nothing to offend the eye or be out of harmony with Nature's first offerings. *J. S.*

Sheep Poisoned by Nightshade Berries.—All owners of sheep who read the brief statement of "J. S." on p. 52 will be anxious to know more particulars of the case. It is likely enough that sheep might be poisoned by eating the berries of the Woody Nightshade (Solanum Dulcamara) in large quantities, but has "J. S." sufficient ground for saying that this plant is one from which "farmers often suffer"? "J. S." would confer a benefit on farmers if he would kindly tell us these things. Is it certain that the sheep had been eating the Nightshade berries? Were the appearances before and after death such as to lead those who understood sheep well to the conclusion that they had been poisoned? What are the symptoms in sheep of poisoning by Nightshade berries? I know what they are in boys, and the effect is exceedingly rapid; there is no "pining away." I recollect a boy of twelve at a boarding-school whose life was but just saved by emetics within an hour of eating Nightshade berries. In the absence of more conclusive evidence than appears in the short account given by "J. S." we must remember that the past season has been remarkable for the mortality among sheep from diseases caused by constant wet, and that if sheep are liable to eat Nightshade berries and to be poisoned by them, both Solanum Dulcamara and Solanum nigrum are so common, at least in the South of England, in fields into which sheep are turned in autumn, that we should hear oftener than we do of these plants as a source of danger. It does not always follow that plants poisonous to man are poisonous to cattle. For example, the common Hemlock (Conium maculatum), the Water Hemlock (Cicuta virosa), and the Hemlock Water-drop (Œnanthe crocata), are amongst the most poisonous of plants to man; but the first is said to be eaten freely by sheep without danger, and the two latter are certainly eaten by cows, and do them no apparent harm. I hope that "J. S." will let us hear more of this interesting case. *C. W. Dod, Grange-over-Sands, Jan.* 10. [We suspect that "Nightshade" berries frequently mean Belladonna. The berries of S. nigrum have been eaten as Tomatos with impunity. EDS.]

A Rose Stock Pruner.—At the meeting of the committees of the Royal Horticultural Society, on Tuesday last, Messrs. John Laing & Co., of Stanstead Park, exhibited a French invention, called the Sécateur Eglantier, to the merits of which, for pruning the roots of Rose stocks, we called attention in our volume for 1872, p. 72, but it still seems to be very little known. From the accompanying illustration (fig. 19) it will be seen that the machine, so far as the knife is concerned, is on the same principle as the

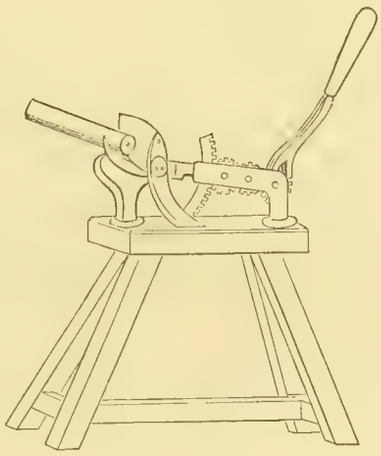

FIG. 19.—ROSE STOCK-PRUNER.

pruning scissors proper, the cutting power being increased by the use of the cogwheels. The operator, as was seen on Tuesday in actual practice, stands with his right side to the implement, his right hand working the lever-like handle and his left manipulating the stocks, which are trimmed, roots and snags, with the greatest ease. The power gained by the use of the cogwheels is immense, considering the size of the knife, roots of 2 and 3 inches in diameter being cleanly cut with ease and rapidity. We should add that Messrs. Laing & Co. are agents for the sale of the implement, which might be made available for other purposes besides that for which it was introduced. EDS.

Rhododendron jasminiflorum.—I am glad to see my favourite Rhododendron noticed, for without exception it is I think the most refined and useful of all the species, the flowers being of such a pure waxy-white and of a form that renders them particularly adapted for making up in bouquets, they having good long tubes, which makes them very handy for mounting, besides which they are not of that fleeting nature peculiar to most other blooms used for such work, but are stout and lasting, quite equalling in that respect those of the Stephanotis, so justly in favour with many. The wonder is that it has not been largely grown for market purposes, seeing that white blossoms are so much in request, and the great ease with which it may be forced and got in early to supply the demand. It is not anything that does to associate with Lily of the Valley, Gardenias, and suchlike, but even they are not disgraced by being seen in close company with this sweet Rhododendron. *J. S.*

Plants Introduced by Mr. Fortune. — All lovers of beautiful flowers, and every admirer of fine trees and shrubs, can now appreciate the enhanced beauty of our landscapes effected by their judicious introduction; and all such must heartily endorse the remarks at p. 48, in your issue of January 10, relative to the services rendered to horticultural science by Robert Fortune years ago—so long since that, were it not on account of some of his many valuable introductions bearing his name, that name, to which horticulture owes so much, may be said to be almost ignored. And such may well be the case, for, so far as I know, no public recognition or admitted appreciation of his valuable services has as yet taken place. When, as you say, the grave has closed over his earthly career, the world may then realise and appreciate the service he rendered in his time to the cause of science. But why should the world always wait until this event comes off? Or why should the horticultural world in particular withhold the admission of its gratitude until this sad *dénoûment* is accomplished? To unostentatious and plodding perseverance Mr. Fortune added rare discretion and disregard of personal danger and courage of an order at least equal to that required to carry a redoubt, or to lead a forlorn hope. These qualifications he earnestly devoted to the interest of horticultural science. With at the best an imperfect knowledge of the language, he entered a country at that time but little known to Europeans, but which had nevertheless but recently suffered from an aggressive war on the part of his countrymen, and from the effects of which the inhabitants might still be supposed to be smarting: they were, moreover, known, or at least were supposed to entertain somewhat lax ideas as to the sanctity of human life, more particularly to that of an outside barbarian intruder, as he was doubtless considered. But notwithstanding difficulties and dangers, Mr. Fortune succeeded, by his introductions, in enriching the gardens as well as the landscapes of his own and other European countries, as most of your readers well know. And now, when time has so far allowed those valuable introductions to develope their beauties and to prove their hardiness and adaptability to the climate of most European countries, the same might also be a suitable time to in some way show to the world and prove to Robert Fortune that his services were at last recognised and appreciated. *P. Grieve, Culford, Jan.* 13.

Taxus baccata var. fructu-luteo.—The golden-berried Yew has been the finest of all plants in berry, up to the time of severe frost, in the Cambridge Botanic Garden. The colour of the succulent cup-shaped aril, which gives the title of berry, has been no mere apology for yellow, but of the brightest tint, and beautiful from the translucence of the fleshy substance. Its profusion of fruit has made the tree a most conspicuous object, and the yellow colour seems to be brighter and more attractive than the red of the same species. Attention may be drawn to this handsome but rather uncommon variety, so that planters may obtain trees before the season for planting is over. *L.*

Poor Soil.—Can any of your readers suggest the best way of treating a neglected estate, with gardens and grass lands of peaty sandy soil, with subsoil of clay and running sand full of water; also as to the cheapest way of draining, the water in the low beds rising to near the surface, flowing as it does through sand from surrounding higher lands? Will a dose of 100 or so loads of clay per acre tend to make the soil more holding if ploughed in with plenty of manure, and pay for the cost? The natives laugh at the idea! What manure would be most advisable? and, lastly, would Pine trees and roots be better worth burning into charcoal or ashes for manure than selling at about one or two shillings each? *Woking Sands.*

Fruit Culture: Restriction or Extension?—In your last issue you inserted a few lines of mine on this subject, wherein I mentioned an instance where the restriction system would be the suitable one to adopt, and where the extension system would be entirely out of place. I should now like to mention a case in which the advantages would be very greatly in favour of the extension system. Suppose a landowner has a tract of land—a deep rich loam of a moderately retentive nature, but not too stiff, cold, or waterlogged—land that does not hold superfluous water, but yet retains sufficient moisture in the subsoil to support trees growing on it through a long drought uninjured—(there are very few large estates in the country on which some such land does not exist); land like this would be half wasted if planted with root-pruned and surface-rooting trees, because the supplies of plant food in the deep and rich subsoil would by such be entirely undrawn upon. In a case of this sort trees on free stocks only should be planted, rank and vigorous growth encouraged, and only sufficient pruning resorted to, to keep the trees well balanced and the branches from getting crowded. Fruit should not be expected for the first few years, indeed such free-bearing sorts as Lord Suffield Apple should have the fruit, which no doubt they would set in quantity, pulled off at once in order that their youthful vigour might be in no way checked, and that

growth of root and branch might be encouraged in every possible way. It would be a great mistake to take crops too soon from trees on the free stock in such soil as this, because as soon as they commence bearing heavily their vigorous growth of root and branch begins to cease. The larger the tree, the more fruit will it be capable of bearing in after years; and the larger the roots, and the greater the portion of ground they occupy, the greater the quantity of sustenance they will be able to supply for the bringing of the crop to perfection. Trees grown on the extension system are not, or should not be immediately remunerative, but to those who can afford to wait, if planted on suitable soil, and occupying a position where other conditions are favourable to success, they will doubtless answer best in the end, and will need comparatively little care or expense after the first outlay of preparing the ground and planting them. About the distance apart to plant Apples, Pears, Plums, and Cherries, on free stocks to be grown on the extension system, no fixed rule can be laid down; much depends on the sort, the soil, and the climate. Some sorts in some soils might be planted as close as 15 feet from tree to tree; other sorts in deep rich soil should have as much as 30 or 40 feet between each. In warmer parts of the country trees will grow to a larger size than in colder and dryer parts, therefore climate should also be considered before determining the distance apart to plant the trees. Certain information on these and other points can be obtained from gardeners who have resided a long time in the neighbourhood of a proposed fruit farm, which it is impossible for others to impart. A fruit farm planted with trees in the way I have suggested, does not need to be unproductive before these permanent trees arrive at a profitable stage of growth. At first, as they occupy very little room, one or two trees on dwarfing stocks may be planted between each, and a Gooseberry or Currant bush between each of these again, or the ground may be occupied by Raspberry canes, be cropped with various market-garden or farm crops, or laid down to grass; and if the trees are protected from them, stock may be turned in. In this case, however, standard trees must be planted, but if stock be not turned in, maiden or two-year trees are to be preferred, as they cost less, and will take to their new positions more readily. Of course great care should be taken not to impoverish the ground in any way by taking crops off without well manuring. No one I think will doubt but that fruit-farming on a large scale, on suitable soils, in suitable localities, systematically carried out, is very profitable. It, however, requires a combination of brains, capital, and energy—a combination which commands the other essentials to success, and makes it certain. *J. E. Ewing, Norwich, Jan. 12.*

Wall Fruit Trees.—Allow me to add the weight of my testimony to the value of the suggestion contained in last week's Calendar, viz., to give to our wall fruit trees "narrow borders all to themselves." I first saw the suggested system (minus the mulching) in operation on assuming charge of a large garden in North Wales some twelve years ago, and it was continued during the three years of my management. The borders referred to were about 6 feet in width and some 200 yards long, and the trees consisted of Apricots, Cherries, Figs, and Pears, and they were all remarkably fine, healthy trees, always carrying heavy crops of first-class fruit. *Herefordian.*

Reports of Societies.

Royal Horticultural: *Jan. 14.*

SCIENTIFIC COMMITTEE.—Sir Joseph Hooker, K.C.S.I., in the chair.

Vine Disease.—Dr. M. C. Cooke alluded to the new disease in the Vine caused by a fungus like that producing the Potato disease, and belonging to the same genus, viz., Peronospora viticola. This disease it appears is spreading extensively on the Continent, and has lately been recorded from Italy.

New Zealand Plants.—Mr. G. F. Wilson showed a series of beautifully executed coloured drawings by Mr. Nolan, of New Zealand and Australian plants. The fidelity of the representations and the tasteful grouping were much admired.

Bud Variation in Spruce Fir.—Dr. Masters showed a fine specimen from Hampshire of a mass of densely crowded, contracted branches on the bough of a Spruce Fir—a formation analogous to the Clanbrassil Fir. It is interesting to see that this singular variety is produced by bud-variation, as also from seed.

Solanum Dulcamara.—The Rev. George Henslow showed a specimen of the maritime form of this species from Walmer beach, some of the leaves of which were densely clothed with hair, perhaps in consequence of the puncture of a mite (Phytoptus).

Insects in Pitchers of Sarracenia.—Mr. Henslow mentioned the fact that the pitchers of these plants became choked with insects, which in their decay brought about the rotting of the pitcher. The fact of the larva of a dipterous insect (Sarcophaga sarraceniæ) making its home in these pitchers, and feeding on the insects therein entrapped, was also commented on.

Destruction of Insects by Yeast.—Mr. MacLachlan called attention to a pamphlet of Dr. Hagan's, in which he advocates the use of yeast as an insecticide. The idea was suggested by the fungus which is so fatal to flies in autumn.

Malformed Root of Ash.—Mr. Jennings showed some curious outgrowths from the roots of the Ash, which were referred to Dr. Masters to be examined and reported on.

Cocoons from West Africa.—Mr. Jennings showed a curious pear-shaped felted case, which, when slit open, was found to contain a colony of hundreds of cocoons of a lepidopterous insect (Anaphe).

Japanese Objects.—Mr. Maries showed a large and varied collection of objects of natural history—birds, reptiles, insects, works of art, antiquities, prehistoric weapons, musical instruments, and other curiosities from Japan. A special vote of thanks was unanimously awarded for the collection.

FLORAL COMMITTEE.—Dr. Denny in the chair. Messrs. James Veitch & Sons were the largest contributors to the success of this, the opening meeting of the year, their contributions including capital groups of Cyclamens, white and purple Chinese Primroses of excellent quality, an admirable group of Lily of the Valley, and a most attractive collection of Orchids in flower, consisting, amongst others, of the sweet little Dendrobium endocharis ×, Colax jugosus, Oncidium cheirophorum, the new and scarce Cypripedium Haynaldianum, Chysis Chelsoni ×, a fine specimen of Saccolabium giganteum, and a number of others, the names of which are mentioned in another column. The same firm also showed some forced plants of Staphylea colchica, a most useful, free, white-flowering shrub, which cannot be too strongly recommended for this work. The committee accorded a vote of thanks, and recommended the display for the award of a Silver Medal. Mr. Cannell again sent a rich collection of cut blooms of Zonal Pelargoniums, clear and lustrous in colour, and, if anything, larger than ever. Many of the varieties shown have already been commented upon, but two amongst them claim a passing word. These are Mrs. Moore, a large white flower, with a distinct ring of red round the eye—a very distinct flower that will be much appreciated when known; the second one is Joyful, a vivid scarlet, suffused with purple—a remarkably bright flower when seen in a good light. Mr. Cannell also brought up a handful of flowers of the Marguérite Chrysanthemum frutescens, a most useful and pleasing plant at all seasons: also flowers of Fuchsia thymifolia, F. microphylla, and F. splendens. The committee also recommended Mr. Cannell's exhibits for the award of a Silver Medal. From Messrs. Osborn & Sons, Fulham, came some nice cut blooms of Mr. Gilbert's new double Primulas; and Messrs. Sutton & Sons, of Reading, showed a fern-leaved Chinese Primrose, named Rosy Morn, rosy-pink in colour; and a semi-double flowered form of the same variety; also a few Cyclamens. Under the name of Azalea purpurea nana, came from J. H. Mangles, Esq., Hazlemere, a semi-double, rose-pink flowered, hardy Azalea, which was believed to be the same or but slightly different from the very old Azalea ledifolia. Samples of a shallow pan which has been highly recommended for use in the cultivation of Orchids were shown by their maker, Mr. John Matthews, of Weston-super-Mare.

PLANTS CERTIFICATED.

Only two First-class Certificates were awarded at this meeting, one of which went to Messrs. James Veitch & Sons for Masdevallia tovarensis, a plant that has been in cultivation about fifteen years, but which, until now, has not been honoured with any award. The specimen showed to-day was a fine one, with over seventy of its pure white flowers, in many instances produced three on a scape, and might have appropriately received a Cultural Commendation. The other certificate was taken by Mr. Bull for the pretty new Barkeria cyclotella, which is figured and described in another column.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. By far the most interesting of the few subjects which came under the notice of this committee was a number of pans of admirably grown Water Cresses, exhibited by Mr. Shirley Hibberd, of Stoke Newington. The varieties shown were the Erfurt Sweet Cress, and the Stoke Newington Purple Cress, a local variety, which Mr. Hibberd stated was exhibited for the purpose of showing that the distinctive characteristics of varieties of Water Cresses are the result solely of local circumstances. A large collection of varieties, obtained from different parts of the country, have been planted in the same brook at Stoke Newington, and all have quickly lost their original peculiarities, and have acquired the deep green leaf and purple-tinted stem of the kind here presented. A vote of thanks was accorded to the exhibitor. A similar vote was also passed to Mr. G. Goldsmith, gr. to P. C. Hardwick, Esq., Hollanden, Tonbridge, for specimens of a dozen varieties of Pears, of which the best were General Todleben, Beurré Superfin, Louise Bonne of Jersey, and Doyenné Boussoch. From Messrs. Barr & Sugden came an attractive basketful of finely crested and brightly coloured Kales, which also met with a like reward.

Manchester Botanical and Horticultural: *Jan. 7.*

—A meeting of this Society was held on the above date at the Old Town Hall, Mr. Bruce Findlay presiding. The principal business of the evening was the reading of a paper by Mr. Robert Tait (of the firm of Dickson, Brown & Tait) on the Hyacinth—its history, propagation, and culture. There was a good attendance.

Mr. Tait having traced the history of the Hyacinth from the earliest period, said there were three ways of propagating it. The first was from the seeds, but by this means one could not depend upon getting the same colours, the produce from the red, white, or blue being of all shades. Therefore this system had been abandoned except for raising new varieties. When the seeds were ripe they were sown in beds, or frequently in boxes, coming up the following spring similar to young Onions. In three or four years they were planted in the beds and remained there two or three years longer until they showed their flowers. It was generally eight or nine years before the grower could fairly judge of the merit of his pet seedlings. Even if he found at the end of this time a variety worthy of cultivation he had only a solitary bulb to start with. Another ten years must elapse before he could have a sufficient quantity to offer for sale, and then at an extravagant price. The ordinary mode of propagation was by cutting the base of the bulb with three or four deep cuts across it reaching the centre. The bulbs for the purpose were selected at the time of taking up in June. The third process was somewhat different, although the end attained was similar. The base of the bulb was cut away and hollowed out. The culture of the Hyacinth was principally confined to the immediate vicinity of Haarlem and Overveen in Holland. At a conference of the principal growers held last year it was computed that the total exportations annually amounted to the sum of 2,500,000 guelders, or, in English money, £208,333. The principal countries to which bulbous roots are exported are in the North of Europe, of which Great Britain takes about one-half. America also receives a fair proportion, but not so many of late years, owing to the high tariff upon them. Germany, France, Italy, and Spain, each take a fair share. A vote of thanks was unanimously accorded to Mr. Tait for his paper.

The following is the report of the Council to the fifty-second annual meeting of proprietors, to be held in the Mayor's Parlour, Town Hall, Manchester, on Monday next, at 12 o'clock at noon:—

The Council, in presenting their annual report, regret to have to state that the unprecedentedly wet and unfavourable season, and the long-continued commercial depression, have had a prejudicial effect upon the finances of the Society.

The income from subscriptions and life compositions is about £150 less than in the year immediately preceding.

Considerable expenditure has been necessary during the past year upon the exhibition-house, the north side of which had passed into a condition which can only be described as ruinous. The rafters were found to be extensively decayed, and the repainting and renewal of this house cost nearly £300.

The number of visitors to the National Horticultural Exhibition, held last Whitsuntide, exhibits a considerable increase over any previously reported. It is nearly 14,000 in excess of the attendance in 1878, and 5000 in excess of the attendance in 1868, the highest number previously recorded. For this satisfactory result the Council believe that they are, to a very large extent, indebted to the President of the Society (the Right Hon. the Earl of Derby), who kindly responded to the invitation of the Council to attend and open the exhibition.

The National Rose Society held their annual exhibition in the gardens, in July, but, owing to a very wet day, the receipts were nearly £240 less than in the previous year.

The annual exhibition of cottage garden produce and window plants was held in August, when more than seventy exhibitors competed for the prizes offered; and the Council believe that this show is the means of stimulating the energies of a large number of owners of small plots of land.

Three exhibitions were held in the Town Hall, two in the spring and one in the autumn, all of which gave manifest pleasure to a large number of visitors. The Council have made arrangements for a series of meetings of amateur and professional gardeners during the winter months, for the reading and discussion of papers on botany and horticulture, and they invite all who are interested in the promotion of these subjects to communicate such new methods of cultivation as their experience may have suggested, and to transmit such superior specimens of produce as their art may have supplied. In no way can the objects of the Society be more efficiently accomplished than by becoming, as it were,

a centre towards which all the practical improvements made in its vicinity shall tend, and from which they may be again disseminated to fructify in a wider circle. The main range of glasshouses has been erected upwards of fifty years, and is quite unfit, on account of age and structural defects, for the present purposes of the Society. Plans and estimates have been obtained for the erection of a new range, which would facilitate the growth and exhibition of the plants, and add very much to the attractions of the gardens. The funds, however, will not suffice for carrying out this project at present, and without additional pecuniary aid many other important objects which the Council anxiously contemplate cannot be accomplished. They venture, therefore, to recommend the Society to the enlightened liberality of the residents of Manchester and the surrounding districts, as highly deserving encouragement and support. The Council desire to record their grateful acknowledgments for presents of plants and seeds received during the year, from Mr. Selwood, Eaton Hall; Mr. T. H. Jenkins, Higher Broughton; Sir Joseph Hooker, of Kew; and Mr. B. S. Williams, of Holloway, London.

Edinburgh Botanical: *Jan.* 8.—The Society met in 5, St. Andrew Square—the President, Mr. William Gorrie, of Rait Lodge, in the chair. It was intimated that two diseased fish had been received from Mr. George Muirhead, Paxton, Berwick-on-Tweed, who in a letter to Mr. Sadler, Curator of the Royal Botanic Garden, stated that on the previous Monday he accompanied Sir Thomas Buchan Hepburn and Captain Milne-Home, in a walk to the side of the Tweed in the policy at Paxton, where a burn runs into the river, and to the Whiteadder at Whiteadder Bridge, for the purpose of seeing the great number of diseased fish which the water-bailiff reported to be in those waters. They went first to the burn, which runs into the Tweed at the east side of the policy, and saw in it, close to the mouth of the burn, where the water stands in a long pool, about half-a-dozen fish covered over with white fungus. They seemed to be in a dying state, and lay quite still when the visitors approached close to the place where they were. They also found one or two dead fish. The fish they saw in the burn and the dead ones were bull trout. They then went to the Whiteadder, just above Whiteadder Bridge, which is about half-a-mile from the mouth of the river, and found the whole water filled with diseased fish. All that they saw, with two exceptions, were affected with fungus, appearing to be spotted with white in the water. They were all bull trout. The diseased fish were mostly lying in the still water at the side, with their heads under the bank or behind stones. The specimens sent had been secured by the bailiff, at Mr. Muirhead's request, for examination by this Society. Sir Robert Christison suggested that he should take the fish to Mr. Stirling, curator of the Anatomical Museum, for examination, and this was agreed to.

A communication was read by Sir Robert Christison "On the Correct Measurement of Trees," in which some interesting comparisons were made between the growth of trees in 1878 and 1879, with the object of showing the effect of light and heat on the growth of wood. Statistics obtained from Mr. Buchan, Secretary to the Scottish Meteorological Society, showed that the mean of maximum temperatures in Edinburgh, for the five months from May to September, inclusive, in 1878, was 64°.7; while for the corresponding period of last year it only reached 59°—the mean temperature for the same five months of 1878 being 56°.8, and for those of 1879 52°.3. Figures were also quoted showing the small proportion of sunshine experienced last year. Bringing these statistics to bear on the measurements of trees which he had taken, Sir Robert gave interesting examples of the extent to which the growth of wood had been retarded by such unpropitious climatic influences.

Mr. Gorrie read a continuation of the paper entitled "Notes on New Zealand Plants Cultivated at Rait Lodge, near Trinity, which Withstood the Severe Winter of 1878-9," of which the first part is published in our present number, p. 75.

Mr. Sadler read a report "On Temperature Registered at the Royal Botanic Gardens from December 1 to January 8." (See p. 83.)

A fine old volume, of large size, entitled *Pomona, or the Fruit Garden*, by Batti Langley, Twickenham, and dated 1729, was shown by Dr. Paterson, Bridge of Allan. It was copiously illustrated, and contained an account of the cider fruits of Devonshire, by the Hon. Hugh Stafford, of Pynes, near Exeter, an ancestor of the present Chancellor of the Exchequer.

Epping Forest and County of Essex Naturalists' Field Club: *Jan.* 10.—A meeting for the foundation of this Association was held on the above date at Buckhurst Hill. Mr. R. Meldola, F.R.A.S., F.C.S. (Secretary to the Entomological Society of London), in the chair. Mr. N. F. Robarts, F.G.S., proposed the foundation of the Club, and the resolution being seconded by Mr. W. C. Barnes, it was carried unanimously. The rules (which have been carefully drawn up by Mr. C. Browne, M.A., Barrister-at-law, to meet the objects kept in view by the promoters) were then read and discussed *seriatim*. The principal points, omitting details, are as follows:—The Club is established for the study and investigation of the natural history, geology, and archæology of the county of Essex (special attention being given to the fauna, flora, geology, and antiquities of Epping Forest); the publication of the results of such investigations, the formation of a library of works of local interest and other publications; the formation of a museum; and the diffusion of information on natural science and antiquities. Members' subscription (both for ladies and gentlemen) was fixed, after considerable discussion, at 10*s.* 6*d.* per annum; members living beyond a radius of 15 miles from the headquarters to pay only 7*s.* 6*d.* per annum. Persons joining the Club within two calendar months from its formation to be considered original members. In addition to the ordinary meetings of the Club, field meetings will be held in different parts of the county as the Council may think fit; the same being under the entire control of the Council, who may appoint lecturers, and make such arrangements as they may deem best for the comfort of the members and their friends. One very important rule, which met with much approval, and which should recommend the Club to the support of all lovers of Nature, runs as follows:—"The Club shall strongly discourage the practice of removing rare plants from the localities where they are to be found or of which they are characteristic, and of risking the extermination of birds, and other animals by wanton persecution; and shall use its influence with landowners and others for the protection of the same, and to dispel the prejudices which are leading to their destruction. The rarer botanical specimens collected at the field meetings shall be such as can be gathered without disturbing the roots of the plants, and notes of the habits of birds shall be recorded instead of collecting specimens either of the birds or of their eggs." To guard against misapprehension it is stated that the rule is not intended to restrict the judicious collecting of specimens by individual members necessary for their studies.

The rules having been passed and ordered to be printed, the meeting elected a Council of twenty-five members; and as President, Raphael Meldola, F.R.A.S., F.C.S., &c.; Treasurer, H. J. Barnes, F.C.S. (Berlin); Secretary, William Cole, M.E.S.; Librarian, W. J. Argent.

BANKS OF GLOXINIAS.

HOWEVER important a part the choicer kinds of Palms and other ornamental foliaged stove and greenhouse plants may play in the embellishment of our garden structures, there is little doubt that an equally good and attractive display may be produced in various other ways, which will meet with the approbation of the general mass of cultivators, and which will cost but a trifle for the first outlay compared with the expense of even forming the nucleus of a collection of what may be termed the fashionable plants of the day. It is not my purpose here to draw invidious comparisons between certain genera of plants, believing, as I do, that there is room for all, if not in the same garden, at least in the gardens of Great Britain, but to endeavour to show the possibility of enjoying the rare privilege of possessing at a minimum expense, a group of flowering plants of great merit, equally, if not more effective while they last, than many other subjects upon which more care and skill are required in cultivating.

The cost of two or three good packets of Gloxinia seed, is not a heavy investment for any one to make who has the taste or the inclination for cultivating plants, which are so modest in their requirements, that any one possessing a couple of hot frames or pits may grow them to the greatest perfection.

It is necessary to qualify the details of cultivation with this advice: that unless good seeds of a superior strain are procured from a trustworthy source, much annoyance and disappointment may be occasioned, which, unhappily, is too often ascribed to anything but the right cause.

The seeds may be sown almost any time during the spring months, but in order to have an early display, sowing should not be deferred later than the first week in March, and if arrangements can be made to sow early in February so much the better for the chances of success; moreover the bulbs have a better chance of ripening in the autumn when the plants are pushed forward early in the season.

The first and most important step to take, is to see that the necessary bottom-heat of from 75° to 80° is available in which to plunge the pots or pans when the seeds are sown. In sowing it is advised that the work be performed methodically by having the requisite number of shallow pots or seed-pans washed and drained, placing a layer of sphagnum moss over the crocks, and then following with the roughest part of the compost so that perfect drainage will be a certainty. The soil in which the seeds are to be sown may consist of any open rich mould, with a dash of sand to render it porous. It should be pressed down rather firmly, leaving a smooth surface upon which to sow the seeds, then cover them slightly with a portion of the same compost run through a fine sieve, and cover with a few squares of glass with a thin covering of damp moss laid over them to prevent the moisture escaping from the soil by means of evaporation, while the process of germination is going on, which is generally accomplished in a month from the time of sowing. When the seedlings are fit to be handled they should be pricked off into shallow pans in a compost of leaf-mould, peat broken into small pieces, wood ashes, and a fair proportion of sand according as it is present or otherwise in the soil used. An inch or so of fine mould should again be laid over the rougher portion of the compost, in order that the young plants may root freely into it, and then ramify the soil downwards, taking hold of the rougher pieces of the compost to which they will adhere, when they are large enough to give them their first pot; then return the plants to a brisk bottom-heat near to the glass, and keep up a growing temperature corresponding with the bottom-heat. Kept in a genial growing atmosphere the young plants are soon ready for potting off.

It is a mistake to give too large a shift at once, better let the first potting be into pots say 3 inches in diameter, and the next into 6-inch pots—a size in which the plants may be flowered the first year.

Gloxinias it may be observed are not deep-rooting subjects, and the practical lesson to be inferred therefrom is that shallow pots well drained are the most suitable in which to pot them for their final shift. They delight in an open generous compost in all stages, which should be made rougher as the plants increase in size, of the materials already mentioned, to which may be added for the last potting a small proportion of cow-dung, which has been mellowed by laying up, and which will crumble to pieces when rubbed between the hands, also chopped sphagnum, charcoal pounded small, with enough sand to make the whole sharp to the feel. Where sufficient space can be spared to keep the plants by themselves, where they can be treated according to their own particular requirments, it will be found a great advantage.

The plants, although requiring abundance of moisture at the root in the growing season, should never be syringed overhead after they are transferred from the seed-pan. Of course there are cases where plants have to be shifted about a good deal, and often with fair success, but it is safer in dealing with seedlings that are expected to bloom the same year, to keep them in a steady equable temperature both of top and bottom-heat throughout the whole period of growth.

They will flower in August and September, and will require to be raised out of the plunging material some time before they are taken into the plant stove, or other show-house, with a view of avoiding a check to the development of the flowers by reducing the temperature too suddenly. The best effect is obtained when the plants are arranged "in banks" with the different shades and colours tastefully blended in arrangement.

The idea may be carried out either by having a stage fixed in three tiers, or a less expensive mode would be to raise three rows of shelving upon inverted pots of different sizes which, would answer the same purpose.

A group of such plants with fine healthy foliage and flowers vieing with each other in surpassing beauty—a combination as it were of all colours blended into one harmonious whole—is a sight well calculated to inspire a feeling of admiration in the breast of every lover of flowers.

The flowers come finest in the second year, provided the bulbs are thoroughly ripened off in a temperature of about 55°, and have from three to four months' rest. The bulbs as they increase in age and size will yield a greater profusion of flowers, but the quality is seldom surpassed, if equalled, after the second year. *W. Hinds.*

Apiary.

BRITISH BEE-KEEPERS' ASSOCIATION.—At the quarterly *conversazione* of this Association, held on Wednesday evening at the Board-room of the National Chamber of Trade, 446, Strand, Captain Campbell in the chair, a paper, entitled "The Ligurian Queen Bee—her introduction to alien stocks, and the best means of pure propagation," was read by the Rev. George Raynor, of Hazeleigh Rectory, Maldon. Mr. Raynor said that it appeared to be the general opinion of those who had given the Ligurian bee a fair trial that it much excelled the common black or German bee in the hardiness of its nature, in its greater activity, its honey-gathering qualities, the gentleness of its dispo-

sition, and especially in its extreme fertility. It was now twenty years since Mr. Neighbour first introduced the Ligurian bee into England, a length of time amply sufficient to prove its superiority to other varieties. In referring to the origin of the bee, Mr. Raynor said that various experiments made by German apiarians and others had gone far to prove that the present race of Ligurians sprang from a cross between the Egyptian bee (Apis fasciata) and the common German bee.

Herr Kohler, a noted German apiarian, had succeeded in raising pure Ligurians from crossing after twenty generations. He took occasion to remark that the Association was pursuing the right course in introducing specimens of the different varieties of the Apis mellifica to their members for experiments in crossing various races. As to the best means of introducing alien queens, Mr. Raynor considered that the best way was to intimidate the bees, by using a cage in which there were a few simple constructions for the purpose. He was also of opinion that the best way of propagating a pure race was by the present Kohler process. The paper was discussed with much interest by the members of the Association present. A vote of thanks to the writer was passed at the close of the proceedings.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JANUARY 14, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
Jan.	In.	In.	°	°	°	°	°	°			In.
8	30.39	+0.65	33.2	29.5	3.7	31.5	— 4.7	29.8	93	E.S.E.	0.01
9	30.36	+0.64	32.8	28.0	4.8	30.6	— 5.6	28.8	93	S.W.: E.S.E.: E.N.E.	0.01
10	30.38	+0.65	39.1	30.1	9.0	35.0	— 1.3	34.5	98	E.N.E.	0.01
11	30.41	+0.68	35.0	32.0	5.0	32.8	— 3.5	28.6	84	E.N.E.: N.E.	0.00
12	30.41	+0.69	37.2	28.0	9.2	32.6	— 3.8	29.0	86	S.E.: E.S.E.	0.00
13	30.26	+0.54	34.0	25.7	9.2	30.5	— 5.9	27.9	89	E.N.E.	0.01
14	30.16	+0.43	35.0	27.7	7.1	31.4	— 5.1	26.6	81	N.E.: N.N.E.	0.00
Mean	30.34	+0.61	35.3	28.5	6.8	32.1	— 4.3	29.3	89	E.N.E.	sum 0.04

Jan. 8.—Overcast, dull and cold throughout. Thin drizzling rain fell.
— 9.—A miserable day. Raw cold, Drizzling rain fell.
— 10.—A very dull day. Drizzling rain fell. Cold.
— 11.—A dull cloudy day. Very cold. Windy. The minimum temperature, viz., 30°, occurred at midnight.
— 12.—A fine bright day. Raw cold. Slight hoar frost in morning.
— 13.—A dull morning. Little snow fell at about 1 P.M.; fine till evening, then overcast.
— 14.—A dull, cold day. Overcast throughout. The maximum temperature, viz., 35°, occurred at midnight.

LONDON: *Barometer.*—During the week ending Saturday, January 10, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.50 inches at the beginning of the week to 30.45 inches by the evening of the 4th; increased to 30.68 inches by noon of the 7th, decreased to 30.54 inches by the evening of the 9th, and was 30.56 inches at the end of the week. The mean reading for the week at sea level was 30.56 inches, being 0.54 inch above that of the preceding week, and 0.64 inch above the average. The mean daily readings were considerably above their averages on every day, the greatest departure in excess being 0.74 inch on the 7th.

Temperature.—The highest temperatures of the air observed by day varied from 43¾° on the 4th to 32¾° on the 9th; the mean value for the week was 37¾°. The lowest temperatures of the air observed by night varied from 28° on the 9th to 33° on the 4th; the mean value for the week was 30¼°. The mean daily range of temperature in the week was 7¼°; the greatest range in the day being 10¾°, on the 4th, and the least 3¾°, on the 8th.

The mean daily temperatures of the air and the departures from their respective averages were as follows: — Jan. 4, 38°.6, + 1°.9; 5th, 36°.8, + 0°.3; 6th, 33°.9, — 2°.5; 7th, 34°.8, — 1°.5; 8th, 31°.5, — 4°.7; 9th, 30°.6, — 5°.6; 10th, 35°, — 1°.3. The mean temperature of the air for the week was 34°.5, being 1°.9 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 66° on the 4th, 49° on the 5th, and 47° on the 7th; on the 9th the reading did not rise above 35°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 28° on the 5th, 26° on the 9th, and about 29° on the 8th and 10th. The mean of the seven lowest readings was 28°.

Wind.—The direction of the wind was variable, and its strength almost calm. The weather during the week was very dull and cold, except on the 4th and 5th, on which days the weather was fine and somewhat mild. Slight mizzling rain fell on the 8th, 9th, and 10th; the amount measured was only 0.04 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, January 10, the highest temperatures of the air observed by day were above 49° at Truro, Plymouth, Liverpool, Bradford, and Sunderland, and below 44° at Brighton, Blackheath, Cambridge, and Norwich; the mean value from all stations was 46½°. The lowest temperatures of the air observed by night were below 30° at Blackheath (London), Bristol, Cambridge, Hull, Wolverhampton, and Nottingham; and above 32½° at Truro and Plymouth. The mean from all places was 30½°. The extreme range of temperature in the week was above 18½° at both Liverpool and Sunderland, and below 10° at Norwich; the mean range of temperature in the week from all stations was 16°.

The mean of the seven high day temperatures was above 45° at Truro, Plymouth, Leeds, and Sunderland, and below 38½° at Blackheath (London), Brighton and Cambridge; the mean value from all places was 42°.1 The mean of the seven low night temperatures was below 34° at Brighton, Bristol, Blackheath, Cambridge, and Wolverhampton, and above 38° at Truro, Bradford, Leeds, and Sunderland; the mean from all stations was 35¼°. The mean daily range of temperature in the week was above 8° at Plymouth, and below 6° at Brighton, Norwich, Nottingham, and Bradford; the mean daily range of temperature in the week from all places was 6½°.

The mean temperature of the air for the week from all stations was 38½°, being 9½° higher than the value for the corresponding week in 1879. The mean temperature was above 41° at Truro, Plymouth, Bradford, Leeds, and Sunderland, and below 35° at both Blackheath (London) and Cambridge.

Rain.—The amounts of rain measured were small everywhere. At Truro the fall was 0.13 inch, and at Plymouth, 0.12 inch, whilst at Liverpool only 0.01 inch fell; at Brighton, Norwich, Wolverhampton, and Sunderland no rain fell; the average fall over the country was 0.04 inch.

The weather during the week was generally dull and cold, and the sky cloudy.

Fog prevailed at some places.

SCOTLAND: *Temperature.* — During the week ending Saturday, January 10, the highest temperatures of the air observed by day varied from 51° at Leith, to 49° at both Dundee and Paisley; the mean from all stations was 49¾°. The lowest temperatures of the air observed by night varied from 26½° at Aberdeen to 37° at Paisley; the mean value from all places was 32°. The mean range of temperature in the week from all places was 17¾°.

The mean temperature of the air for the week from all stations was 42½°, being 11½° higher than the value for the corresponding week in 1879, and 4° higher than that of England. The mean temperature was 44½° at Paisley, and but 40° at Aberdeen.

Rain.—At Paisley the amount of rain measured was 0.30 inch, and at both Greenock and Perth it was 0.20 inch; at Edinburgh the fall was but 0.01 inch, and at Dundee and Leith no rain fell; the average fall over the country was 0.11 inch.

DUBLIN.—The highest temperature of the air was 57¾°, the lowest 28°, the extreme range 29¾°, the mean 41¾°; no rain fell.

JAMES GLAISHER, F.R.S.

Variorum.

THE WHEAT HARVEST OF 1879. — A full estimate has just been published in the *Bulletin des Halles et Marchés* of the Wheat yield of all the world, as compared with the average yield. The average production for the whole of Europe is 962,866,150 bushels, while that of 1879 is only 763,987,500 bushels, being a falling off of 198,878,650 bushels. The average yield for other parts of the world is 1,367,887,500 bushels, and for the past year 1,189,487,500, showing a decrease of 178,400,000. The deficiency of the crop for the whole world is 377,279,150 bushels. The following table is interesting as showing the yield for each country:—

	Average Yield.	Yield for 1879.
	Bushels.	Bushels.
United States	337,500,000	337,500,000
France	230,172,000	172,125,000
Russia	180 000,000	157,500,000
Germany	99,000,000	90,000,000
Spain	94,500,000	78,750,000
Italy	87,550,000	67,500,000
Austria-Hungary	76 500,000	63,000,000
Great Britain	83,500,000	47,500,000
Turkey	34,500,000	29,500,000
Roumania	27,000,000	22,500,000
Belgium	19,150,000	14,650,000
Portugal	6,750,000	5,675,000
Algeria	20,500,000	16,875,000
Canada	13,500,000	13,500,000
Australia	13,500,000	14,650,000
Egypt	13 500,000	11,500,000
Netherlands	4 615,000	3,375,000
Greece	3,500,000	3,375,000
Servia	3,375,000	2,812,500
Denmark	2,250,000	2,250,000

Enquiries.

He that questioneth much shall learn much.—BACON.

AMERICAN ARBOR-VITÆ. — Can any of your readers say if the common American Arbor-vitæ is injurious to cattle or horses when eaten? I have been planting a hedge of these trees bordering a meadow, and to satisfy the farmer shall be obliged for any information. *W. H.*

BEE FLOWERS.—What are the best annuals to sow for bees? *H., Great Bookham.*

MAGNUM BONUM POTATO. — Will some of your correspondents who have grown the above oblige by giving their opinion as to its eating quality? One conspicuous dealer says "the flesh is firm, and of exceedingly fine flavour; very white and mealy." I must say it has not proved so with me during my two years' trial, but probably our northern climate is at fault. At the same time I have not forgotten the Red-skinned Flourball, about which more could not have been said in favour of any Potato. Where is it now? *N. B.*

ORCHARD-HOUSES.—Will one or more of your correspondents kindly give their opinion upon the best form of construction for an orchard-house—1, the best position; 2, best shape and size; 3, best internal arrangements? *A. D. M.*

Answers to Correspondents.

CHISWICK: *Thos. Fletcher.* 1, Yes; we do not think that any young man could do better than spend a year or two at Chiswick. 2, We cannot say exactly, but very extensive as regards the glass.

CUCUMBERS AND STRAWBERRIBS: *Inquirer.* 1. If you can get Rollisson's Telegraph (true), you cannot do better than grow that for summer fruiting; and Syon House or Masters' Prolific for winter. 2. Elton; see p. 84.

GARDEN ARCHITECTS: *A Constant Reader.* Consult the list in the *Horticultural Directory.* We cannot undertake to answer such an invidious question.

INSECTS: *W. L.* The minute black shining insects in the crevices of the bark of your Apple and Pear trees are the common bark mite, Acarus geniculatus. (See *Gardeners' Chronicle*, 1843, p. 356). Scraping off and burning the loose bark, and then washing the stem and branches with lime and gas-tar water and soft-soap will be found useful in destroying these insects. *I. O. W.*

LAYERING LIMES: *Douglas Wilson.* It is not necessary or usual to "tongue" the layers; the method most usually adopted being to give them a twist at the point pegged down.

MUSHROOMS: *J. K. H., Wallingford.* The fungi you send are no doubt Mushrooms (Agaricus campestris), but the gills are white, as in the closely allied species, A. cretaceus. Your plants also agree well with the variety A. vaporarius, except that your specimens do not change to red when broken or bruised. There can be no doubt that several species and varieties, close to the true Mushroom, are all one and the same plant with a tendency to vary first in one direction then in another. Your plant has points in common with two or three forms or species, and agrees wholly with none. It is probably edible, but it is not the form of A. campestris commonly placed on the table. *W. G. S.*

NAMES OF PLANTS: *Douglas Wilson.* We cannot spare the time to identify such scraps. Conifers are difficult enough when the materials are good.—*Pat.* If your plant bears a yellow flower it is Santolina incana. — *T. Anderson.* Adhatoda cydoniæfolia. — *C. C.* 1, Rhopala macrophylla; 2, Asparagus æthiopicus ternifolius; 3, Litobrochia aurita; 4, Pteris cretica albo-lineata. — *A Reader.* Lastrea æmula. — *G. W. R.* 1, Echium fastuosum; 2, Goldfussia isophylla; 3, not sent; 4, Dracæna reginæ; 5, Yucca aloifolia variegata; 6, Aspidistra lurida variegata.

RAILWAY CHARGES: *J. Steele.* We do not know of any rule of law affecting the point in dispute; but looking at the question from a purely business point of

view, we decidedly think that your customer was not justified in deducting the 6*s.* from the account.

SEEDLING GRAPE: *F. Lee.* The sample was smashed when received. Could you not send another earlier in the season?

TROPICAL FRUITS: *C. Wissenbach.* Orange: Citrus Aurantium. Lemon: Citrus Limonum. Pomelows: small fruiting varieties of Citrus decumana. Shaddocks: Citrus decumana. Mandarines and Tangierines: varieties of Citrus Aurantium. Brazil nuts: the seeds of Bertholletia excelsa. Lychees, or Litchis: the fruit of Nephelium Litchi. The Hickory nuts sold in Covent Garden are those of Carya alba.

CATALOGUES RECEIVED:—F. C. Heinemann (Erfurt), General Catalogue of Seeds.—Wm. Drummond & Sons (Stirling), Catalogue of Vegetable and Flower Seeds.—W. Smith & Sons (Aberdeen), Descriptive Spring Catalogue.—Messrs. Kelway & Son (Langport, Somerset), Seed Manual, 1880.—Messrs. John Waterer & Sons (Bagshot, Surrey), Catalogue of Rhododendrons, &c.—Messrs. Wheeler & Son (Gloucester), Little Book, or Select Seed List.—Messrs. John Perkins & Son (Northampton), Catalogue of Vegetable and Flower Seeds.—Messrs. Stuart, Mein & Allan (Kelso, N.B.), General Catalogue of Seeds, Gladioli, &c.—Messrs. C. Daly & Son (13, Bridge Street, Coleraine), Catalogue of Kitchen Garden and Flower Seeds.—Alfred Legerton (5, Aldgate, London, E.), Trade Catalogue of Garden, Agricultural, and Flower Seeds.—Stephen Brown (Weston-super-Mare), Seed Catalogue.—Henry Walton (Edge End Nurseries, Burnley, Lancashire), General Catalogue.—Charles Turner (Slough), Catalogue of Seeds.—J. G. Hill (Yeovil), Seed Catalogue.—Messrs. Dickson & Co. (1, Waterloo Place, Edinburgh), Catalogue of Garden and Flower Seeds; also Descriptive List of Gladioli.—Messrs. Smith & Simons (36, Howard Street, Glasgow), Descriptive Seed Catalogue.—Messrs. Wood & Ingram (Huntingdon), Catalogue of Vegetable, Flower, and Agricultural Seeds.

COMMUNICATIONS RECEIVED.—W. Kerr.—T. B.—A Gleaner.—J. S. (many thanks)—A. C. Van E.—W. C.—M. D.—J. D.—J. J. R.—R. B.—S. J.—W. H.—A. S. W.—B. S. W.—H. G. F.—W. T.—A. D.—T. T.—D. T. F.

Markets.

COVENT GARDEN, January 15.

No alteration to quote, except that our market has relapsed to its former state of quiet. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve ..	2 0– 6 0	Lemons, per 100 ..	3 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100 ..	6 0–12 0
Cob Nuts, per lb. ..	1 0– ..	Pears, per dozen ..	3 6– 6 0
Grapes, per lb. ..	1 6– 6 0	Pine-apples, per lb.	2 0– 3 0
— Muscat, per lb...	3 6– 8 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0– 7 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle ..	1 0– ..	Lettuces, Cabbage, per doz.	1 6– ..
— French, per bun.	7 0– ..	Mint, green, bunch..	2 0– ..
Beet, per doz. ..	1 0– 2 0	Onions, new, p. bun.	0 6– ..
Brussels Sprouts, lb.	0 6– ..	Parsley, per bunch..	0 6– ..
Cabbages, per doz. ..	1 0– 2 0	Peas, per lb. ..	1 0– ..
Carrots, per bunch ..	0 8– ..	Potatos (new), per lb.	0 3– 0 9
— New Fr., p. bun.	1 0– ..	Rhubarb (Leeds), per bundle	0 9– ..
Cauliflowers, per doz.	2 0– 5 0	Seakale, per punnet	3 0– ..
Celery, per bundle ..	1 6– 4 0	Shallots, per lb. ..	0 6– ..
Chilis, per 100 ..	3 0– ..	Spinach, per bushel	5 0– 6 0
Cucumbers, each ..	1 6– 5 0	Tomatos, per dozen	3 0– ..
Endive, per score ..	4 6– ..	Turnips, new, bunch.	0 6– ..
Garlic, per lb. ..	0 6– ..		
Herbs, per bunch ..	0 2– 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 150*s.*; and Champions, 130*s.* to 150*s.* per ton. The large supplies received from Germany are making from 4*s.* to 7*s.* per bag.

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	12 0–24 0	Ficus elastica, each	2 6–15 0
Azaleas, per dozen ..	30 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz. ..	6 0–18 0	Fuchsias, per dozen	6 0–18 0
Bouvardias, per doz.	12 0–24 0	Hyacinths, per doz..	9 0–18 0
Cinerarias, per doz..	12 0–18 0	Myrtles, per doz. ..	6 0–12 0
Cyclamen, per dozen	12 0–30 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	9 0–18 0
Dracæna terminalis	30 0–60 0	Poinsettia, per dozen	12 0–24 0
— viridis, per doz...	18 0–24 0	Primula, single, per dozen	6 0–12 0
Erica gracilis, per dozen	9 0–18 0	Solanum, per dozen..	9 0–24 0
— hyemalis, p. doz.	12 0–30 0	Tulips, 12 pots ..	9 0–15 0
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 0	Lily of Val., 12 spr.	1 6– 6 0
Arum Lilies, per dozen	9 0–18 0	Mignonette, 12 bun.	6 0– 9 0
Azalea, 12 sprays ..	1 0– 3 0	Narcissus, Paper-white, 12 spikes ..	2 6– 6 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	1 6– 3 0
Camellias, per doz...	3 0–12 0	— zonal, 12 sprays	0 9– 2 0
Carnations, per dozen	1 0– 3 0	Poinsettia, 12 blms...	3 0– 9 0
Chrysanthem., large flowers, per doz...	3 0– 9 0	Primula, double, per bunch	1 6– 3 0
Cyclamen, 12 blms..	0 4– 1 6	— single, per bunch	0 6– 1 6
Epiphyllum, 12 blms.	0 9– 3 0	Roses (indoor), doz.	2 0– 9 0
Eucharis, per doz. ..	6 0–12 0	Spiræa, 12 sprays ..	3 0– 6 0
Euphorbia, 12 sprays	3 0– 6 0	Tropæolum, 12 bun.	1 0– 3 0
Gardenias, 12 blms..	12 0–24 0	Tuberoses, per dozen	4 0– 6 0
Heliotropes, 12 sp. ..	0 6– 1 0	Tulips, 12 blooms ..	1 6– 3 0
Hyacinths, 12 spikes	6 0–12 0	Violets, Fr., per bun.	6 0– 9 0
— small	3 0– 6 0	White Lilac, Fr., per bundle	10 0–15 0
— Roman, 12 spikes	1 6– 4 0		

SEEDS.

LONDON: *Jan.* 14.—The market to-day was thinly attended, and no feature of special interest or importance presented itself. For choicest samples of yearling English red Clover there has been a fair inquiry, and long prices have been realised. With regard to French red, present importing prices are above values current here for spot seed. The weather in Canada having lately been very favourable for threshing purposes, some fair arrivals may shortly be expected from that quarter. Last year the total grass seed receipts in Chicago amounted to 48,994,692 lb., for 1878 to 47,995,234 lb. Alsike and white meet with increasing attention. In Trefoil some business has been doing on fully late terms. The upward movement in the value of Italian Rye-grass continues unchecked: of good seed the available supply is exceedingly scanty, whilst the consumption this spring must without doubt be very large. For Tares there is a brisk sale, and the tendency of quotations is adverse to the buyer. Canary and Hemp seed move off slowly at last week's currencies. Trade for Haricots, Lentils, and Peas is slow. For French Millet, 1*s.* per quarter more money is asked. Linseed is unchanged. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade was dull at Mark Lane on Monday. No change was reported in the value of Wheat, either English or foreign, but where sales were pressed low rates were submitted to. Barley, especially feeding sorts, was slow of sale. Malting produce was dearer, and better held. Malt was without alteration. Oats were very steady, rates showing no change on the week; Maize, however, was dull, and quite 1*s.* per quarter cheaper than on the previous Monday. Beans and Peas found few buyers, and went off on rather easier terms. Flour was quiet, and quotations had a downward tendency.—No feature of importance presented itself on Wednesday. As regards Wheat, holders were not over firm, and some small transactions took place at rather easier rates. Fine malting barley maintained its price, but the tone was weak for all feeding stuffs. Malt was quiet and without change. Oats were steady in value. Maize was dull at the late reduction; Beans and Peas moved off slowly at about late rates. Flour was difficult to move, and quotations favoured buyers to some extent. —Average prices of corn for the week ending Jan. 10:—Wheat, 46*s.* 2*d.*; Barley, 36*s.* 8*d.*; Oats, 20*s.* 11*d.* For the corresponding period last year:—Wheat, 39*s.* 7*d.*; Barley, 36*s.* 11*d.*; Oats, 20*s.* 1*d.*

CATTLE.

At the Metropolitan Market on Monday there was a larger number of beasts than on the previous Monday, with a fair demand, yet owing to the increased supply Thursday's advance was not sustained throughout. For sheep trade was very slow, and prices not at all improved. Choicest qualities were readily disposed of, but inferior difficult of sale. The calf trade was unaltered. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.* 2*d.*; calves, 5*s.* to 6*s.*; sheep, 5*s.* 2*d.* to 5*s.* 6*d.*, and 6*s.* to 6*s.* 10*d.*; pigs, 4*s.* to 4*s.* 10*d.*—Thursday's cattle trade was very dull. Both beasts and sheep were difficult to sell, and were quoted 2*d.* to 4*d.* per 8 lb. lower. Calves also were flat and weak.

HAY.

Tuesday's Whitechapel Market report states that the trade was steady, at the following quotations:—Prime Clover, 100*s.* to 129*s.*; inferior, 70*s.* to 95*s.*; prime meadow hay, 80*s.* to 95*s.*; inferior, 30*s.* to 75*s.*; and straw, 30*s.* to 37*s.* per load.—On Thursday there was a moderate supply of hay and straw on sale. With a rather quiet trade prices were unchanged.—Cumberland Market quotations:—Superior meadow hay, 92*s.* to 100*s.*; inferior, 42*s.* to 74*s.*; superior Clover, 120*s.* to 128*s.*; inferior, 70*s.* to 105*s.*; and straw, 36*s.* to 40*s.* per load of 36 trusses.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that the demand continues pretty good and prices firm. German reds have been specially in request, at 6*s.* to 7*s.* 6*d.* per hundredweight. Scotch Regents, 140*s.* to 160*s.*; do. Champions, 140*s.* to 150*s.*; Lincoln Regents, 140*s.* to 150*s.*; Victorias, 160*s.* to 180*s.*; French whites, 85*s.* to 95*s.* per ton. Belgian kidneys, 5*s.* 3*d.* per hundredweight. — The imports into London last week comprised 9230 bags from Hamburg, 1000 from Harlingen, 786 Rotterdam, 600 Bremen, 301 bags 102 sacks Boulogne, and 183 bags Ghent.

COALS.

The prices current at market during the week were as under:—Bebside West Hartley, 14*s.* 3*d.*; East Wylam, 16*s.*; West Hartley, 14*s.* 3*d.*; Walls End—Hetton, 16*s.* 6*d.*; Hetton Lyons, 15*s.*; Lambton, 16*s.*; Original Hartlepool, 16*s.* 6*d.*; Wear, 15*s.*; Chilton Tees, 15*s.* 6*d.*; East Hetton, 16*s.*; South Hartlepool, 15*s.* 3*d.* and 15*s.* 6*d.*; Hawthorns, 15*s.* 3*d.*; South Hetton, 16*s.* 6*d.*; Tunstall, 15*s.*; Chilton Tees, 15*s.* 6*d.*; Tees, 16*s.* 3*d.*

Government Stock.—The closing prices of Consols on Monday were, for delivery, 97⅝ to 97⅞; for the account, 97 13/16 to 97 15/16. The final quotation on Tuesday, Wednesday, and Thursday, for both delivery and the account, was 97⅝ to 97⅞.

CLAY'S FERTILISER OR PLANT FOOD

The following is an additional List of *celebrated Nurserymen, Gardeners, and Growers for Covent Garden Market*, who have permitted us to state that they are using this Manure with the most successful results, and are willing to give particulars to any one applying to them. It is very gratifying to be allowed to publish *such a List*, as the names of many of these gentlemen have *never before been published* in connection with any article of commerce. Further lists to follow;—

JAMES VEITCH & SONS ..	Royal Exotic Nursery, Chelsea
E. G. HENDERSON & SON	Pine-apple Nursery, Maida Vale
B. S. WILLIAMS	Victoria and Paradise Nurseries, Holloway
HUGH LOW & CO. ..	Clapton Nursery, Clapton
CHARLES TURNER ..	Royal Nurseries, Slough
CHARLES LEE & SON ..	Royal Vineyard Nursery, Hammersmith
JOHN FRASER	Lea Bridge Road Nurseries, Leyton
OSBORN & SONS	Fulham Nurseries, Fulham
WM. CUTBUSH & SON ..	Highgate Nurseries, Highgate
RICHARD SMITH & CO. ..	Nurserymen, Worcester
T. JACKSON & SON ..	Kingston-on-Thames
JOHN STEWART & SON ..	Broughty Ferry Nurseries, Dundee, N.B.
FISHER, SON & SIBRAY ..	Handsworth Nurseries, Sheffield
WM. THOMSON & SON ..	Tweed Vineyard, Clovenfords, Galashiels, N.B.
F. R. KINGHORN.. ..	Sheen Nursery, Richmond, Surrey
LITTLE & BALLANTYNE..	Nurserymen, Carlisle
P. S. LAIRD & SINCLAIR	Dundee, N.B.
H. CANNELL	The Home for Flowers, Swanley, Kent
RICHARD DEAN	Seed Grower, Ealing
W. COOMBER	Curator, Royal Botanic Gardens, Regent's Park
W. H. HEAD	Superintendent, Crystal Palace Gardens, Sydenham
T. SPEED	Duke of Devonshire's, Chatsworth, Derby
J. WOODBRIDGE	Duke of Northumberland's, Syon House, Brentford
W. DENNING	Lord Londesborough's, Norbiton, Surrey
J. ROBERTS	Baron Lionel de Rothschild's Gunnersbury Park
WM. ELPHINSTONE ..	A. M. Munday, Esq., Shipley Hall, Derby
J. JAMES	W. F. Watson, Esq., Redlees, Isleworth
J. BALLANTINE	Baron Schroeder's, The Dell, Englefield Green

Growers for Covent Garden Market and Others.

P. LADD	Florist, Bexley Heath
J. & J. HAYES	,, Edmonton
R. WEATHERILL	,, Finchley
G. BECKWITH & SON ..	,, Tottenham
W. E. DAVIS	,, Whetstone
J. MALLER	,, Tottenham
B. MALLER	,, Lee
JAS. SWEET	,, Leyton
E. SAWYER	,, Edmonton
W. WARREN	,, Isleworth
M. ROCHFORD	,, Tottenham
P. & S. KAY	,, Finchley
E. BENNETT	,, Rabley
HAWKINS & BENNETT ..	,, Twickenham
J. WARD	,, Leytonstone
GREGORY & EVANS ..	,, Lee
JENNINGS & BODENHAM	,, Acton
J. H. POUNCE	,, Hendon
G. POULTON	,, Edmonton
SMITH & LARKE	,, Ashford, Middlesex
H. & G. WRIGHT ..	,, Lee

Sold in Packets 1s. each, and in Bags,

¼ Cwt.	½ Cwt.	1 Cwt.
7s. 6d.	12s. 6d.	20s.

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CLAY & LEVESLEY,

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GAWITH'S FIREFLY CIGARETTE, for destroying Thrip, Greenfly, and other greenhouse Pests. The advantages of fumigation over all other methods of destroying these enemies must be apparent to all horticulturists. However skilfully applied, insect-destroying powders cannot reach every one, whereas by rendering the atmosphere of a house destructive, all are reached. These Cigarettes are clean and effective; one trial is enough to convince the most sceptical that a long-looked-for handy and clean destroyer has at last been found. The Cigarette merely requires suspending by the wire attached, lighting at each end as in ordinary fireworks, and does its own work without further attention.

Price 1s. 6d. each. To be had from Seedsmen, and from JOHN E. GAWITH, Sole Manufacturer, Lowther Street Tobacco Manufactory, Kendal.

One Fume effectually destroys the whole family of

APHIDES.

Two Fumes in quick succession will annihilate the

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IN IRON, 6s. 6d.

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"Ready Cut Up," "Self Consuming,"
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Who will be pleased to send, post-free, on application, Circular containing Testimonials and all particulars.

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It has stood the public test for 9 years, and proved to be the most Successful and the Cheapest Manure for

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SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1s. 6d., 2s. 6d. and 12s. 6d. each. Special quotations for large quantities.

London Agents: HOOPER AND SONS, Covent Garden; and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it

Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

For Sale, Wholesale,

EXCELLENT CATTLE FOOD—extract of Vegetables; on board at Rouen or Dunkirk.

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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

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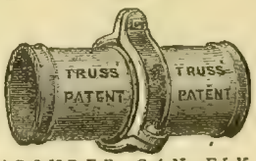

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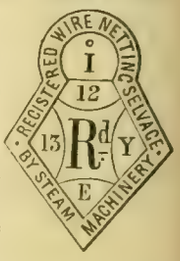

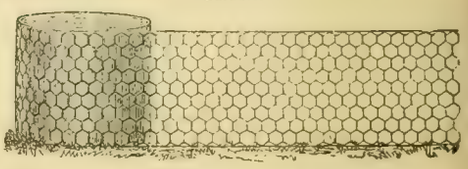

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1⅜ in.	Small Rabbits, &c.	19	3d.	18	3½d.	17	4¼d.
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WOOD AND CO. deliver in truckloads to any Railway Station, prices for which can be had on application, or can be delivered by Wood & Co.'s Vans (in the Metropolis).

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To Messrs. Wood & Co.

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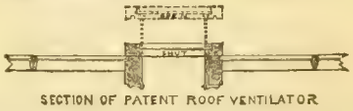

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Hot-Water Apparatus fixed in any part of the Kingdom, and guaranteed.

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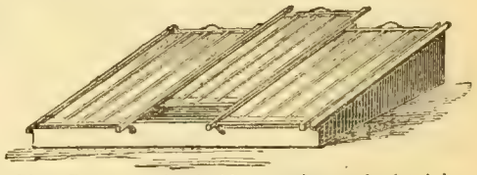
A. & J. MAIN'S MELON or CUCUMBER FRAMES.



These Frames are glazed with 21-oz. glass, and painted three coats best paint. The frame is 24 inches high at the back and 13 inches at front; sides are 1¼ inch thick, and the bars of the lights 2 inches deep. The wood used is best selected red deal. Each light has an iron strengthening rod and handle. No brickwork is required for these Frames.

1-light	FRAME,	4 feet by 6 feet,	£2	0	0
2-light	,,	8 feet by 6 feet,	3	7	6
3-light	,,	12 feet by 6 feet,	4	17	6

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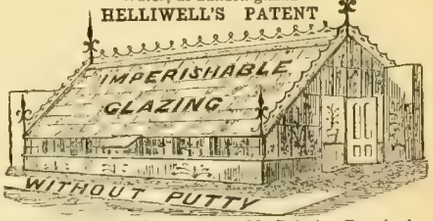
UNGLAZED PIT LIGHTS, 6 feet by 4 feet, 2 inches thick, iron strengthening rod through, 5s. each. Orders amounting to 4 s. carriage paid. BOULTON AND PAUL, Horticultural Builders, Norwich.

As adopted for the Prince of Wales, at Sandringham.

HELLIWELL'S PATENT



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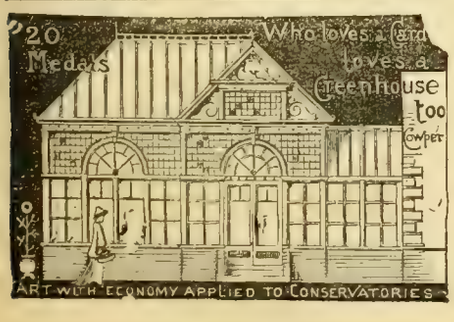

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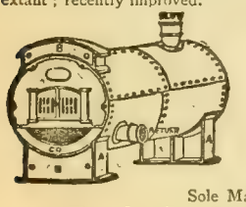

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Majesty Queen Victoria.

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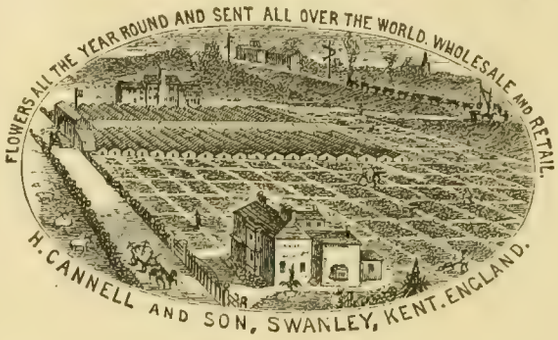

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From Dr. SCHOMBURGK, *Botanic Gardens, Adelaide.*—"Seeds safe to hand, and which have turned out well."

From J. D. HATTON, Esq., *Launceston, Tasmania, February*, 17, 1879.—"Dear Sir,—The seeds arrived in splendid condition, just at suitable season, and are growing fine."

From Mr. R. TAYLOR, 5, *Rose Street, Beverley Road, Hull, January* 13, 1879.—"The seeds purchased from you for the last two years have given every satisfaction."

From S. V. HOFMEYR, Esq., *Cape Town, October* 7, 1879.—"Dear Sir,—All the seeds received from you which I have sowed come up well."

From Messrs. DUNCAN & SON, *Nurserymen, Christchurch, New Zealand, September* 13, 1879.—"Dear Sir,—The seeds arrived in good order."

From Mr. WILLIAM ANDEAN, *Victoria, Vancouver's Island, British Columbia, November* 5, 1878.—"Dear Sir,—The seeds came to hand in good order last spring. The seedlings are turning out well."

From Mr. S. OWEN, Jun., *West Maitland, New South Wales, Australia.*—"The last flower seeds sent by you were very good. I think every seed of the Cyclamen germinated. I got about 100 plants from the packet, and are now coming into flower. Polyanthus particularly good—the flowers measured 5 inches across the truss."

From Mr. G. H. MCCOLLEY, *Public School, Blacktown, viâ Sydney, N. S. Wales, October* 27, 1879.—"I am happy to say that your seeds have proved highly satisfactory both in germinating power and quality, and was honourably mentioned by the Parramatta Horticultural Society. Send off enclosed order soon as you can."

From Mr. E. B. CONRAD, *Winona, Ohio, U. S. America, May* 7, 1879.—"The seed I purchased of you of Carnation and Picotee did well, and I have had some very handsome sorts which are very much admired; colours beautifully bright and size good."

From A. J. ROLLO, Esq., *Holly Bank, Simla, India.*—"I have seen the plants from your seeds, and also your plants sent out to people in this country, and they are excellent. I have every confidence you will send me good things."

From Mr. W. WEDD, *Mount Gambier, South Australia.*—"Dear Sir,—I have to thank you for sending my parcel of seeds, which arrived in first-rate condition within three months of date of order; this, considering the distance, is extraordinary dispatch, and enabled me to get a sowing in good time. As a proof of their good quality they are already above-ground."

From J. H. BARKER, *Pine Grove Cemetery, Lynn, Mass., U. S. America, November* 28, 1879.—"The seeds you last sent me proved highly satisfactory."

From Mr. C. BROWN, *Gardener, South Field House, Louth, Lincoln, February* 24, 1879.—"The packet of Begonia seed I had of you last year gave me many seedlings far better than those in my named collection. One had six petals measuring 4 inches over—the grandest I ever saw."

From Mr. J. BOX, *Carr Nursery, Doncaster, August* 2, 1879.—"The Primula seed you sent, every one has grown. I have a grand lot."

"*From* Mr. A. MESTON, *Anguston, Peterculter, N.B., March* 22, 1879.—"The Beta from your seed were greatly admired in this quarter last year."

From Mr. FOSTER BERRY, *Nab Mirfield, August* 4, 1879.—"Dear Sir,—The Marigolds from your seed are coming splendid. I am more than pleased with them."

From Mr. JOHN KING, *Brizlincote House, Burton-on-Trent, August* 25, 1879.—"Dear Sir,—The Asters and Marigold seed I had from you have turned out very good. I took the 1st prize last week at Burton Show with the Marigolds."

From Mr. J. EVERETT, *Wood Lane, Handsworth, Birmingham, April*, 1879.—"Your Hollyhock seed has turned out really beautiful double flowers."

From Mr. JOHN CLARKE, *Plough Road, Wellington, Shropshire, February*, 1879.—"Your Hollyhocks and Asters are without exception the finest seen this season."

"*From* Mr. J. LITCHFIELD, *Gardener to Lord Chas. Russell, Woburn, Beds, May* 16, 1879.—"I thank you very much for sending me seed of such good quality."

From W. C. KEY, Esq., *Cypress Lodge, Walton-on-Thames, May* 17, 1879.—"The Petunia and Primula seed I had from you came up capitally, and I have, from the Primula seed, 200 nice young plants, in 60's."

From Mr. W. CORDEN, *Penistone, near Sheffield, September* 30, 1879.—"Out of the 2*s.* 6*d.* packet of Primula seed I got for my friend from you, he had 130 plants, and at the present time they are really magnificent. The Petunias and Balsams also turned out first-class. We had some splendid things amongst them."

From Mr. G. FLETCHER, *Gardens, Moss Bank, Bolton, April*, 1879.—"I had a fine crop of Cucumbers from seed I had of you last season—the best in these parts."

From Mr. A. MACKIN, *Town Hall Buildings, Banbury, August* 5, 1879.—"The Balsam seed I had of you in the summer has turned out well. We have had some beautiful flowers."

From Mr. E. EADE, *Gardens, Edenthall, Penshurst, August*, 1879.—"Dear Sir,—The Balsams from your seed are the finest I ever saw, measuring 3 inches in diameter. My employer is well pleased."

From Mr. G. BOND, *Walcot Gardens, Lydbury North, Shropshire, September* 25, 1879.—"Dear Sir,—I feel bound to tell you that late as my Balsams were sown, from your packet of seed, they have far exceeded my expectations—beautifully double, and are the best decidedly I ever saw."

From W. KITTO GIDDINGS, Esq., *Shaftesbury House, Calverley, near Leeds, March* 1, 1879.—"The bed of Antirrhinums last year from your seed was delightful."

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"THE HOME FOR FLOWERS," SWANLEY, KENT.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

THE FARNINGHAM ROSE SOCIETY.

At a GENERAL MEETING of this SOCIETY, held on January 19, it was decided to hold the next Exhibition on WEDNESDAY, June 30 next.

SHROPSHIRE HORTICULTURAL SOCIETY.

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Montbretia Pottsii.

See Illustration in the *Garden* of January 24.

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Reading, Berks.—In Liquidation.

TO NURSERYMEN AND HORTICULTURISTS.

MESSRS. EGGINTON AND PRESTON are instructed by the Trustee to SELL by AUCTION, at the Queen's Hotel, Reading, on THURSDAY, January 29, at 3 o'Clock punctually, the LEASE of the NURSERY GROUNDS in the Oxford Road, Reading, for many years carried on by Messrs. Phippen & Robinson. They are about 2 acres in extent, and include a seven-roomed Residence, 12 Greenhouses and Hothouses, and 3 unheated ditto, with numerous Ranges of Cold Pits and Frames, Carpenter's Shop, Packing and Potting Sheds, Stabling, Cart Shed, and Piggeries. The NURSERY contains an extensive Collection of Fruit Trees, Shrubs, Ornamental Trees, Greenhouse, Hothouse, and Bedding Plants, and General Nursery Stock suitable for a local trade. There are in addition a considerable stock of Shrubs and Trees on three outlying pieces of nursery ground. There are also Two Horses, Two Carts and Van. The whole, including GENERAL NURSERYMAN'S STOCK of Tools, Fittings, and Appliances, will be sold as a going concern. The unexpired term of the lease is about eight years, and the annual rent is £24.

Full particulars of sale may be obtained of EGGINTON AND PRESTON, Auctioneers and Valuers, 150, Friar Street, Reading.

Tooting, Surrey, S.W.

URGENT SALE OF GLASS ERECTIONS, BUILDING MATERIALS and EFFECTS.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises known as The Nurseries, Tooting, S.W. (lately Messrs. Rollisson's), on THURSDAY NEXT, January 29, at 1 o'Clock precisely (by Order of the Owner), all the VALUABLE MATERIALS contained in an elegant Conservatory, and several GREENHOUSES, useful PIPING and BOILERS, and a large quantity of good BRICKS, TILES, SLATES, and BUILDER'S PLANT.

Catalogues on the Premises, or of the Auctioneers, Estate Agents, and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

To Florists, Nurserymen, &c.

ABOUT FIVE ACRES of first-class LAND, admirably adapted for the above, with or without two Freehold Villas, containing four bedrooms, dining and drawing-rooms, kitchen, &c. Most admirably situate on high ground, within easy distance of Bushey Park, Hampton Court, &c.

Possession can be had at once.

Apply to J. EMBLETON, Suffolk House, New Hampton.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

SPIRÆA PALMATA.—This beautiful pink variety, with immense flower bunches, justly called "The Queen of Spiræas," is offered at 20*s.* per 100, strong clumps.

Wholesale CATALOGUES free on application.

BUDDENBORG BROTHERS, Bulb Growers, House, Bloemswaard, Hillegom, near Haarlem, Holland.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to

Mr. JEAN NUYTENS VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium.

London Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

WM. VIRGO, Wonersh Nurseries, Guildford, has the undermentioned FOREST STUFFS for Planting:—

50,000 Alder, 4, 5, to 6 feet; Withy and Osier, 3 to 5 feet; 10,000 Crab Stocks; Limes, 10 to 12 feet; Yews, 4 to 6 feet; austriaca, 4 to 6 feet; Spruce Fir, 4 to 6 feet; Paul's Standard Double Scarlet Thorns, Pink ditto; Lombardy, Black Italian, and White Abele Poplar, 8 to 10 feet; Scarlet Oak, 6 to 9 feet; Sycamore, 8 to 10 feet; Hornbeam, 6 to 10 feet; Beech, 6 to 10 feet; Mountain Ash, 6 to 10 feet; Birch, 6 to 10 feet; Ailantus, 8 to 10 feet; 2-yr. seedling Hazel; do. fine Spanish Chesnut.

Samples, and Prices and CATALOGUES on application.

Immense Quantities of Young

FOREST TREES, CONIFEROUS, ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, and 3-yr. QUICKS, very cheap.

CATALOGUES will be sent free on application.

LEVAVASSEUR AND SON, Nurserymen, Ussy, Calvados, France.

Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, London, E.C.

Established in 1815.

Hollamby's Nurseries, Groombridge, Tunbridge Wells.

100 Acres to select from.

EDWIN HOLLAMBY'S Descriptive Priced CATALOGUE of Roses, Evergreens, and Flowering Shrubs, Conifers, Fruit and Forest Trees, &c., will be forwarded free on application.

N.B.—Through trucks to all parts: a great saving in packing.

SEED POTATOS.—20,000 bushels of the choicest varieties of Seed Potatos to offer, amongst which are Sutton's Magnum Bonum (true), Fidler's Surprise Ashleaf Kidney, Snowflake, Early Hammersmith, Gloucestershire Kidney, Schoolmaster, Covent Garden Perfection, Paterson's Victorias, Scotch Champions, &c. Send for Catalogue and testimonials, post-free on application, to

C. FIDLER, Grower and Importer, Friar Street, Reading.

KENTISH FRUIT TREES.—One of the largest and best Stocks in the country, consisting of Standard and Pyramid Apples, Pears, Plums, and Cherries, from 60*s.* per 100. A splendid lot of Hessel and William Pears, Gooseberries, and Currants, from 8*s.* per 100.

T. EVES, Gravesend Nurseries.—Established 1810.

SPECIAL TRADE OFFER.

ALDER, 1½ to 2 feet, 10*s.* 6*d.* per 1000.
ASH, Common, 1½ to 2 feet, 10*s.* 6*d.* per 1000.
" Mountain, 2 to 3 feet, 15*s.* per 1000.
CHERRY, or WILD GEAN, strong, 1½ to 2 ft., 20*s.* per 1000.
ELM, Scotch, 1-yr., 2*s.*, per 1000.
HOLLY, Common, 1-yr. 1-yr., 10*s.* per 1000.
POPLARS, sorts, 1½ to 2 feet, 12*s.* 6*d.*; 2½ to 4 feet, 17*s.* 6*d.* per 1000.
FLOWERING CURRANTS, 1½ to 2 feet, 5*s.* per 100.
LIMES, 5 to 6 feet, 15*s.* 6*d.* per 100.
APPLE and PEAR STOCKS, strong, 2-yr., 3*s.* per 1000.
AUSTRIAN PINE, 2-yr., strong, 2*s.* 6*d.* per 1000.
LARICIO PINE, 2-yr., strong, 2*s.* 6*d.* per 1000.
LARCH, 2-yr. 1-yr., strong, 10*s.* to 12*s.*; 2-yr. 2-yr., do., 25*s.* per 1000.
IRISH YEWS, 1½ to 2 feet, 25*s.*; 2 to 2½ feet, 30*s*; 3 to 3½ feet, 40*s.*; 3½ to 4½ feet, 60*s.*; 4½ to 5 feet, 70*s.* per 100.

R. AND A. MORRISON, The Nurseries, Elgin.

1880.

Messrs. SUTTON'S PRIZES

FOR

VEGETABLES, POTATOS, &c.

ALL GARDENERS WHO INTEND COMPETING

For the above

Can have full particulars on application.

SUTTON & SONS,

THE QUEEN'S SEEDSMEN, READING.

SEED POTATOS.—

Snowflake	Paterson's Victoria
Early Rose	Regent
Myatt's Prolific	Dalmahoy
Fortyfold	Fluke
Bresee's Prolific	Champion (Scotch)
Early Shaw	Redskin Flourball

And other leading varieties. Prices on application to

JOSIAH H. BATH, York Street, Borough Market, S.E.

To the Trade.

MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.

Seed Growing Establishment, Wisbech.

KITCHEN GARDEN AND FLOWER SEEDS, ALSO GLADIOLI ROOTS, &c.

DOWNIE AND LAIRD have posted their CATALOGUES of Kitchen Garden and Flower Seeds, including Gladioli Roots, &c, to all their customers; if however, by any chance they have not been received, and their friends will kindly let them know, a copy will be forwarded in course of post.

DOWNIE AND LAIRD, Seedsmen and Nurserymen, 17, Frederick Street, Edinburgh.

JAMES BACKHOUSE AND SON'S Priced LISTS of VEGETABLE and FLOWER SEEDS are now ready, and will be forwarded post-free on application. The FLOWER SEED LIST will be found to contain an excellent assortment of Perennial and Rock Plants, which have been saved from their well known Collection; to which is added a well assorted descriptive list of Gladiolus Roots.

JAS. BACKHOUSE AND SON, The Nurseries, York.

SPECIAL CHEAP OFFER TO THE TRADE.

APPLES, Pyramid, extra strong and well rooted, 40*s* per 100.
PEARS, Pyramid and Standard, extra strong and well rooted, 50*s.* per 100.
CHERRIES, Standard trained, PLUMS, Standard trained, PEARS, Dwarf trained, } Prices and sorts on application.
SPRUCE, Norway, 2 to 3 feet, very bushy and well rooted, 40*s.* per 1000.
THUJOPSIS BOREALIS, 5 to 6 feet, 24*s.* per dozen; 6 to 7 feet, 30*s.* per dozen; 7 to 8 feet, 48*s.* per dozen.

W. G. CALDWELL AND SONS, The Nurseries, Knutsford.

To the Trade.

"PRIDE OF ONTARIO" POTATO.

H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.

Seed Growing Establishment, Wisbech.

LILIUM AURATUM.—English grown far superior to Imported. Fine Bulbs, in three sizes, 12*s.*, 18*s.*, and 30*s.* per dozen respectively. A few, extra large, at 3*s.* 6*d.* each.

HOOPER AND CO., Covent Garden, London, W.C.

LEICESTER RED CELERY has again proved itself to be the hardiest, sweetest, most solid, and best Celery this unfavourable season; when most kinds have been soft and watery this has been good in every way. Those wishing to obtain the true article should have it in printed packets, price 1*s.*; post-free on receipt of 13 stamps.

BROCCOLI, Harrison's new Dwarf Hardy; a late valuable kind, 1*s.* per packet.
SAVOY, Harrison's King Coffee Garden, 1*s.* per packet.
TURNIP, Harrison's Exhibition; a perfect round white variety, from 6*d.* per packet.
CARROT, Harrison's Early Market, 6*d.* per packet.

HARRISON'S "LEICESTER SEEDS," of choicest quality, are supplied in collections of 21*s.* and upwards, sent carriage free. Trade Prices and full particulars on application to

HARRISON AND SONS, Seed Growers, Leicester.

To the Trade.

SEEDLING and TRANSPLANTED FOREST TREES, and other useful HARDY NURSERY STOCK always in demand.

Priced LIST on application.

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

TREE SEEDS.—
ABIES DOUGLASII, post-free, 2*s.* 6*d.* per ounce.
" MENZIESII, post-free, 4*s.* per ounce.
PICEA NOBILIS, post-free, 4*s.* per ounce.
PINUS MONTICOLA, post-free, 3*s.* per ounce.
LARCH, Native, 2*s.* per pound.

The above are all of crop 1879, and collected from Trees grown in Scotland, and may be fully relied on for purity and hardiness.

Special prices for large quantities, and to the Trade on application.

BEN. REED AND CO., Nurserymen and Seedsmen, Aberdeen.

New Cucumber, Sir Garnet Wolseley.

JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, post-free for 30 stamps.

"The points in which Cucumber Sir Garnet Wolseley surpasses all other long-fruited varieties are the symmetry of its fruit, and the abundance with which they are produced; there being no shank or handle to Sir Garnet." — *Gardeners' Chronicle*, September 27, 1879.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are prepared to make special offers of their choice stocks of HOME-GROWN GARDEN and FIELD SEEDS to those who have not yet completed their supplies for the coming season.

Seed Growing Establishment, Wisbech.

NEW ZONAL GERANIUMS of 1879. PEARSON'S SET of thirteen splendid varieties, 8*d.* each; the set for 6*s.*, post-free.

Selected varieties:—Jeanne d'Arc, finest single white; Candidissima plena, double white; Zonal Tricolor H. M. Pollett, Mr. Parker, Lord Gifford, Arnobius, Brennus, Laverna, Numitor, Syressa, Tereus, 8*d.* each, 12 for 6*s.*, post-free.

Executors of H. WALTON, Edge End Nursery, Brierfield, near Burnley.

To the Trade.

JOHN PERKINS AND SON offer the following:—
ROSES, strong, on Manetti, 30*s.* per 100
APPLES, Pyramids, 50*s.* per 100
APRICOTS, Moor Park, dwarf, cut back, 50*s.* per 100
CURRANTS, Black, strong, 10*s.* per 100, 80*s.* per 1000
" Red, ditto, 10*s.* per 100, 80*s.* per 1000
ELMS, Wych, 3 to 4 feet, 20*s.* per 1000
HAZEL, 2 to 3 feet, 18*s.* per 1000; 3 to 3½ feet, 20*s.* per 1000; 3½ to 4½ feet, 30*s.* per 1000
PRIVET, Evergreen, 2 to 3 feet, 20*s.* per 1000
LAURELS, Common, 2 to 2½ feet, 12*s.* per 100
" Portugal, 1½ to 2 feet, 20*s.* per 100
YEWS, English, 2½ to 3 feet, 30*s.* per 100; 3 to 4 feet, 60*s.* per 100

52, Market Square, Northampton.

Special Trade Offer.

W. BALL AND CO., Bedford Road Nursery, Northampton, have a very large stock of the undermentioned to offer to the Trade and large Buyers, in fine condition:—
APPLES, good Standards, best market varieties, our selection, 55*s.* to 65*s.* per 100.
PEARS, good Standards, best market varieties, our selection, 65*s.* to 70*s.* per 100.
PLUMS, good Standards, best market varieties, our selection, 65*s.* to 70*s.* per 100.
APRICOTS, Dwarf-trained Moorpark, 20*s.* to 24*s.* per dozen.
CURRANTS, Black, 3-yr., very strong, 12*s.* per 100.
LIMES, Standards, fine, 5 to 6 feet, 6 to 7 feet stems, 80*s.* to 100*s.* per 100.
CHESTNUTS, Common, 6 to 7 feet stems, fine heads, 75*s.* per 100.
ELMS, Standard Italian, 6 to 7 feet stems, fine heads, 90*s.* to
ASH, Common, 2 to 3 feet, 23*s.* per 1000. [100*s.* per 100.
BEECH, Common, strong, 5 to 7 feet, 25*s.* per 100.
HORNBEAM, strong, 3 to 5 feet, 25*s.* per 1000.
QUICK, very strong, 3-yr., 15*s.* per 1000.
BLACKTHORN, very strong, 3-yr., 15*s.* per 1000.
HOLLY, Green common, fine, 3 to 4 feet, 50*s.* to 60*s.* per 100.
LAUREL, Portugal, very fine, bushy, 3 to 3½ feet, 60*s.* to 70*s.* per 100.
YEWS, Common, fine Pyramids, 3 to 4 feet, and 4 to 5 feet, 90*s.* to 100*s.* per 100.
" well rooted, 3 to 4 feet, 60*s.* to 70*s.* per 100.
ROSES, fine Standards, 4 feet stems, large heads, our selection, 70*s.* to 75*s.* per 100.

WILLIAM FLETCHER, Ottershaw Nurseries, Chertsey, will be glad to quote prices to the Trade, as named :—
BIRCH, 2 to 3 feet, 3 to 5 feet, and 5 to 8 feet.
HAZEL, 2 to 3½ feet.
ASH, Common, 2 to 4 feet.
ALDER, 2 to 3 feet, 3 to 5 feet.
QUICKS, MANETTI STOCKS, &c.

TREES for AVENUE, PARK, or STREET PLANTING.
ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
,, Horse, 14 to 16 feet, girting 8 to 10 inches.
,, Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
,, Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.
They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.
The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.
ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

Windsor Nurseries, Putney, S.W.
To GENTLEMEN, BUILDERS, and the TRADE.
S. MAHOOD AND SON have to offer a large stock of HARDY and ORNAMENTAL SHRUBS and TREES, in great variety, comprising Hollies, Cupressus, Thujopsis, Cedrus Deodara, Box Trees, &c., 6 to 8 feet high, good specimens; a large quantity of smaller Shrubs, Aucubas, Portugal Laurels, &c.; also a large quantity of Golden Euonymus, 9 to 18 inches high, good bushy stuff. All in good condition for moving, and at low prices. An inspection invited.

DICKSONS AND CO., NURSERYMEN and SEEDSMEN, 1, Waterloo Place, Edinburgh, are now Booking Orders for the beautiful DOUBLE MATRICARIA, figured in the *Gardeners' Chronicle* of Dec. 13, 1879, at 1s. 6d. each, 12s. per dozen, or 75s. per 100—all free by post; and are now sending out well-established Plants of their lovely new SAXIFRAGA WALLACEI, at 1s. 6d. each, 12s. per dozen, or 75s. per 100, free by post. Usual discount to the Trade.
D. & Co. have the largest stock of BEDDING VIOLAS in the country.
Descriptive CATALOGUE free on application.

To the Trade and Large Buyers.
ISAAC MATTHEWS AND SON'S
Special offer :—
200,000 ASH, Mountain, 3 to 4 and 4 to 5 feet.
100,000 ,, Common, 3 to 4 feet.
50,000 ALDER, 3 to 4 and 4 to 5 feet.
150,000 FIR, Scotch, 15 to 18 inches and 1½ to 2 feet.
50,000 ,, Spruce, 1½ to 2 feet and 2 to 2½ feet.
50,000 PRIVET, Evergreen, 2 to 3 feet.
50,000 WILLOWS, Osier, 3 to 4 feet.
20,000 RHODODENDRON, splendidum, white.
20,000 ,, Jacksoni.
50,000 ,, Ponticum, 1½ to 2 feet and 2 to 2½ feet.
50,000 ,, Hybrid Ponticum, seedlings, 1½ to 2 feet.
20,000 ,, named varieties, 2 feet.
50,000 YEWS, English, 1½ to 2 feet.
For prices and particulars apply to
The Nurseries, Milton, Stoke-on-Trent.

Kent, the Garden of England.
COB NUTS, fine Kentish; Kentish PLUMS, CHERRIES, PEARS, DAMSONS and APPLES; specimen MULBERRIES, large AUCUBAS, large LIMES, YUCCAS, and the finest general stock of FRUIT TREES in the Kingdom, some 200,000 to choose from.
General Descriptive FRUIT LIST on application.
The Trade supplied.
THOS. BUNYARD AND SONS, Old Nurseries, Maidstone.

Wandsworth Common and Garret Lane Nurseries.
R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.
All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
CATALOGUES free by post on application.

Gros Guillaume Grape.—Roberts' Variety.
W. TAIT AND CO. are offering strong well-grown CANES of this wonderful variety, at 5s., 7s. 6d., and 10s. 6d. each, grown from eyes taken from the parent Vine. See *Gardeners' Chronicle*, Dec. 20, 1879, page 794. Orders from strangers should be accompanied with remittance.
The Old Established Nursery and Seed Warehouses, 119 and 120, Capel Street, Dublin.

SPECIAL OFFER TO THE TRADE.

A. M. C. JONGKINDT CONINCK,
TOTTENHAM NURSERIES,
Dedemsvaart, near Zwolle, Netherlands,
Has to offer :—

	Per 100—	£	s.	d.
DIELYTRA, spectabilis, strong plants	.. ..	0	10	0
SPIRÆA, filipendula fl.-pl. ,, ,,	.. ..	0	8	0
,, japonica ,, ,,	.. ..	0	5	0
,, palmata ,, ,,	.. ..	0	10	0
,, ,, elegans ,, ,,	.. ..	2	2	0

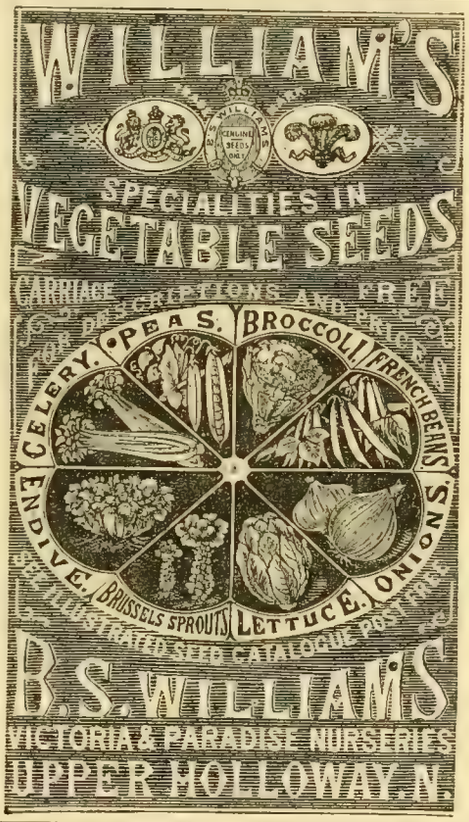
STRONG ROSE STOCKS,
Fit for Immediate Working.
Rosa Manetti, 25s. per 1000, £10 per 10,000.
Rosa multiflora de la Grifferaie, 20s. per 1000, £7 10s. per 10,000.

SPRUCE FIRS.—Many thousands, 2, 3, 4 and 5 feet. Stout, well furnished, and good rooted.
ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

GEO. JACKMAN & SON
WOKING NURSERY SURREY.

JACKMAN'S Descriptive Priced CATALOGUE, Free on application, containing—
JACKMAN'S List of FRUIT TREES, suitable for large or small Gardens.
JACKMAN'S List of ROSES—selected Dwarfs and Standards.
JACKMAN'S List of AMERICAN PLANTS, for Peat and Loamy Soils.
JACKMAN'S List of CONIFERS, for Lawns and Pleasure Grounds.
JACKMAN'S List of HARDY SHRUBS, adapted for Belts, Shrubberies, Screens, &c.
JACKMAN'S List of ORNAMENTAL TREES, suitable for Parks and Private Gardens.
JACKMAN'S List of HARDY CLIMBERS, including their celebrated Clematises.
JACKMAN'S Assortment of TREES and SHRUBS, adapted for planting by the Sea-coast, on Chalk Soil, beneath the Shade of Trees, and in Cities and Towns.

GEO. JACKMAN & SON
WOKING NURSERY SURREY.



AMERICAN TUBEROSES.
DOUBLE .. .. 13s. per 100
PEARL .. .. 14s. ,,
Special prices to large buyers. Samples on application.

HOWCROFT & WATKINS,
COVENT GARDEN, LONDON, W.C.

CRANSTON'S NURSERIES,
KING'S ACRE, HEREFORD.
TO THE TRADE.
ROSES, LAURUSTINUS, LAURELS, all uninjured by frost.
Extra fine CHERRIES, CURRANTS, GOOSEBERRIES, PEARS, PLUMS, CONIFERÆ, &c.
LIST of sorts with present Prices on application to
CRANSTON'S NURSERY and SEED COMPANY, Limited.

FISHER, SON & SIBRAY,
Late FISHER, HOLMES & Co.,
NURSERYMEN, SEEDSMEN and FLORISTS,
HANDSWORTH, SHEFFIELD.
Nurseries :—Handsworth.
Seed Warehouses :—Corner of Market Street, Sheffield, and Church Street, Rotherham.

To the Trade.
A RETAIL LIST of the best NOVELTIES of the YEAR, without our name and address on it, will be forwarded post-free on application. The provincial Trade will find this a reliable and acceptable List to place before their customers.
JAMES CARTER, DUNNETT, AND BEALE, 237 and 238, High Holborn, London, W.C.

Lilies of the Valley.
JULIUS HOFFMANN,
131, Koepnickerstrasse, Berlin S.O.
The Plants are fine this year. Prices, £1 12s. per 1000, £15 per 10,000. Every one strong flowering. Stock, 400,000.

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 3, and 3 to 4 feet.
SCOTCH, 1½ to 2, and 2 to 2½ feet.
SPRUCE, 1½ to 2, 2 to 2½, 2½ to 3, and 3 to 4 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, offer as under :—
At per 1000 :—
ALDER, 2 to 3 feet, 22s.; 3 to 4 feet, 27s.
ASH, Mountain, 3 to 4 feet, 20s.
DOGWOOD, Red, 1 to 1½ foot, 40s.; 1½ to 2 feet, 60s.; 3 to 4 feet, 80s.
FIR, Silver, 4 to 6 inches, 8s.
,, Spruce, 4 to 8 inches, 5s.; 6 to 9 inches, 7s.; 9 to 15 inches, 9s.; 1 to 1½ foot, 12s.; 1½ to 2 feet, 20s.
LARCH, 1 to 1½ foot, 15s.
POPLAR, Black Italian, 3 to 4 feet, 23s.; 4 to 5 feet, 28s.
PRIVET, yellow-berried, 1½ to 2 feet, 16s.
QUICKS, 9 to 15 inches, 12s.; 1½ to 2 feet, 22s.
WILLOW, Huntingdon, 4 to 5 feet, 30s.
FLOWERING SHRUBS, in variety, 40s. to 60s.
BERBERIS, Aquifolia, 6 to 9 inches, 12s.
,, Darwinii, 1 to 1½ foot, 70s.
,, Dulcis, 9 to 12 inches, 20s.
MEZEREON, Red, 9 to 18 inches, 60s.
IVY, Irish, 25s. and 40s.
LAUREL, Common, 9 to 12 inches, 35s.; 1 to 1½ foot, 40s.
,, Portugal, 1½ to 2 feet, 60s.
PERNETTYA, mucronata, 6 to 9 inches, 25s.
RHODODENDRON, hybrids, 4 to 6 inches, 50s; 6 to inches, 65s.; 9 to 15 inches, 85s.
,, ferrugineum and hirsutum, 80s.
WHIN or GORSE, double, 1 to 1½ foot, 80s.
YEWS, 9 to 12 inches, 75s.; 1 to 1½ foot, 100s.; 2 to feet, 200s.
At per 100 :—
ARBOR-VITÆ, Tom Thumb, 6 to 9 inches, 7s.
AZALEA, pontica, 1½ to 2 feet, 30s.
BOX, elegantissima, 6 to 12 inches, 10s.
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NEW SEED GUIDE, 1880.

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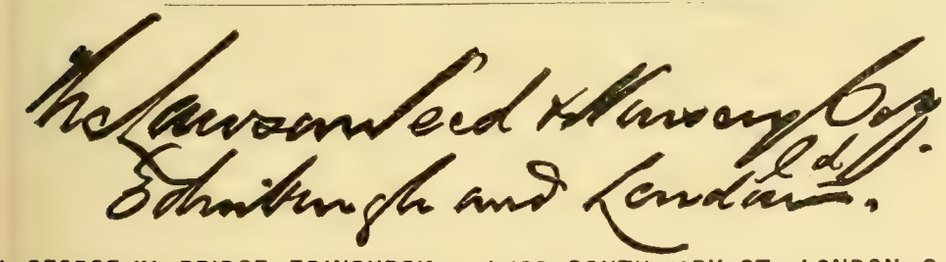

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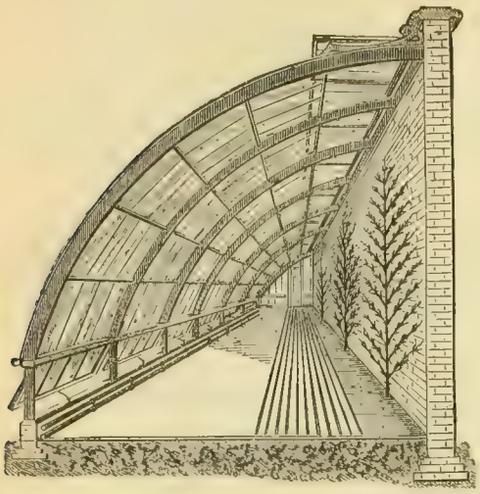

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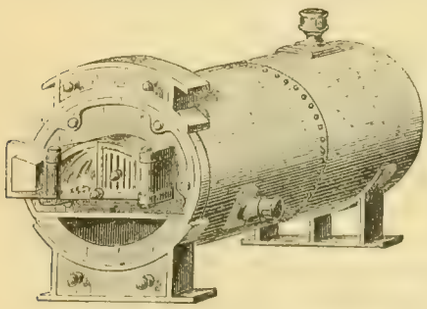

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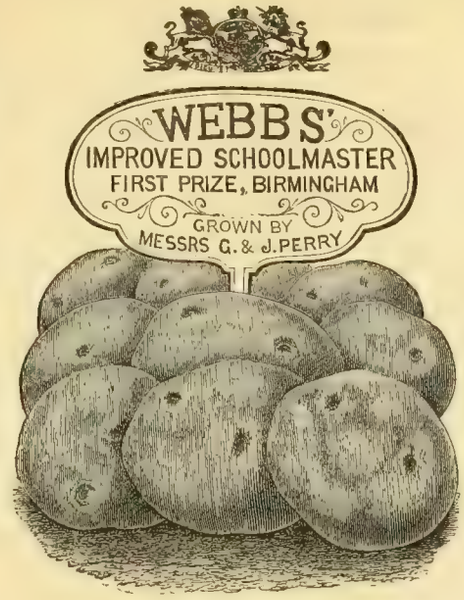

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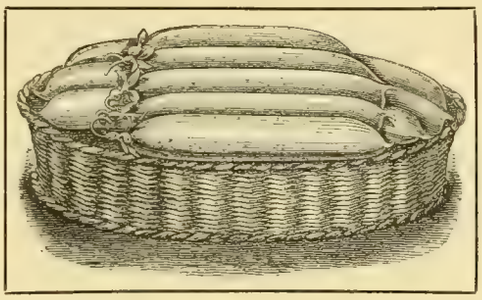

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From MR. JAS. HOPE, *Head Gardener to the* Right Hon. the Earl of Bradford.

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THE QUEEN'S SEEDSMEN,
WORDSLEY, STOURBRIDGE

THE
Gardeners' Chronicle.

SATURDAY, JANUARY 24, 1880.

STREET PEARS.

THE streets of London are full of interest to the philosopher, the social reformer, the politician, and the moralist. They teem with human life in manifold manifestations: the wealthy and the poor, the happy and the miserable, the good and the bad, jostle against each other and pass their several ways with but little knowledge of each other's circumstances and needs. In the streets of London thousands of persons find a means of livelihood, but of the many modes by which a subsistence is earned that having perhaps the largest amount of interest for horticulturists is the selling of fruit. The quantities of fruit sold in the London streets in a season when it is at all plentiful and can be readily obtained and disposed of at remunerative prices, is perfectly astounding. Were the statistics put into the form of figures and presented in totals their amounts would savour of the incredible. The year 1879 has passed away never to return, with many sins of omission and commission staining its memory, one of these being that its inclement and uncongenial character spoiled the fruit harvest, and left the itinerant street sellers little, if any, to offer. To what other occupation did the hawkers of Pears, for instance, turn their hands when Nature deprived them of the means of a livelihood of this character? Who shall say?

The leading varieties of Pear hawked for sale in the streets of London are the Windsor, Summer Doyenné d'Eté, Williams' Bon Chrétien, Hessle, Beurré Bosc, Louise Bonne of Jersey, Beurré de Capiaumont, Beurré d'Amanlis, and Beurré Diel. The model Pear of the Londoner is "Williams." It is a criterion by which he judges of the value of every Pear he is called upon to partake of. In Edinburgh the modern Athenians swear by the Jargonelle; it is their model street Pear, and it is probably not too much to state that if they partake of a good Pear they would pronounce it to be the Jargonelle.

Of the London street Pears but very few fell to the lot of the street hawkers in 1879. The Hessle, which is one of the Pears most largely grown in the London market gardens, was a full crop, and, indeed, the country throughout, in England and Scotland alike. At Chiswick, as also at Newburgh, in Fife, N.B., a great Pear growing district—perhaps the best in Scotland—the fruit were very small and scarcely worth gathering, in fact all over the country very few came to anything like maturity. It will thus be seen that though the Hessle Pear was a good crop, there were yet but very few indeed in the streets. On the other hand, Beurré d'Amanlis was a good Pear this year in the North as well as at Chiswick. It was singularly good in appearance for the season, though wanting in flavour. Louise Bonne of Jersey was conspicuous for its badness: it is a variety largely

grown for market round London, and it is a free cropper, but this season it attained but small size, and the fruit became covered with a kind of fungus, and cracked very much, hardly a fruit attaining to its natural size. Glou Morçeau showed a good crop, and though the fruit grew they never attained to full size, and, like Louise Bonne of Jersey, cracked very much indeed; Beurré Diel scarcely ripened at all, though the fruit grew to a fairly good size, and those that matured themselves did not become melting. At Christmas the examples of this variety lying in the fruit-room at Chiswick were as hard as when gathered. Williams' Bon Chrétien, usually a good crop round London, where it is so much grown, was this season but a poor yield and inferior in quality. Beurré de Capiaumount was also very poor and scarcely worth gathering where there was anything like a crop. If one wanted evidence of the lateness of the summer of 1879 it would be found in the fact that the Summer Doyenné d'Eté, which in an ordinary season ought to be ripe about July 10, was during the past summer not fit to gather till August 20. Beurré Bosc was inferior in quality this year, and but an indifferent crop.

In regard to some other varieties that may in course of time find their way for sale into the London streets, it may be remarked that Thompson's Pear produced a fairly good crop, and, be it noted, fully up to the average standard of quality. This occurred in several instances numerous enough and sufficiently widely distributed to justify the remark that it proved one of the best flavoured Pears of the year. Aston Town, considered a dessert Pear of the first quality, and in use during the end of October and beginning of November, was this season a heavy crop; it is a variety largely grown by Mr. F. T. Dancer, of Little Sutton, Chiswick, who has a number of large trees that invariably bear fruit of the finest quality. No Pear this season, however, proved better than Beurré d'Amanlis, as it came large in size, though it is not a variety of first-rate quality.

Pitmaston Duchess was singularly fine in 1879, and produced a full crop generally. It is one of the handsomest of Pears, with an extremely rich and juicy flesh, very tender and melting. Jargonelle was a fairly good crop, and fully better flavoured than usual this season. The moist character of the summer might have had something to do with this, for in Scotland the Jargonelle is generally superior in quality to that shown as English grown fruit, especially in the South, the climate being cooler and moister. Marie Louise was very poor in common with others. There was a fair sprinkling of Beurré Rance, but none became melting. Belle Julie, which has the reputation of being a most delicious Pear, becoming ripe about the end of October, was an abundant crop at Chiswick, and also with Mr. Dancer, and of excellent quality. It is a russet-brown Pear, of medium size, and will be much grown by-and-by when it is better known. It should take a leading place as a street Pear. Jersey Gratioli was of very different character last summer.

The fact that early Pears produced a much better crop than late ones is worthy the attention of planters. Much depends on position and soil, but in the long run early varieties can no doubt be relied upon to produce larger average crops than late ones. *R. D.*

THE GREAT YORKSHIRE GALA AND FLORAL FÊTE.—The annual meeting of guarantors and life members was held in York recently, Mr. Alderman Terry in the chair. The sum of £500 was voted for prizes in the floral department for the exhibition in June next, and £150 for music, and £310 for other attractions. This will be the twenty-second exhibition of the Society, and the *esprit de corps* animating the committee will ensure, as it always has, the full confidence of the exhibitors and the public.

New Garden Plants.

ONCIDIUM XANTHOCENTRON, *n. sp.**

This is a new member of the group represented by Oncidium pyramidale, Lindl., most probably regarded as a variety of this by the late Professor Jameson. It is nearest Oncidium elephantotis, but the cheeks of the tabula of the column are square and very prominent, the wings of the column are semiovate, blunt, bilobed (hence emarginate), the crest is distinct and entire, the lip is of a dark colour with a nearly rhomboid yellow centre. The petals are hastate at the base, shortly stalked and provided with a dark spot over the base. The inflorescence is an exceedingly dense panicle. If the dark colour of the lip is elegant, the contrast of colours is also very marked, and the plant supplies an almost novel effect. It is one of the recent South American discoveries of Mr. F. C. Lehmann, the energetic and successful traveller. *H. G. Rchb. f.*

THRIXSPERMUM MOOREI, *n. sp.*†

This plant, which may bear the name of Sarcochilus Moorei in gardens, came from the Royal Exotic Nursery of Messrs. Veitch, who had it from Mr. Charles Moore, the very successful director of the Sydney Botanic Gardens. It came from the island of New Britain, of the group of Solomon Islands. The novelty is inscribed to our excellent colleague, with the expression of the friendly hope that we may soon have once more a fresh opportunity of seeing him in Europe, where a hearty reception always awaits him. The leaves exceed 2 inches in breadth, and are nearly a foot long, which gives them an unusually broad appearance. Their substance may be called coriaceo-chartaceous. They may be bilobed at apex, but I have not that part in integrity. The peduncle is half the length of leaf. It is of a brownish-purple colour, and its superior part bears a cylindrical, lax, many-flowered raceme. The flowers are equal to those of Thrixspermum lunatum. Sepals and tepals light ochraceous yellow, with numerous elegant brown blotches. Side laciniæ of short, small, sacciform lip strong falcate, middle lacinia very much shorter, retuse, with two marginal incrassate parts, and two very small and very short conical horns inside, and a hippocrepic area of hairy papillæ under the nail of the lip in the short blunt conical pouch. The pollinia are dark yellow and very waxy. *H. G. Rchb. f.*

LÆLIA ANCEPS (*Lindl.*) ROSEA, *nov. var.*

Once more a new variety of Lælia anceps, having bright rose-coloured flowers, but the margins of the lip's laciniæ are darker, though not so dark by far as is the genuine variety. Even the dark lines on the yellow disk of the lip are not so dark as in the common variety. I obtained this very curious and pretty novelty from Mr. Day, who found it in Mr. Bull's establishment. *H. G. Rchb. f.*

MACRADENIA BRASSAVOLÆ, *Rchb. f.*

This is a curious species. A single inflorescence, seen in a herbarium without bulb and leaf might be thought to belong to some Epidendrum in the way of flamineum, carneum, or bivalve. The pseudobulbs are ligulate compressed, not much exceeding 1 inch in length and ½ inch broad. One or two cuneate oblong-ligulate acute leaves, reaching 5 inches in length, and ½ inch in breadth. A nodding peduncle bears numerous dense flowers, which have all six organs long acuminate, exceeding ½ inch in length; sepals and petals cinnamon with ochre-coloured margins. The trifid lip has rhomboid side laciniæ and a very long cuspidate middle lacinia. It is white, with purple streaks with yellow borders to the side laciniæ. The staminodes are yellow with red borders, and the long beaked rostellum has purple borders. This species is distinct from Macradenia triandra by its aristate sepals and petals and lip, not to speak of the lip's other discrepancies. It was discovered I believe in 1850 or 1851 by the late M. Warscewicz in Guatemala, and described by me in 1852. Then it appeared, I think, in 1864, in M. Linden's garden, having been sent from New Granada by the late Wallis; finally quite recently I had the success of obtaining a nice living plant with its lovely nodding raceme from Messrs. Veitch. It had been sent them by Mr. Charles Winn, Birmingham, who obtained the plant at one of Stevens' sale meetings amidst Oncidium Kramerianum. Many thanks for the good specimen. *H. G. Rchb. f.*

* *Oncidium xanthocentron*, n. sp.—Affine Oncidio pyramidali, Lindl.: inflorescentia densissima ditissima; sepalis ligulatis obtusis, tepalis unguiculatis hastato oblongo-ligulatis obtusis; labello pandurato, basi latiori, lobis posticis retrorsis obtusangulis, callo quinquedentato, dentibus lateralibus biseriatis, in angulo inter utrumque unidenticulatis, alis columnæ oblongis emarginatis (hinc panduratis); tabula infrastigmatica inferne quadrata producta.—In Andib. det. cl. F. C. Lehmann.

† *Thrixspermum Moorei*, n. sp.—Foliis loratis latis oblongo ligulatis apice—pedunculo dimidium folium æquante parte superiori racemoso; bracteis triangulis minutissimis; sepalis tepalisque oblongis obtusissime acutiusculis seu obtusis unguiculatis; labello unguiculato reniformi conico, laciniis lateralibus porrectis semi-lunato falcatis magnis, lacinia mediana retuso emarginata minutissima, corniculis conicis geminis introrsis appositis, linea hippocrepica velutino papillosa sub columna in sacco, rostello bidentato; polliniis cereis densissimis. Sepala et tepala ochraceo-flava elegantissime atropurpureo guttulata. Labellum maculis striisque atropurpureis et aurantiacis. Columna flava maculis brunneis pallidis.—New Britain mis, cl. Ch. Moore ad cel. merc. Veitch. *H. G. Rchb f.*

PACKING GRAPES FOR MARKET.

IN our last volume, p. 624, we gave some particulars of the system of packing Grapes for market so successfully practised by Mr. Coleman, of Eastnor Castle Gardens, which we now supplement with an illustration (fig. 20) of one of his boxes as packed, prepared from a photograph placed at our service by Mr. Webber. The woodcut represents a box of the size recommended by Mr. Coleman, viz., 24 inches long, 14 inches wide, and 6 inches deep, inside measure, and made of ¼-inch deal, with the lid all in one piece. We need not now repeat the details of Mr. Coleman's method, but for the convenience of those who may desire to refer to them we add the reference, viz., p. 624 of our number for November 15 last.

ART IN THE CONSERVATORY AND GREENHOUSE.*

THE subject under the title of "Art in the Conservatory and Greenhouse" is a very wide one, and the limited time, both at your disposal and mine, will render anything like an exhaustive paper quite out of the question. A few leading details, from a constructive and architectural point of view, is all that I can pretend now to contribute for your discussion.

The great advantages of conservatories and glass-houses of all kinds, both in immediate connection with dwelling-houses and as detached buildings in garden grounds, are, of course, beyond dispute, while all intelligent minds can but find delight in the cultivation of flowers and fruit, even if circumstances will but allow of such a pastime being conducted only in a very limited degree.

Nothing can add to the grace and comfort of a house so much as natural flowers. Decorators and furnishers, whether they belong to the classic, the mediæval, the Queen Anne, the French, modern, or any schools, will never make the comforts of a well-appointed dwelling in any sense complete without some judicious use of flowers in their living state. The charm of a cottage, more than often, is to be found in its window flowers, while the not very hospitable arrangements of an almshouse home are rendered enviable by the charmingly bright flower-beds which are nearly always found in connection with such dwellings.

Simple and trite as such commonplace remarks are, they refer to facts which really lie at the root of the matter; for if there be one question of domestic economy, so to speak, occupying the attention of ordinarily cultivated people at the present time more than another, it is, in hackneyed phrase, "art at home." How to make one's home in some sense artistic? In the days of the Gothic Revival, as it is called, almost every effort was concentrated on the artistic building and furnishing of churches; and so generally has this feeling extended itself that Nonconformists of every shade have long since become by no means behindhand in imitating the High School of the Church of England, which may claim to have originated the movement in ecclesiastical matters. For all this enthusiasm architects can but be very thankful—this desire on the part of the public for a more artistic and appropriate treatment of things. Of course much of it is no deeper than mere fashion, still use seldom fails to prove itself a second nature; and already the honest seeking for art at home has established itself as a fact. Furniture manufacturers, paper-hangers, and even drapers, have had discernment sufficient to notice this; and further it may be remarked that in several very important instances much that should have fallen into the hands of architects to design has been executed by trading firms such as these, while some tradesmen have gone so far as to charge and obtain professional fees as decorative artists. The architectural profession has failed to secure much of the work alluded to, chiefly because it shrank somewhat from the opportunity thus presented; and it has been much the same with horticultural buildings, which either have been treated as

* A paper read before the Leeds Architectural Association, by Mr. Maurice B. Adams, A.R.I.B.A., on Thursday, January 15, 1880.

of very secondary importance, or relegated to the carpenter and builder to design.

Why should anything do for a conservatory? Often, and more than often, one sees adjoining a pretentious and evidently costly house a mere glazed shed of the ugliest proportions, evidently the production of some house-carpenter, or mere greenhouse builder; and occasionally when an attempt has been made by the architect to render the conservatory in keeping with the architectural character of the house, it is to be feared that almost all the requirements of a building for plant growing have been overlooked, the chief and only thought being to make the structure architectural.

In the days when Gothic was thought to be the only style for every kind of building, some of the most singular things conceivable were built in the way of conservatories. All the glories of the stop chamfer were intensified; and heavily-braced framing, which was quite out of place, with diagonal jointed boarding *ad lib.*—in short, all the incongruous mouldings and shapings of the residence itself—were brought to bear in the glasshouse adjoining. And if one looks back to earlier days, when classic architecture was thought more suitable, it will usually be found that conservatories were constructed in such a heavy style, and of such lofty proportions, that it was almost impossible for any gardener to grow either flowers or fruit with success in them. But surely at the present time there can be no excuse, seeing that eclecticism rules with absolute sway in everything, especially in art. I do not say that such a rule is a good one, far from it; but it is evident that no trammels of any architectural school need prevent conservatories and horticultural buildings from being treated in a common-sense and really artistic manner, whether they belong simply to the limited form of a window Fern-box and glasshouse of a town dwelling flat, or the more extended character of conservatory proper and winter garden.

The regular nurseryman's glass buildings also might with advantage, and without much extra cost, be made more picturesque; and the thought is worth consideration, even from a money-making point of view, seeing that his stock would show to better advantage, though it is to be feared that a long time will elapse before many are led to take this view of the matter.

On the walls are exhibited a series of more than thirty designs of buildings, embracing most forms of garden architecture, which I have prepared for execution alone and in conjunction with Mr. E. W. Godwin, F.S.A. These designs must be taken simply for what they are worth, and judged according to their merits; but probably they will illustrate my ideas better than a written description alone of what one has carried out. At the conclusion of my paper I will briefly allude to some of the drawings in particular. It may, however, be here remarked that nearly all the exhibited designs are in either "the Adams'" style, or, perhaps, rather in what has been called "Queen Anne;" and it is in this respect of style, I fancy, that we have a considerable advantage over those who worked either in the classic or Gothic manners. Neither classic nor Gothic forms are, *per se*, suited for the interior finishings of ordinary domestic dwellings now, and most people will, I think, agree that the latter styles just referred to are eminently adapted for our modern requirements. Mr. E. W. Godwin has very cleverly introduced an adaptation, which he calls Anglo-Japanese, for one or two conservatory designs, and these will commend themselves to you. There is this to be said, however, about styles: that although the "Free Classic," to use an appropriate term, lends itself to the horizontal lines and square openings of our modern houses, it really matters but very little what style a thoroughly competent architect determines to work in, though of course he will succeed best in the style with which he is most familiar, but under most circumstances a true artist is able to produce a suitable design, with thought and study, in any style; and he often, out of the most elementary materials, succeeds in giving his client a well-proportioned and inexpensive building, devoid at once of bad taste as well as the commonplace. On the other hand, an indifferent architect or designer will fail in producing anything good, be the style or outlay what it may, and the chief cause of failure is generally to be found in the fact that too great an attempt is made. And if this be true in house and church building, where the precedent is frequently followed, how much more must one expect it to be the case in horticultural buildings, in which the most simple forms are needed, and where all pretence should carefully be avoided.

Any architectural design worthy of being classed as a work of art should first of all be simply the outcome of the purposes for which the structure is intended, and it must always be folly on the part of the architect if he attempt to persuade himself or his client that a building is in good taste when it fails to fulfil the objects for which it was built. A conservatory of whatever kind must, above all things, be a practical building, and there is no reason why it should not be made in an equal degree a thoroughly artistic one, even where limited outlay governs the proceeding, provided, of course, a reasonable amount is to be expended.

Requirements to be Met.

With these preliminary remarks we may turn to the practical requirements of the class of structures under notice, in all of which light and heating requirements, with a ready means of ventilation, are among the chief considerations to be observed. The working houses in a garden—that is, the houses which are exclusively devoted to the growing of plants and fruit, are rather numerous. They comprise the plant-house, intermediate-house, stove, forcing-houses, propagating houses, Orchid-house, vineries, Peach-house, or orchard-house, Pine-pits, Melon and Cucumber houses, &c. In large establishments we frequently find houses devoted to one particular flower, as Orchid-houses, Camellia-houses, Azalea-houses, Palm-houses, Rose-houses, &c. Vineries have also to be so arranged that ripe Grapes may be had all the year through. In order to do this, special attention has to be paid to heating, so as to ensure whatever temperature may be required, no matter what may be the temperature out-of-doors. It is also of equal importance, as I have just said, that a thorough ventilation should be obtainable at any time, and without special attention to these points in particular no house can be considered a success. To briefly notice the various houses already enumerated may not here be out of place, giving at the same time time a few details, most of which will be of service to an architect who may have to build glasshouses for general purposes of any kind, such as those in connection with houses especially requiring a more ornamental treatment than the special buildings now referred to.

Plant-houses.

We will take the plant-house first. This is frequently made a span-roofed structure, and 18 feet wide is found to be a width which will admit of the most advantageous arrangements of fittings. It is usual to place a flat stage on either side and a stepped one in the centre, thus leaving a walk all round the house. The pipes for heating can be conveniently arranged under the side stages. A span-roof is the best form that can be erected, as the plants, having light all round them, are not so liable to be drawn to

Fig. 20.—Mr. Coleman's method of packing grapes for market. (see p. 104.)

one side or the other, and thus become of bad shape, as they are likely to be in lean-to houses. A span-roof house should be placed with the ends north and south, as by this means each side secures an equal amount of sun. The length from end to end may vary according to circumstances, but it is generally advisable not to have one house more than 40 or 50 feet long, as by dividing it up and heating each house separately, the gardener is afforded greater facilities for growing his plants. The heating apparatus can easily be regulated in connection with one furnace, as at Kew, where one big boiler heats three or more houses.

The HALF-SPAN house is the next best, and is very frequently used where a back wall exists. The light is not so well distributed as in a span, but the house has a great advantage over the lean-to house for plants. Internally, the most convenient arrangement will be to have a flat stage in the front and a stepped stage at the back. I may here say that if no other provision be made for obtaining water, warmed in proportion to the temperature of the house in which it is to be used for watering the plants, a tank or cistern should be arranged in the floor of the structure for this purpose, a trough under the passage-way is a good method.

A "LEAN-TO" would be fitted in the same way. Both half-span and lean-to buildings should run east to west, facing the south, and rather inclining towards the east. In this country the angle of 45° is, for most purposes, found the best pitch for horticultural buildings generally.

For plant-houses 1 foot of 4-inch pipe for every 28 or 30 cubic feet of air will be found to give a proper temperature.

The INTERMEDIATE house is used for growing plants that require a somewhat higher temperature than the plant-house, but not so high as the stove. One foot of 4-inch pipe to about 25 cubic feet of air will answer best in this case, and in other respects the building resembles the plant-house.

THE STOVE.

The stove-house is more usually made with iron stages carrying slate shelves covered with stone-chippings, sand, or small shells, on which the pots stand, thus obtaining a soakage for the superfluous moisture after watering; and from an artistic point of view, this system of gravelling the shelves with small shells is much to be recommended, especially in ornamental houses, where the ground space should be laid out, as far as possible, in natural beds instead of devoting the room entirely to stages. If wooden stages were employed in stoves similar to those employed in the plant-house, where they are made of stout laths 1½ inch by 1 inch, about ⅜ inch apart, it would be found that, owing to the great heat kept up and the quantity of moisture usually produced, they would be liable to speedy decay. The stove may be either a span, half-span, or lean-to structure. Each form has its advantages, though, all things considered, the span-roof is the best. This house is heated in the proportion of 1 foot of 4-inch pipe to about every twenty cubic feet of air, and the same system applies to the Orchid-house. These proportions must, of course, be taken as a medium guide, for it is evident that the quantity of pipe necessary to keep up a given temperature will vary according to different situations and local influences; thus houses in the North of England and Scotland will require more pipe than those in the South of England. Also a span-roof, because it has a much greater cooling surface, will require more pipe than a half-span or lean-to where the back consists of a brick wall; but the proportions of heating power which I have just given will be found sufficiently accurate for a basis.

HEATING.

At the risk of being tedious, permit me to say a few words more with reference to the subject of heating, because the particulars may be of value for future reference, when a more strictly accurate rule than the above calculations is required. It has been found from careful experiments that one square foot of glass will cool 1¼ cubic feet of air per minute, as many degrees as the difference between the external and internal temperature. Therefore, having taken out the number of square feet of glass, multiply this by 1¼, which will give the number of cubic feet of air to be warmed per minute. Then proceed by the following rule:—Multiply 125 by the difference between the extreme external and internal temperature, and divide the product betwixt the temperature of the building and the pipes (the latter being usually calculated as at 200°); this quotient being again multiplied by the number of cubic feet necessary to be warmed per minute, and divided by 222, will give the number of 4-inch pipe which will be required to bring the building to a proposed temperature. Suppose it be required, for example, to ascertain the quantity of pipe to heat a vinery with 400 square feet of glass to 75°, and, estimating the lowest external temperature at 20° the calculation will be as follows:—125 × 55 (difference of external and internal temperature) = 6875 ÷ 125 (difference between temperatures of pipes and house) = 55, which multiply by 500 (number of feet of air to be warmed per minute) = 27,500 ÷ 222 = 123¾, the number of feet of 4-inch piping necessary.

(To be continued.)

DATE PLUMS.

WHEN in Singapore a little more than a year ago I caught sight of a bronzy skinned Celestial trudging along, with what appeared to be two splendid baskets of Trophy Tomatos—a closer examination, however, proved them to be ripe fruits of Diospyros. My constant practice when abroad was to learn the Malay name of every fruit and beautiful plant I saw, and the reply to my question in this case as to the name of the fruit was "Pisang Kaki." Now "Pisang" is the Malay name for the Banana, and on my saying as much to the itinerant dealer in Persimmons his reply was "Tuan etu, Betal; eine boah line matcham, eine boah Kaki, Hongkong punya"—which meaneth, "That is quite true, sir; but these fruits are of another kind —Kaki fruits from Hongkong!" The Celestial well loveth to sit upon the outer barbarian, and in this case his pleased grin told me of his inward chuckling at my ignorance. The fruits were very fresh and fine, of a Tomato-like red colour, covered with a delicate bloom. I purchased half a dozen of the finest specimens for a few cents, and made a careful study of them. They were perfectly ripe, and showed no signs of being bletted, although I was afterwards told that they were gathered before perfectly ripe, and then packed in boxes of fine clean sawdust for transit. That they had been most carefully packed and handled their freshness and delicate bloom showed very plainly. I afterwards found out that these and other Chinese fruits are brought down to Singapore every season, and are as much appreciated by the Chinese inhabitants as the Apples of Australia are relished by Europeans, even although the choicest of tropical fruits, such as Mangosteen, Bananas, Mangoes, &c., may be had at a tithe of their cost.

I did not detect any evidence of the sutures or ribs so evident in D. Kaki var. costata, as figured in the *Revue Horticole* for July 16, 1871, in the first fruits I saw—all the batch being perfectly plump and smooth, and of an ovoid form, as shown in my sketch. Some fruits were perfectly seedless—others, again, had from five to eight seeds, similar in size and shape to those of Scarlet Runner Beans, but flatter, and of an uniform dark brown colour. The pulp surrounding the seeds was Apricot-like, having however a trifle more juice, and there was a rich sugary after-taste followed by a slight astringency. The puckery or astringent after-taste was most apparent in the case of the fruits which contained seeds. Like the good boy in the fairy tale, I saved the seeds of the fruit I ate, and they germinated in the garden here about three months ago. They came up very quickly, about a fortnight after they were sown. Their mode of germinating is interesting.

I think it was the late Thomas Rivers who said that the public generally required very clear and distinct directions as to the planting of fruit trees. The great fact, as he remarked, was to point out clearly that the root end of the trees was to be placed downwards! Perhaps I did not sufficiently observe this advice, and so planted my Diospyros seeds wrong way upwards, at any rate the radicle, after forcing its way out of the testa, curved over like a shepherd's crook and commenced its downward course. At this stage the seeds and radicle were entirely covered with soil, but the downward growth and pressure of the radicle pushed up the crooked neck above the soil, and eventually the plumule is, and apparently by this action of the radical, drawn or pushed out of the testa. I observed that the radicles after pushing downwards about an inch, took a sudden bend or deflection, and I thought at the time this might be to obain a fulcrum from which their full growth-pressure might be brought to bear in pushing the curved neck upwards, and so drawing the plumule and cotyledons from their imprisonment in the testa or seed-coat.

It will be seen that the above account does not altogether coincide with that of M. Naudin* inasmuch as the fruits are called "Kaki" by the Chinese themselves, as I afterwards found out from an educated Chinese gentleman and an enthusiatic amateur gardener to boot, in Singapore. Then in the first specimens I saw and sketched there were no indications of furrows or ribs, and there were both abortive and perfect fruits so far as good seeds are concerned. I am well aware that it is only by comparing the wild types of Diospyros that any lines of demarcation of value are to be found. The question I would venture to propose, however, is, are there really two wild types of Diospyros, the one a native of China and Mongolia, the other confined to Japan?† I saw at least a dozen varieties after my sketch was made in Singapore, some with ribs and sutures, and of all tints—green, yellow, orange, and others deep sub-translucent crimson, like the fruits of Solanum Dulcamara when perfectly ripe, and of various sizes. Some were like D. Mazeli (of *Rev. Hort.* 1874, p. 70), others like D. Kaki var. costata, whilst some recalled the glimpse and memory of Mr. G. F. Wilson's variety, fruits of which I saw and tasted at South Kensington a year or so before.

I am afraid that size or shape or the fertility or otherwise of such long domesticated fruits as the Diospyros are not sufficient as data on which to found any distinctions of specific importance, especially as it is now known that both Chinese and Japanese gardeners are such adepts in raising and selecting seedlings of this popular fruit, the finer kinds of which are as carefully grafted as our finest Apples or Pears at home. Whether any of the cultivated varieties will ever prove sufficiently amenable to Orchard-house culture in England so as to make them popular, is a question that time and trial alone can settle. Of the distinctive beauty of the fruit there is no question, and as grown and ripened in China it is certainly equal to a fairly good Apricot, which is no mean praise. Some of the varieties are being tested by Californian fruit-growers, and the dried fruits from Japan may soon be expected in our shops, although the *Rural New Yorker's* estimate of them—"they remind us in flavour both of the Fig and the Date, although they are inferior to either,"—is not very high praise! Still a new addition to dessert or dried fruits affords variety, and in large cities incredible sums are yearly spent in novelties of this class. It is a sort of speculation which is nearly akin to gambling and the love of travel, a Micawberish state of mind, anxious to see what will "turn up" next? *F. W. Burbidge, College Botanic Garden, Dublin.*

MANCHESTER BOTANICAL AND HORTICULTURAL SOCIETY.—At the annual meeting of this Society, held on Monday last, the President, the Earl of Derby, in the chair, the report of the Council, which we published last week, was adopted. In seconding the motion for its adoption, Dr. Watts stated, with reference to the Society's garden at Old Trafford, that their long range of glasshouses, which were erected fifty-two years ago, were giving way as regarded the framing rapidly, and they must contemplate a considerable outlay for their renewal. The Secretary (Mr. Findlay) had a plan by which he proposed to make the long range semicircular, starting from the first exhibition-house and running back, over land which was now, at any rate to a great many of the proprietors, *terra incognita*, and by which means greater space would be afforded, especially for promenading. He need not say that that would be a very costly operation, and they would need all the help they could possibly get to carry it out. On the motion of Dr. Watts, seconded by Mr. Samuel Barlow, it was also resolved — "That the Council be at liberty to issue sixpenny admission tickets, to be distributed by the proprietors and subscribers, admitting at any time, except on exhibition and promenade days."

* See *Gardeners' Chronicle*, 1880, n.s., xiii., 15.

† The species and varieties alluded to by M. Naudin are thus set down by M. Lavallée in his Arbor. Segrezianum, p. 161:—

D. Kaki, L. fil.: Kæmpf. Amœn., icon., p. 806.—China.
D. Schi-Tze, Bnge. Enum., p. 237.—China borealis.
= *D. Kaki*, Carr. (non L.), Rev. Hort. 1869.
Var. *costata*.
D. costata, Carr. Rev. Hort. 1870: 1874, p. 410 — Hiern, Camb. Phil. Trans., vol. xii., 227, cum icon.
Var. *Mazeli*.
D. Mazeli, Carr. Rev. Hort. 1874, p. 70.

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KUBANKA AND SAXONKA WHEAT.

IN the *Gardeners' Chronicle*, vol. xi., p. 652 (May 24, 1879), appeared an account of my first year's experiments with Kubanka and Saxonka Wheat. It will there be seen that specimens of these two varieties in ear had been furnished from Samara, in Russia, by request of Dr. Asher to Dr. Charles Darwin, for the purpose of testing the opinion that Kubanka grown repeatedly on inferior soils assumed the form of Saxonka. The specimens were put into my hands for experiment.

I continued my experiments in 1879 with my own seeds of the previous crop. I had planted rows of these Wheats in the garden on October 24, 1878, but although some of the seeds germinated, none of the plants survived the severe winter.

The snow lay so long in the spring of 1879 that it was not till March 31 that seeds could be planted. At this date a row of Kubanka and a row of Saxonka were put in alongside of each other in the garden, of the best seeds of crop 1878. The Saxonka plants became much stronger than the Kubanka, and produced three or four times as many tillers, but owing to the extreme wetness and slowness of the season no flowering took place till so long after the usual period that it was then evident there would be no fruit, and that the experiment would be of less value for its intended purpose than had been expected. The plants were also attacked by red-rust. But although fruit was not here produced, the fact was shown by these two rows that no change had taken place in the character of the respective ears; the Kubanka remained a thickset ear, however much dwarfed in size, and the Saxonka remained an ear closely resembling, or identical with, "Fern" or awny spring Wheat.

Beside these rows a little plot was sown on April 2 with a mixture of 106 seeds of each of the Wheats, broadcast. The resulting plants were so poor and diseased, carrying no fruit whatever, that it was useless to attempt any estimate of the quantity of any part of them. It was noticeable, however, that the unfavourable conditions which had killed many of the seeds and stunted the whole crop had not converted all the plants into the Saxonka form. There were more Saxonka plants than Kubanka, but there were fewer of each than 106.

On April 16 I mixed 350 troy grains of the Saxonka which had grown amongst Oats the previous year and was not rusted, with nearly the same weight of unrusted Kubanka and as much more partly rusted as made the Kubanka double the weight of the Saxonka, or 700 troy grains, and sowed the whole broadcast in a corner of a field ploughed out of grass.

As in the former cases the pollination came far too late to admit of general ripening. The Saxonka here also showed the highest vitality, for although a double weight of Kubanka had been sown, the number of Saxonka plants greatly exceeded the number of Kubanka. When cut in the beginning of November, and separated from each other, the Saxonka plants weighed nearly two-and-three-quarter times as much as those of the Kubanka. Some of the Kubanka plants were better than any of the Saxonka, reaching a length of nearly 5 feet, carrying ears 3½ inches long, having ten ranks of spikelets on each side, some of which showed four fertile florets or grains, and giving sixty and seventy grains to the ear; the best grains weighing about half a grain troy.

The best plants of Saxonka were 4½ feet in height, with ears of eight ranks of spikelets, each for the most part carrying three grains, and each grain averaging in weight about '42 of a troy grain.

In both varieties of this plot the seeds are sufficiently matured, though the latest sown, to be available for the production of another crop; but in the Saxonka the process of ripening is the most advanced, arising from the fact that the Saxonka is more of what is called a spring or summer Wheat than the Kubanka. All Wheats are able, in various climates, more or less to accommodate themselves to autumn or spring sowing; but in some sorts the process of assimilation is naturally more rapid than in others, and hence the classification into winter and summer Wheats. That such a classification exists may help to point out that the trimestrian Wheats, probably of the old Roman farmers, have not been evolved in recent times. But although Wheats have been loosely classed as summer and winter some are equally adapted for autumn and spring sowing; and the separation of so-called species is really made, not in reference to the time of seeding, but in reference to the character of the spike. Whether a persistent sowing of a spring Wheat in autumn has ever changed its physiological aptitudes is very doubtful; certain it is that no such treatment has demanded a new description of the spike.

Now, what are the conclusions to be drawn from the present experiments? Where the two rows of different seeds were sown separately and produced plants like the plants from which they had been derived, the inference is inevitable that no transmutation had taken place. Where two of Kubanka to one of Saxonka were sown as a mixed crop, producing eleven of Saxonka to four of Kubanka, uncorrected imagination might conclude that many of the Kubanka seeds had produced Saxonka plants. But we know as a fact of the case that if the Kubanka seeds had been equally vital with the Saxonka, there should have been about double the number of Kubanka plants which there were of Saxonka; in reality there were less than half as many. And if in this experiment a certain number of Kubanka seeds produced Kubanka plants, while in another experiment all the Kubanka seeds which grew were certainly known to have produced Kubanka plants, it is more probable that the Kubanka seeds which did not produce Kubanka plants died, than that they produced Saxonka plants. So far as the logical elements of the case go, it is not absolutely certain in the case of the mixed sowings that some of the Kubanka seeds did not produce Saxonka plants, or some of the Saxonka seeds Kubanka plants; but it is certain that there were more of Saxonka seeds sown than there were of Saxonka plants reaped, so that no transformation was needed to produce any one of the Saxonka plants; and thus certainly the best conclusion is, that the predominance of Saxonka has here arisen, not from transmutation of Kubanka, but from the higher or more immediate vitality and fertility naturally inherent in the cells and protoplasm of the Saxonka embryo, under the circumstances.

Dr. Asher, who is well acquainted with the phenomena here in question, and would only have proposed them for solution for good reasons, in some observations he has done me the honour of making on my first year's experiments, objects that "Kubanka Wheat, far from being less prolific than Saxonka, is, on the contrary, the most prolific of all known kinds of Wheat; eight ears from one grain, and forty grains to each ear not being very rare in favourable years on the proper soil." I have no doubt that these facts are strictly correct, some of my own Kubanka plants giving a similar return. Kubanka Wheat can hardly be distinguished from the old Pole Rivet Wheat of England.* Many ears of this variety grown by me show from 80 to 100 grains, the plants carrying from six to twelve ears. But this is as nothing to the potential fecundity of a seed of almost any variety of Wheat. Planted at the proper depth, on the proper soil, in a favourable year for tillering, a seed of Wheat will give 3000 or 4000 returns. But the present contention is, that the inferior or half-exhausted soils in Russia or elsewhere are not able to develope so high a fecundity in Kubanka Wheat as in Saxonka, which makes less demand upon physiological agencies. For centuries of the worst Scottish agriculture, much of the soil was unable to produce anything but the "small Oat" (Avena strigosa); and there was just the same reason probably for supposing that the "great Oat" (all forms of Avena sativa) had then changed into the small Oat, as there is for supposing that Kubanka Wheat changes into Saxonka.

Dr. Asher makes makes various other objections to my hypothesis for the intrusion and predominance of Saxonka. He informs me that the appearances in question were observed by him on the land of Count Orloff-Davidoff, one of the most prominent agriculturists among the landed proprietors of Russia; that the field he saw was quite a mixture of Saxonka and Kubanka, although the intention of the superior tenant, a highly intelligent and industrious German, certainly was to produce only Kubanka, and everything had been done to attain that aim; that some of the more intelligent Russian landowners, in order to prevent the degeneration of Kubanka, choose after the harvest the finest ears one by one, employing their most careful people for that task, and as the aspect of Kubanka and Saxonka ears differs very widely, errors on any extensive scale are quite out of the question, and yet these agriculturists are obliged to renew their seed at least every five or six years by purchasing from the finest virgin steppe land; and further, that the grain which in St. Petersburg and London is called Saxonka, is in Samara called "Peresod," signifying degenerate. The very name of Saxonka, it is added, is an important fact, since it appears from a careful study of the history of the German colonies in Russia that at the time this word was first used these people could not possibly have developed any European Wheat; Saxonka certainly being the development of a Russian grain which the German colonists found useful.

To the claims of transmutation, as thus stated, I have given a careful consideration. But I cannot concede that the Russian agriculturist is any better able to perpetuate an unmixed stock of any Wheat or other corn than the Scotch agriculturist; and no field of Scotch grain is other than a more or less mixed crop of various kinds. No care on the part of the farmer can prevent the shedding of grain by gales before harvest; and where, as in some parts of Russia, this shedding is all the seed of the following crop, the problem becomes too complex for observation to follow. The selection of Kubanka ears referred to, even were it carried the length of forming sufficient stocks to sow whole fields, has always to be weighted with the carelessness and inattention of servants. This hopeless method of improving seed corn is recommended by Columella, who tells us it was also approved of by Celsus (B. ii., ch. ix.). The former tells us likewise that "all common Wheat after the third sowing on wet ground changes into Siligo." And Henry Best, in his *Rural Economy of Yorkshire* (1641) informs us that among the "long read" Wheat "oftentimes" came up "a Wheate called driven Wheate having noe awnes," which hindered the sale of the main crop; showing the same facts as have given rise to the transmutatory solution. In my own small crop of a few handfuls, after having selected the Kubanka from the Saxonka, I found that three mistakes had been made. And the very fact that the task of selecting the proper ears can be set even to the most careful people, shows that the mixture is intimate and the difficulties greater than the determination to overcome them. *A. Stephen Wilson.*

(*To be continued.*)

* *Lawson's Manual* does not mention this Wheat by the name of Kubanka; but perhaps it is what is there called "Turkey Wheat," and by the French "Blé gros Turquet," "Polard rouge bleu;" "Gros ble rouge," &c., and may be what Tusser calls "Turkey or Purkey Wheat," which he says "many do love because it is floury." The great number of names which every form of Wheat has had from the time of Theophrastus utterly confuses inquiries like the present.

ORCHARD HOUSES.

THE general failure of hardy fruit crops for the past two seasons has already aroused healthy symptoms of practical action being taken, which it is hoped will be prosecuted with energy and vigour until some scheme has been formulated by practical horticulturists which will give a better return for material and labour than the meagre crops of 1878-79. The subject is a comprehensive one to deal with. It necessarily embraces a variety of homogeneous circumstances, which require experienced discrimination to thoroughly unravel, so that no case will be treated otherwise than upon its own particular merits.

Orchard-houses may now be called an established institution in horticultural circles. They will soon be more: they are destined before long to become convalescent homes for recruiting the shattered energies of thousands of fruit trees which are either barren or are fast languishing towards decay. The form an orchard-house should take, its position, and other questions relative to structural formation, are now attracting attention, and it is well that the subject should be discussed for the benefit of those who rely upon the horticultural Press for sound advice and information.

With regard to the size an orchard-house should be, I rather fancy that should be left in the hands of the occupier or owner to decide. The size of the house ought, however, to be in proportion to the size of the garden, exactly as the grounds surrounding a mansion or the conservatory should bear a relative proportion to the size of the mansion itself. An exception would, of course, arise in the case of market growers, where appearance would be set aside in favour of utility. Coming nearer to the point an orchard-house may be made of great benefit in small gardens which are not enclosed by walls. It may be made to

answer the purpose of growing fruit, and also of affording protection to one side of the garden by excluding cold winds.

The position of an orchard-house should depend upon circumstances, and as the first expense is a consideration, the earliest situation would be chosen in large gardens where a supply of Strawberries, French Beans, early Peas, Cauliflowers, Potatos, and other vegetables and salads are in request during the months of May and June. For this purpose, where there is a wall facing the south, it should be utilised, and in this case the house should be a lean-to with a hip-roof, and not less than from 16 to 18 feet wide, with a border 2½ feet in width along the back, and a path of the same dimensions, or a narrow grid path might be substituted with a 4½-inch brick wall, supported by light buttresses, running parallel with the outside of the path, in order to keep the trees trained on the back wall from travelling through the border where it was intended to be cropped with early vegetables.

If I were building an orchard-house or myself, and there were no existing walls which could be profitably utilised, I would decidedly prefer a capacious span-roofed house, running north and south, to any other, as affording the healthiest means of ventilation to the trees, as well as securing a maximum of sun and light.

There is yet another point I would urge upon intending builders, namely, that a narrow short house requires two ends and two doors as well as one that is larger. Many people who have not the benefit of practical advice think a small house must be comparatively cheap, which seems a reasonable assumption, while it is in fact proportionately dearer than the larger one. Take, for example, a house of any given size, 40 feet long, and express a wish to the builder of having it extended to 50 feet in length, and the comparative difference in the cheapness will be evident at once.

As regards the width of orchard-houses, I believe the original idea of having narrow houses has done more to render them unpopular than anything else. The reason is this: in the spring we very often have changeable weather, cold frosty winds, alternating with hot blinks of sun; air must be admitted, and in narrow houses the quick succession of cold air entering the house in volume has not sufficient room to disseminate itself or become mixed with the internal air of the house before it comes into violent contact with the blossoms, thus rendering the organs of fructification abortive in their action. Now as to cool houses, it should be borne in mind that during the past season of 1879, and its immediate predecessor, we have not had sufficient sun to ripen the wood of fruit trees without having recourse to artificial means where it was available; and it should also be remembered that during the spring months we are frequently visited with clear bright days, when the sun, acting upon the glass, excites vegetation to a degree which can only be counteracted by artificial warmth, which will lessen the disparity between the day and night temperatures. It is therefore better to have the means of safety in the shape of a flow and return 4-inch hot-water pipe at hand in case of necessity.

A modern orchard-house should be abundantly ventilated by machinery. Stone fruits such as Plums and Cherries delight in plenty of healthy air, and for these the span-roofed form of house is certainly the best, as the opening of the ventilators may be reversed according to the quarter the wind blows from, thereby securing a constant circulation of air. A plan I adopted in the management of one of the worst houses in Great Britain was to nail a sheet of tiffany inside the front ventilators all the time the trees were in flower, and keep the water in the hot-water pipes barely warm. The experiment resulted so favourably that perhaps reference to the fact will prove useful in similar cases. The genial warmth barely noticeable from the pipes circulating with the air, broken up as it were into threads by the perforated tiffany, was just the atmosphere for stone fruits to set in.

Shelving for Strawberries and other plants should be fixed "underneath" the top ventilators in order that plants when in flower may not be in direct contact with cold air. If the orchard-houses of the future are not more successful than those of the past it is not because there is anything wrong in the principle, but because the work is not properly carried out in detail. *W. Hinds.*

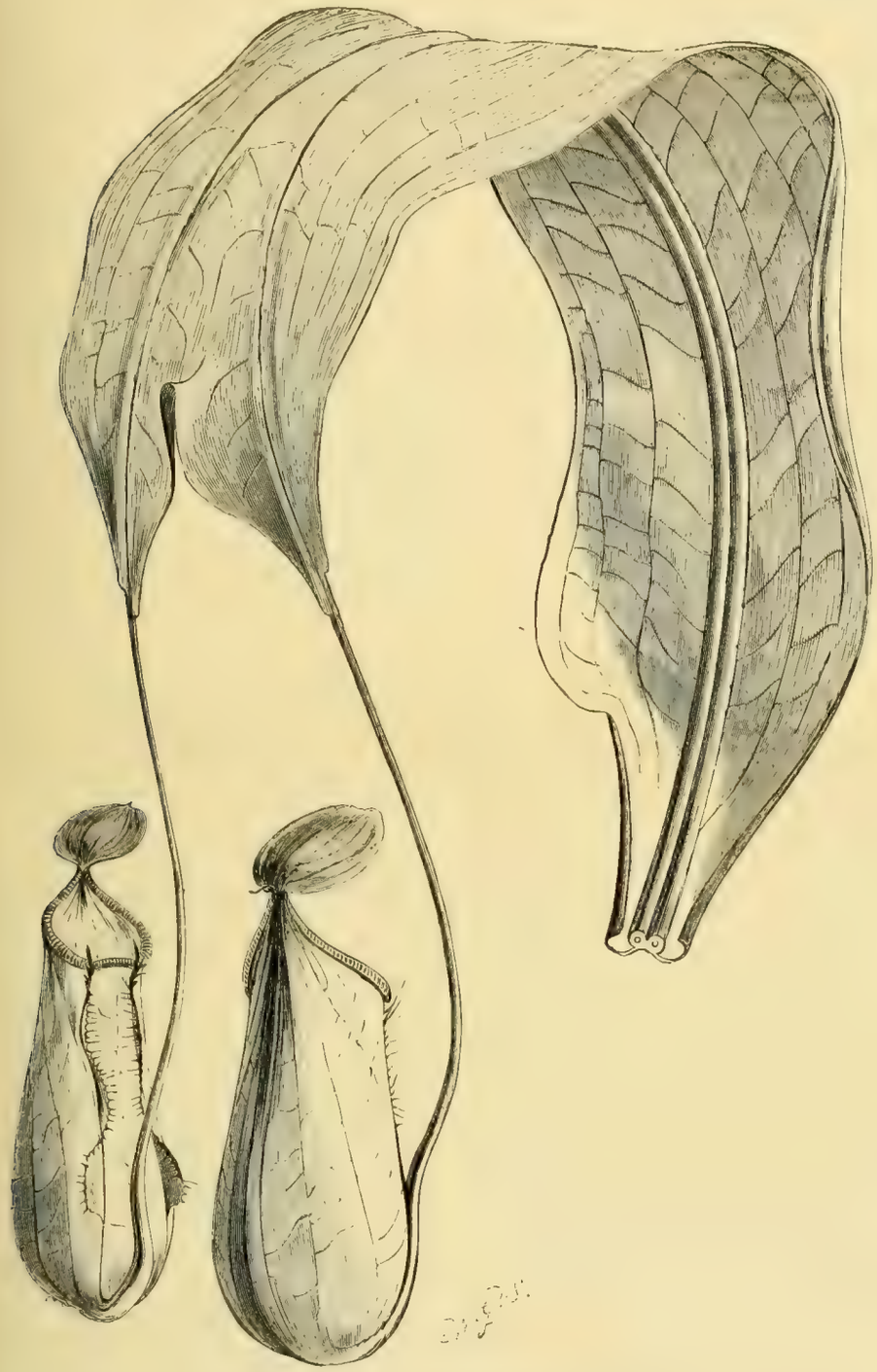

FIG. 21.—DOUBLE LEAF OF NEPENTHES ZEYLANICA.

A DOUBLE PITCHER.

OF course Shakespeare was a botanist—nay, a teratologist! "What proof?" This—see *Midsummer Night's Dream*, act ii., sc. 2:—

> "A double Cherry seeming parted,
> But yet a union in partition,
> Two lovely berries moulded on one stem."

A good many of us may, like Shakespeare, have seen such a Cherry, but we do not think even Shakespeare ever saw a "double Pitcher-plant," such as is represented in fig. 21. Neither do we think that Homer, before he became blind, ever saw one, albeit the double cup (ἀμφικύπελλον), such as Dr. Schliemann unearthed for us, and such as may be seen in the South Kensington Museum, is of such a form that, were it otherwise possible, it would not be difficult to imagine that its shape was suggested by some such appearance as that presented by the Nepenthes sent us by Messrs. Veitch. Of course, if Homer, or some of the potters of those days were spiritualists and clairvoyants, they would have had no difficulty in summoning up double Pitcher-plants to their aid: but that is at least a questionable assumption.

Forestry.

THINNING SCOTCH FIR PLANTATIONS.—In my reply to the letter on this subject from Mr. Michie, forester at Cullen, in Banffshire, I suggested that he would do well to give us some instances of the sums realised from the extensive plantations under his charge, and he has promptly replied in last week's *Gardeners' Chronicle*, p. 77. The examples he gives, however, only show us his valuation of plantations which have evidently been comparative failures, the soil in one case being described by him as "too damp and clayey for Pine or Fir attaining age and perfection." Now the different reports quoted by me referred to plantations grown on suitable soil, and which had been judiciously thinned and brought to a successful issue. These reports were published in the *Trans-*

actions of the Scottish Arboricultural Society, and were written by well-known foresters, who, without any collusion, confirmed each other in their estimates, that well-managed plantations of Scotch Fir had yielded, and would do so again, a yearly rent for the ground occupied by them during fifty years of at least £2 per acre. Now if Mr. Michie has not been so successful at Cullen, that is surely no reason why he should throw discredit on the reports of others who have been more fortunate.

In referring to those reports Mr. Michie tries to lessen their value by saying that "the writers had in view the gaining of prizes," but I cannot believe that a number of well-known practical men would sit down and concoct details without regard to truth, merely for the purpose of securing the prizes awarded by the Scottish Arboricultural Society, most of whose members are clever foresters, who would very quickly detect the fallacies of such "cooked accounts" and prevent them from appearing in their *Transactions*. If Mr. Michie declines to receive such reports as authentic, there is no use in bringing more of them under his notice, although that could easily be done; but neither are we under any obligation to accept the valuations he gives us as being trustworthy estimates of the maximum profit to be derived from young plantations.

Judging by the valuations given by Mr. Michie the demand for young timber in his district must be limited and the value much under that obtained elsewhere, but perhaps he will oblige us by going a little more into detail, and let us know the height and girth of a few of the Scotch Fir trees mentioned by him as being forty years old and upwards at the time they were valued, also the soils and exposure of the localities where they grew—and inform us at the same time if he always allows cattle to graze among the trees, as soon as the plantations are twenty years old.

I hope I am not asking too much, and it will be a very good result of our correspondence if it induces other practical foresters to follow Mr. Michie's good example and send us brief records of the progress and value of plantations under their charge.

The following questions would be easily replied to:—The rent of the land and date when planted; the original cost of plants and planting; the date of the different thinnings, and how many trees were taken out and how disposed of; the number of trees left on the ground at fifty years, and their average size and value. And in conclusion I hope Mr. Michie himself will now favour us with a valuation of some of his more successful plantations. *Wm. Baxter Smith*, 4 *Salcombe Villas, Merton.*

Law Notes.

ACTION FOR DAMAGES AGAINST A CHEMICAL MANUFACTURING COMPANY. — At the Newcastle Assizes, on January 16, before Mr. Justice Lush, the case of *Charlton* v. *Russell and Others* was resumed and concluded. It was an action by a farmer at Low Walker to recover compensation for alleged damages to his crops by noxious vapours emitted from the defendants' chemical works.—Mr. Cave, Q.C., and Mr. Walton were for the plaintiff; Mr. Wills, Q.C., Mr. Seymour, Q.C., Mr. Waddy, Q.C., and Mr. John Edge were for the defendants.

The plaintiff had 6 acres of Barley, 7 acres of Oats, and 14 acres of Wheat growing on his farm at Low Walker, on the north side of the Tyne, which he alleged was very seriously affected in August and September of last year by noxious gases emitted from the defendants' works. Both the yield and the quality were affected, and he claimed £44 9*s.* 3*d.* for the loss he had suffered. Messrs. Russell's and Messrs. Hill & Sons' works are on the same side of the Tyne as the plaintiff's farm, and Messrs. Tennant's works are at Hebburn Quay, on the opposite side of the river, but by reason of their having two principal chimneys at a higher elevation than the other defendants' single chimneys, on the same side of the river, the plaintiff considered the damage had been caused equally by all the defendants. The defendants denied that noxious gases had been emitted from their works, and sought to show that the bad crops were due to natural causes and the inclemency of the season.

For the defence, a number of experts were called to prove that the several defendants conducted their works on the best principles and with the best appliances, and that the gases emitted were not injurious to vegetation. The Alkali Act, 1874, required Messrs. Tennant and Messrs. Russell not to permit more than one-fifth of a grain of muriatic acid per cubic foot of smoke to escape from their chimneys, and the tests which were taken three or four times a week showed that Messrs. Tennant had always been within the limit, and Messrs. Russell considerably below it. Messrs. Russell's and Messrs. Hill's chimneys were about half a mile, and Messrs. Tennant's about a mile distant from the plantiff's fields, and the gases which were allowed to escape were so diluted they were in no sense poisonous or injurious. The plaintiff's bad crops were due to the badly-drained, impoverished condition of the land, and the wet season which had affected all farmers.

The learned Judge, in charging the jury, said they had now arrived at the end of a very complicated, and to him, an incomprehensible case. It was the first time, he believed, since the passing of the Judicature Act that the section which enabled the plaintiff to join all three defendants, instead of bringing three separate actions, had been put in force. It was a very wholesome rule, and they now saw the advantage of it. After a very careful analysis of the evidence he finally left it to the jury to say whether the crops had been damaged or not by poisonous gases, or whether their bad condition was to be attributed to the bad season. If so, their verdict must be for the defendants; but if, on the other hand, they thought the damages were such as were over and above the damages caused by bad season, they must then consider whether the damages had been caused by the defendants or any of them, and if so, apportion the damages among the several defendants according to the evidence.

The jury found a verdict for the plaintiff, and assessed the damage against each of the defendants at £6 13*s.* 4*d.* The judge reserved questions of costs for further consideration. *Times.*

Garden Operations.

FLOWER GARDEN, ETC.

In a recent article on bedding (p. 71) I inadvertently omitted to name the two best hardy green-surfacing plants that have yet come under my notice; they are Veronica repens and Herniaria glabra. Both of these take care of themselves when once planted in good soil, and require no pinching, pegging, or clipping, the growth being naturally both dwarf and dense. Their hardiness is undoubted; for, after all the frost we have had this winter, they are looking as fresh as it is possible for plants to be, presenting a remarkable contrast to the much-used Mentha Pulegium gibraltaricum, which has all but succumbed, perhaps more injured by wet than frost; still, it is not to be depended on for winter effectiveness, and requires the bestowal of so much labour in the summer that it may be predicted it will decline as rapidly as it rose into favour. It only winters well in the open air, when split up into little bits in the autumn, and planted on a south border that is well drained; in such a position, out of thousands of plants, not one has died, notwithstanding that the frost has upheaved most of them. They now require to be pressed firmly into the soil, together with other plants that the frost has similarly acted on, among which are Sedums, Saxifragas, Sempervivums, Cerastiums, Pinks, Carnations, and spring-flowering plants generally; shallow-rooting alpine and herbaceous plants may also require the same attention, but the protective mulching must still be retained to any of doubtful hardiness.

To some plants the present winter has been more fatal than last. Phormium tenax seems to be quite killed, and some of the Euonymus, neither of which were seriously injured last winter; the cause is, no doubt, in the succession of thaws and quickly recurring frosts whilst the plants were wet. Eucalyptus globulus is again killed, and seeds of it should be at once sown in heat for planting out in May. It is an effective "subtropical," being both in habit of growth and colour of foliage distinct from any other plant of such rapid growth, and withal it is the present "fashionable" plant. Ordinarily, in this part of the kingdom, Cannas winter safely in the beds; but last season's experience, when they were all destroyed, caused us this season to lift them, and they have wintered safely on the floor of a cool shed, the roots being covered with dry soil. Where it is desired to increase the stock, these roots should now be brought out and cut with a sharp knife or edging-iron into single crowns. Pot and place them in strong heat till new roots are emitted, and then grow them on slowly in a greenhouse temperature. Seeds sown in strong heat at once will make fine plants by bedding-out time. The outer shell of the seeds is so hard that they should be soaked for a couple of days prior to sowing, and the same remark will apply to seeds of Acacia lophantha, one of the most graceful, though one of the commonest of plants that is used for subtropical planting. With the exception of Castor-oil plants (Ricinus), Hemp (Cannabis), and one or two of the coarser growing Solanums, all other kinds of subtropical plants that are usually raised from seed should now be sown; those named are apt to get pot-bound and stunted before planting time when started too early. Stock plants of those kinds of Pelargoniums that were not propagated in sufficient quantity in the autumn should now be placed in an intermediate temperature for the production of cuttings. February-struck plants are seldom, if ever, inferior to autumn-struck ones by planting time when grown on without check. Verbenas, Petunias, Coleus, Iresines, and plants of that class will all now need a minimum temperature of 65° to ensure a supply of cuttings, and as soon as these can be had propagation should be commenced.

There is nothing gained by beginning to propagate Alternantheras before March; at the beginning of that month they should be given a moist, strong heat, and cuttings will be had in abundance in a very few days, which are the most expeditiously dealt with by striking them in dung frames, there to remain till they are transferred to the beds.

The season for alterations and extra work is fast waning, and these should now soon be ended, or postponed another year, for the neglect of routine work soon ends in general untidiness, and can only be prevented by doing as suggested, that is, leaving behind all extra work as soon as the advancing season brings a multiplicity of jobs that will brook no delay. The planting and repairing of Box edgings, laying turf, gravelling and turning walks, are amongst the more important operations that should be completed forthwith, to be followed, as soon as the ground is sufficiently dry, by the completion of any deciduous tree planting yet on hand. In the event of frost again setting in, abundance of work will be found in cutting hedges, shrub pruning, soil and manure wheeling, and making up hotbeds for propagating purposes. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

During the past fortnight but little change has taken place in the weather favourable to prosecuting ground operations in the shape of planting or surface-dressing of fruit trees. Previous to the frost the ground was in such excellent condition, that when the thaw set in here, and no rain of any account fell except on one day, we had, notwithstanding a succession of dull days, anticipated an early spring, and had already made preparation for commencing to plant; but a downfall of sleet and rain supervened, and the probability at present is, that the middle of the next month will see more planting done than any time during the present month of January. Looking at the arrears of work to be performed in the fruit garden up to the present date, one naturally feels anxious as to the future. There is, however, hope yet. The winter has been favourable for pushing forward work of a different character in other departments, and a good general who knows how to organise his forces and concentrate his strength upon any given point will see his way to tide over existing difficulties. Our soil for planting is made up into ridges like a triangle, and will be in a mellow condition at any time it is required for use. Peaches and Nectarines on open walls should have their borders and soil prepared according to the natural conditions of the locality.

The rainfall of the neighbourhood is a point that should be taken into account more often than it is, and the site of the garden, whether elevated or otherwise, should receive a due amount of consideration as so much depends upon a healthy bracing air in ripening the wood of fruit trees, and under these atmospheric conditions soil of a heavier nature might be used than in less favoured districts. If this were done and lime-rubble and small pieces of broken bricks about the size of inch bones were used, together with giving the trees a circumscribed root-space, we should at least succeed in reducing the labour of the root-pruner, and probably secure a trifle more fruit than we do. Pear trees like an open fibry loam, with good drainage, which should be supplied artificially in wet situations, and they would also be benefited by being slightly elevated above the natural ground level and mulched in order to encourage roots to the surface, which will be rendered better and more fertile channels of supply than if they were allowed to travel in quest of food to a lower and more unhealthy region. Upon light soils and in undulating situations where there is a constant percolation of moisture passing away from the roots, the trees should be planted on a different principle by leaving a shallow cup or basin round the bole of the tree in order to be able to render assistance at the proper time with liquid manure. The most successful cultivator will be he who can draw most upon his own resources. With respect to wall trees where the wall copings do

not project sufficiently, and the roots of the trees are saturated by drip and the branches are of a greenish hue in winter, it is a sure sign that they are getting more moisture than is good for them. In planting small fruits, such as Gooseberries, in localities where birds are troublesome it is well to minimise, if possible, the labour of keeping these little marauders at bay. For late dessert purposes no plan of planting surpasses that of forming a low arch, say from 2½ feet to 3 feet high, of wire, with iron hoops to support it. It should be wide enough for a man or boy to pass up inside to gather the fruit without disturbing the net from the outside, so that the device will be a permanency all through the season of gathering the fruit. As the buds of fruit trees may be expected to swell rapidly with increasing light, the necessary provision will need to be made by way of protection. The pruning and nailing of Pears, Apples, and Plums on walls may be advanced at favourable intervals, however short; but the pruning of Gooseberries, unless where they can be netted, had better be deferred while the weather continues severe. The prickles are the best safeguard against birds. Orchards that have grown overcrowded should be thinned, and plantations of Damsons should have their branches skilfully adjusted while there is leisure to attend to these somewhat neglected departments of the hardy fruit garden. *W. Hinds.*

FRUIT HOUSES.

VINES.—The cold wet years 1878 and 1879 having been most unfavourable to Vines in general, and late ones in particular, no time should be lost in making a careful examination of borders in which Lady Downe's, Alicantes, and other kinds recently cleared of the past year's crop, are growing, and producing unsatisfactory results. The inclement months of January and February being unfavourable to the lifting and relaying of Vine roots in external borders, the occupants of these late houses do not always receive the attention they deserve, and on this account it often happens that the work is postponed, or partially performed; but it is only putting off the evil day—sooner or later our borders must be made, and as there is nothing like trying to set things right as soon as they are found to be going wrong, immediate preparations should be made for taking out the old and putting in the new soil. In the first place, a good supply of new compost, consisting of turf from an old pasture, lime rubble, burnt earth and crushed bones, should be got ready for use, either in an open shed or where it can be protected from rain; and to save valuable time in cleansing the old drainage, a liberal supply of clean broken brickbats or stones may be prepared and placed near the borders about to be operated upon. This portion of the work having been got over, advantage may be taken of the first mild settled weather, with all hands, for freeing the roots from the old compost, and clearing everything away down to the concrete. All the roots should be carefully preserved as the work proceeds, and prevented from getting dry by being tied up in damp mats and secured near the front wall-plate of the house. Having ascertained that the outlet from the bottom of the border is satisfactory, place from 12 to 18 inches of drainage on the concrete, reserving the finest for spreading over the surface. Place thin turf, grass-side downwards, all over the drainage, and having decided upon the width of the new border—6 to 9 feet is wide enough—build the front or retaining wall with sods also. Wheel in the compost, and beat firmly with steel forks, if at all damp or inclining to be wet, in preference to trampling, until the bed has been raised to within about 9 inches of the ground line. The relaying of the roots may then be proceeded with by taking those which emerged from the deepest part of the internal border first. Shorten back all the strongest, and continue the addition of the soil in thin layers so as to keep them separated from each other until all have been disposed of, and the border has been raised some inches above its proper height to allow for settling. When all is finished some covering should be used for keeping out frost and throwing off rain and snow, as dryness of the soil about the mutilated roots is an advantage when the sap is rising. Assuming that these Vines, as all late Vines should, have good substantial internal borders, liberal supplies of tepid liquid will keep them going through the early stages of growth, and as the season advances they will gather strength, and finish off good crops of fruit; the only difference being perhaps smaller bunches of perfectly fertilised berries which invariably colour well. With one exception all the houses at this place have internal and external borders, and this arrangement enables me to take out one or other without risk of injury to the Vines or having to sacrifice a crop of Grapes. *W. Coleman, Eastnor.*

MELONS.

If these have been sown as advised in the last Calendar they will now have made their first rough leaves, with the development of which there will be a corresponding increase of root-action, which will necessitate their receiving a shift into pots a couple of sizes larger, and being again plunged in a bottom-heat from 75° to 80° near the glass, a small stick to be put to each plant for its support until grown on large enough for transferring to the hillocks in the Melon-house. But those plants which are intended to be planted in pits and frames, and trained over the surface of the beds, can be planted out as soon as they require more room at the roots. The Melon delights in a good turfy loam, which has been cut and stacked the previous summer. The top 3 inches from a deer or sheep-park when to be had, or from a down which has been grazed by sheep, is the best possible soil for the growth of Melons and kindred subjects requiring a loamy soil. As a rule, loam of this description without the addition of any other ingredient will be sufficient, so far as the suitability of the soil is concerned, for the production of first-rate Melons. The turf should be chopped into small pieces—a couple of inches long. However, if the loam at hand should be of a stiff and adhesive nature, old lime rubble or charcoal must be added in sufficient quantity to render it somewhat porous, and if the loam should be of a poor description, one-fourth of well decomposed short dung, free from worms, should be added. After which the whole should be turned over twice to mix it, and when moderately dry got into the pit or frame—the same having been thoroughly cleansed—the brickwork washed with hot lime, the woodwork with soft-soap and warm water, the glass with water only—previous to putting the soil in. Make a hillock in the centre of each light, by putting a barrowload or more of soil, according to the size of the light, in each, and leave a space of 10 or 12 inches between the surface of the hillock and the glass. In planting (the soil having been in the pits or frames a few days previous, to get warm) put two plants in each light, so that in case of one or other of them dying off through damp or other causes there may be no inconvenience experienced. Should all the plants grow and flourish, the shoots can be thinned-out to the proper distance, and more fruit obtained from each light than could be secured from one plant. In planting press the soil firmly around each plant, taking care, however, not to press the stems of the plants in doing so, inasmuch as they are very susceptible of injury from pressure of any kind when in a young state. See that the plants are moderately moist at the roots before turning them out of the pots, and then, as recommended on various other occasions, make a circle of quicklime and dry soot around each plant, which will serve a double purpose, namely, that of preventing an unnecessary amount of moisture settling on or near the stems of the plants, and also of keeping slugs—which if not guarded against are very destructive—at bay. When the plants have commenced to grow stop them at the third rough leaf, and maintain a good steady bottom-heat as advised above. Let the day temperature without sun range from 70° to 75°, running up 10° with sun, night temperature from 65° to 70°. Sow a few more seeds for succession, &c. Get some more fermenting material in readiness for linings, &c. *H. W. Ward, Longford Castle.*

CUCUMBERS.

The plants which have been producing fruit all the winter will now be the better for having the surface-soil of the bed removed and replaced with an admixture of three parts of light loamy soil and one of short dung and leaf-mould. This top-dressing will have an invigorating and beneficial influence upon the plants. See that the young growths are kept tied up to the trellis, but not too tightly, for this would be very injurious, if not positive and ultimate ruin to the shoots in developing their growth. Avoid overcrowding the shoots, and keep the plants in a clean and growing state. Shift young plants as they require more room, and keep them near the glass till ready to plant for trellis training, putting a stick to each plant for support. The soil, being composed of the ingredients above referred to, and in the same proportion, with the addition of a little charcoal, in sufficient quantity to render the whole porous, may be got into the pits or frames, and made into ridges or hillocks, as recommended for Melons. The same treatment may be followed with plants intended to fruit in pits or frames without trellises, as also advised for the Melon, stopping as soon as the plants have made a fresh growth, say at the third leaf. The same holds good respecting bottom-heat, whether obtained by hot-water or fermenting material, &c. *H. W. Ward.*

PLANT HOUSES.

STOVES.—Now that the days are gradually lengthening, and the sun, so long absent, is at last making its presence felt, the temperature of these structures may with advantage be considerably increased, especially on bright days, when the fires should be started by 1 o'clock or so, to aid with the solar rays in imparting a good brisk heat, which, with plenty of atmospheric moisture at the same time, will soon rouse the plants and start them into a state of activity. Growth, however, produced in the absence of full light is never satisfactory, and therefore when the weather is dull and gloomy, thermometers ought not to be pushed much above 70°, for comparative rest under such circumstances is only natural, and it will always be found that any apparent loss of time is more than made up afterwards in the better results attained. As the majority of stove subjects will soon require overhauling and repotting, it is a matter of the greatest importance that a sufficient stock of soil for the purpose be got somewhere under cover without further delay, that the dead chill may be taken off, and it may otherwise be rendered fit for use when wanted. In cases where either the peat or loam is infested with worms or insects it is a good plan as a preparatory process to subject the sods to a strong heat by packing them over the tops of some of the boilers for a day or two that they may have a baking, which is not only destructive to any pests of the above-named character, but is fatal to any eggs or larvæ that may have found a home therein. Among tuberous-rooted plants that require immediate attention none are more highly prized or useful for general decorative purposes than Gloxinias, a batch of which should be started at once by bringing them from their winter quarters and standing them where they can feel an increase of heat. It often happens when these are first put to work that they are lost through over-watering, as after being somewhat shrunken in resting they absorb more moisture than they have any outlet for, and instead of pushing forth leaves and roots they rot. The safest way is to let them remain in the old ball of earth till they are on the move, or if repotted to give no water beyond what they get in syringing or just damping the surface till the tips of the leaves begin to appear, and the same with Caladiums, which are equally affected by sudden change at the particular stage already referred to. Achimenes succeed best pricked out and started in pans of finely sifted leaf-mould, or peat and sand, from which they can be transferred later on to the pots it is intended they should be flowered in. In the way of seed to be sown now, that of Gloxinias, tuberous-rooted Begonias and Cyclamens should not be forgotten. The two former, being so exceedingly fine, require great care and attention to get them up, which can only be done by making the soil perfectly smooth and then sowing on the surface, where just a sprinkling of very fine sand may be shaken. To obviate having to damp or water till the seed germinates, it is necessary to cover with a bell or a sheet of glass and place the pan containing it in strong moist heat out of reach of the sun till the tiny plants appear, when more light is essential to their well-being.

GREENHOUSES.

In the arrangement and management of these, the great point is to so distribute what flowering plants there are available as to make the most of them, standing them well up above others that they may be seen to advantage. Epacrises and Heaths, being very impatient of dry heat, should be placed as far from the pipes as possible, as otherwise, during a frosty time, they are apt to suffer through a too rapid root desiccation, which starves the bloom and detracts much from its beauty. To have herbaceous Calceolarias fine and healthy, they must have no check, but be potted on, as they require it, giving them rich fibry loam and leaf-mould, and a genial temperature of about 45° by night, rising 5° or 10° more by day according to the state of the weather. A light pit where there is a hot-water pipe along the front suits them best, but failing this, a shelf in any moist house will do. Cinerarias, too, that are growing on for late work require similar treatment and are much benefited by being syringed freely on the afternoons of bright days. Any that are in a more advanced stage and pushing up their flower-stems, will be greatly improved in strength and vigour by frequent applications of liquid-manure, as being gross feeders stimulants are needed to keep them well up to the mark. Although young Fuchsias are preferable for general decorative purposes, they cannot be had so early in bloom as old plants, which pruned-in and started now in any vinery will soon break and be ready for shaking out and potting. It is the practice with some to carry out this latter operation as a first preliminary, but there can, I think, be no question that the shoots start stronger and more regularly before the roots are disturbed, and that they take more readily to the new material after, which being quite fresh, induces growth at a great rate. Any that are misshapen will come in most serviceable for affording cuttings, or for planting out in borders, Chrysanthemums are at last receiving the attention their merits deserve, for assuredly there are no finer decorative things in existence. Cuttings put in now make the most useful plants, but the thing with them is, that they receive no coddling or get treatment which causes them to become etiolated and drawn. The less heat they are subjected to in striking them the better, and all they requre is just the shelter of a handlight stood on a slate in any light frame or pit where they can be kept close for a time. Stocky short-jointed shoots are the ones to choose, which taken off about 3 inches long, and inserted around the side of a pot in sharp soil, root in a fortnight, when they at once require more air. *J. Shepherd.*

APPOINTMENTS FOR THE ENSUING WEEK.

WEDNESDAY,	Jan 28	Sale of 18,000 Liliums, &c., at Stevens' Rooms.
THURSDAY,	Jan 29	Sale of Orchids, at Stevens' Rooms Sale of Glass Erections, at Rollisson's Nursery, Tooting, by Protheroe & Morris.
SATURDAY,	Jan. 31	Sale of Miscellaneous Plants, &c., at Stevens' Rooms.

THE receipt of the balloting list for the officers and Council of the ROYAL HORTICULTURAL SOCIETY reminds us that the annual meeting of the Society is nigh at hand. The meeting in question would be looked for with some interest if there were reason to hope that any light was likely to be thrown on the anomalous position in which the Society is placed with reference to its Kensington landlords. As is well known, a lawsuit to settle the intricate questions involved is pending, but so far as we can learn little or nothing has been done in the matter, and unless a surprise is in store for us, the Council will be able to tell us little that we did not know before. So far as we make out, the Society is in the position of a tenant who is unable to pay his rent, but who refuses to be ejected till he has been compensated for money laid out on the property, and which money he has borrowed at the express instigation of the landlords, and virtually on their security. This money was advanced by the debenture-holders, in whose interest the Society, albeit they have forfeited their lease, still hold to the gardens and to the property they have erected in and on it.

There is thus a "triangular duel" between the Commissioners, the Society, and the debenture-holders. The result of such a contest, involving so many cross issues, no man can guess, much less predict. In the meantime, as the matter is, or soon will be, *sub judice*, it is advisable to say no more about it at present, but quietly to wait the upshot. Meantime, there is every hope that the Society will carry on as before, its valuable though unobtrusive labours at Chiswick and in the several committee-rooms. Were these matters safeguarded, we could well feel resigned if the Society's tenure at South Kensington were to cease for all purposes except that of holding shows and committee meetings.

So far as the annual reconstitution of the Council is concerned, that is a matter upon which comment may without impropriety be made. Three gentlemen are recommended by the Council to be removed—Mr. J. T. D. LLEWELYN, Colonel MAKINS, and Lord SKELMERSDALE. The resignation—we should say the proposed "removal"—of the first of these gentlemen is a distinct loss to the Society, the removal of the other two, and more especially of Lord SKELMERSDALE, can only be looked upon as gain. His Lordship on election had the good-will and support of the horticulturists, and it was hoped from his antecedents at a sister society that a useful and valuable member of Council had been secured. This has not proved to be the case, for what reason we know not. To fill these three vacancies the Council propose the names of Mr. W. HAUGHTON, a man of business, who has done the Society good service though not too sympathetic with horticulture; Sir HENRY SCUDAMORE STANHOPE, Bart., and Rev. H. HARPUR-CREWE: concerning whom we would only say that we wish there were more of that excellent stamp of horticulturist on a horticultural Council. If we remember rightly an implied promise was made by the Council last year, or by the President in their behalf, that Mr. W. B. KELLOCK should this year be proposed for election. We do not know what reason there may be for the non-fulfilment of this promise, but looking to what has been done or rather not done by the two gentlemen elected last year and removed this, it is pretty clear that those who on the last occasion supported Mr. KELLOCK had juster ideas of what constitutes a working member of Council than those by whose agencies two councillors were elected last year, to be removed from their seats this. No change is proposed to be made in the list of officers.

—— ART IN THE CONSERVATORY.—The double-page lithograph plate which we publish to-day includes a selection of a few of the smaller examples of picturesque garden architecture, constructed by Messrs. MESSENGER & CO., of Loughborough, from designs by Mr. MAURICE B. ADAMS, A.R.I.B.A., of London. We give them as additional illustrations of Mr. ADAMS' paper, printed on p. 104 of this number, on "Art in the Conservatory and Greenhouse," which was read last week before the Leeds Architectural Association. Our drawings are taken from the series of thirty designs referred to by the writer, and include two floral porches, an octagonal conservatory with aquarium, a summer-house, and a belvedere. The porches are adapted, the one for a principal entrance, and the other for a garden or side doorway of a country or suburban residence, both being arranged either for flowering or foliage plants. The space usually occupied by stages is planned as natural flower borders, with side shelves over. Tinted glass is introduced in quarry-glazing in the upper parts of the vertical lights, as in the octagonal conservatory, in the centre of which a tank in several compartments is fixed for a few fish and aquarium objects. Ventilation is here obtained in the central cupola side-lights, worked from below. The summer-house and belvedere are placed in the grounds of a rural villa, and are constructed of wood—the former being roofed with thatch, the latter with red tiles. White is used as the external finishing colour in all the instances illustrated.

—— BARKERIA CYCLOTELLA.—On Professor REICHENBACH'S authority we have to announce that the woodcut in our last issue, taken from Mr. BULL'S plant exhibited at the last meeting of the Royal Horticultural Society, does not represent B. cyclotella but probably B. elegans. We regret the circumstance, but are not responsible for the error, as the plant in question was exhibited and certificated as B. cyclotella, and was pointed out to us as such by the exhibitor.

—— ROYAL HORTICULTURAL SOCIETY.—The gentlemen officially recommended for election as members of the Council at the annual general meeting, to be held on February 10, are W. Haughton, Esq., a former member; Sir H. Scudamore Stanhope, Bart., Holme Lacy, Herefordshire; and the Rev. H. Harpur-Crewe, Drayton Beauchamp Rectory, Tring. The retiring members are J. T. Dillwyn Llewelyn, Esq., Colonel W. T. Makins, M.P., and Lord Skelmersdale. The Council also recommend the appointment of Lord Aberdare as President; Henry Webb, Esq., as Treasurer; Dr. Hogg as Secretary; Lord Alfred S. Churchill, Henry Webb, Esq., and Wm. Haughton, Esq., as Expenses Committeemen; and R. A. Aspinall, Esq., John Lee, Esq., and James F. West, Esq., as Auditors.

—— THUIA ERICOIDES.—Mr. MEEHAN, who some years ago stated that this was only a juvenile state of Thuia occidentalis, is enabled to confirm his opinion, as one of his plants has assumed the adult form, and, moreover, has produced cones not differing from those of the American Arbor-vitæ. Retinospora squarrosa in like manner has been proved to be a state of R. obtusa.

—— FUCHSIA JEAN SISLEY.—Mr. CANNELL has sent us flowers of this French hybrid, raised between F. spectabilis and F. Dominiana. It is one of the most brilliant of its race, and must be a charming shrub for a conservatory. The flowers have a tube $1\frac{1}{2}$ inch long, fully half an inch in diameter at the mouth, and slightly tapered to the base. This is of a brilliant crimson-scarlet. The four sepals are each just an inch long, crimson at the base and passing into green at the tip. The four petals are spreading, measuring $1\frac{3}{4}$ inch across the face of the flower, and are nearly round, a little wavy at the edge, slightly narrowed to the base where they are affixed to the mouth of the calyx tube, so that they are strictly roundish obovate; these are of a brilliant orange-scarlet. Altogether, we have not previously seen so brilliant a Fuchsia, the flowers very far eclipsing the figure in the *Revue Horticole* as to form, size, and colouring. The leaves are elliptic, about 4 inches by 2 inches, of a deep almost olive-green, and purplish on the under surface.

—— AINSLIEA WALKERI.—We had occasion lately to mention this as likely to prove a useful addition to our list of ornamental greenhouse plants. The plant is not Himalayan, as we supposed, but is a native of Hong Kong, and is figured in the *Botanical Magazine*, tab. 6225.

—— PRESENTATION OF A TESTIMONIAL TO MR. JOHN SADLER.—It having been made known that on account of Mr. SADLER'S appointment by Government as Curator of the Royal Botanic Garden, Edinburgh, he was obliged to retire from the position of Secretary of the Scottish Arboricultural Society—a position which he had held with great skill and energy for nineteen years—the members of the Society determined to present him with some tangible proof of their appreciation of his services. Consequently on the 15th inst. a deputation from the Society, consisting of Robert Hutchison, Esq., F.R.S.E., of Carlowrie, Wm. Gorrie, Esq., President of the Edinburgh Botanical Society; Jas. Alexander, Esq., Redbraes; James Alexander, Esq., Jun. (of Messrs. Dicksons & Co.); Messrs. McCorquodale, Scone; Dunn, Dalkeith; John Lamont, Jun., Musselburgh; and France, Penicuik, waited upon Mr. SADLER, at the Royal Botanic Garden, and presented him with a handsome gold watch and appendages, and a purse of 100 sovereigns as the gift of the Society. Mr. HUTCHISON, in making the presentation, referred in appropriate terms to the valuable services rendered to the Society by Mr. SADLER, who undertook the office of Secretary at a time when the very existence of the Society was flickering in the balance between life and utter extinction, having battled sore for life for seven years previous. The advent of Mr. SADLER seemed to infuse new energy and life into it, and it had gone on ever since increasing and flourishing under his fostering care; and instead of being, as it was nineteen years ago, a mere name, it was now one of the most important institutions in the country. This state of things was due in every respect to the energy and indomitable perseverance of their Secretary; and while the Society felt that they had sustained a very great loss in his being obliged to resign his official connection with them, they at the same time felt glad at the causes which brought that about—his receiving an important Government appointment, which his talents and general acquirements so well fitted him to occupy. Mr. SADLER, in reply, said that words failed him to express the gratitude he felt at the munificence of the Society in presenting him with such a substantial token of their regard. To be the secretary of such a Society as the Scottish Arboricultural was to him a sufficient honour, and although during his term of office it had certainly gone on increasing, that fact could be attributed to other causes than his direct official connection, and to none more so than to the influence thrown into the Society by Mr. HUTCHISON himself, than whom none had done more for its welfare and prosperity. He should always take the warmest interest in its well-being, and should at all times be glad to give what assistance he could to promote its general good. In the name of himself and family he desired to express his deep gratitude for their handsome gift. The deputation was then entertained to cake and wine. In the afternoon a complimentary dinner to Mr. SADLER took place in the Albert Hotel, with WM. MCCORQUODALE, Esq., Scone, in the chair, and Mr. BULLEN, Glasgow Botanic Garden, croupier. The watch and chain presented to Mr. SADLER was furnished by the jewellers to the Society, Messrs. G. & M. CRICHTON, Princes Street, Edinburgh, and reflected the highest credit on the skill and taste of that eminent firm. On the outer case of the watch is a beautiful engraving of the well-known arms of the Society, with its appropriate motto—"Ye may be aye stickin' in a tree; it will be growin' when ye're sleepin'." On the inner

case the following inscription is neatly engraved :—"Presented by the members of the Scottish Arboricultural Society to JOHN SADLER, Esq., Curator of the Royal Botanic Garden, Edinburgh, as a token of esteem and regard, on his retirement from the secretaryship, after nineteen years' faithful service."

—— EVERGREEN PEACHES. — Messrs. STUART, MEIN & ALLAN, of Kelso, have sent us a few Peach leaves which have remained quite green up to the present time, notwithstanding that the thermometer in the Kelso Nurseries registered 12° below zero last month.

—— A GOOD ARTIFICIAL MANURE.—M. WOERHLIN recommends the following as generally suitable :—

Nitrate of ammonia	40
Phosphate of ammonia	20
Nitrate of potash	25
Sal ammoniac	5
Sulphate of lime (soluble)	6
Sulphate of iron	4
	100

The quantity to be used depends on the nature of the plant, its leaf-surface, &c.

—— THE ROYAL HORTICULTURAL SOCIETY'S "JOURNAL."—Part 9, which completes vol. v., has just been issued. It contains a brief record of the Society's proceedings from April 22 to August, 1879, including the awards of the judges made on May 27, June 2, and July 8 ; the concluding portion of the report on Gloxinias grown at Chiswick ; and some valuable notes on the genus Tulipa, by Mr. H. J. ELWES. We note an error on p. 145 of the *Proceedings*, which, to avoid confusion, it may be well to point out at once. The name of the Melon which received the First-class Certificate on May 13 is not "Devonshire Early" but "Davenham Early." It was raised at Davenham Bank, Malvern, the residence of J. D. PERRIN, Esq. The index to the *Proceedings*, especially of the Scientific Committee, is a valuable innovation, for which our best thanks are due to the Editor.

—— EMBRYO SAC.—The *Quarterly Journal of Microscopical Science* contains a paper by Mr. H. MARSHALL WARD on the embryo-sac and development of Gymnadenia conopsea. The young ovules are very slightly curved structures, each consisting of an axial row of large polygonal cells surrounded by a layer of somewhat smaller ones. The terminal cell of the axial row increases considerably in size, and has been called the embryo-sac mother-cell, since the embryo-sac originates from it. Four cells more or less clearly developed may be said to arise from it by three successive divisions. Of these cells the two upper are much compressed, and form mere "cap-cells" to the two lower, between which the division wall always remains excessively weak. The four cells may be regarded as four spores, the upper two being nearly suppressed. In each of the lower cells the nucleus divides successively into four. Of the upper of these groups one division becomes the egg-cell ; two others intervening between it and the wall of the embryo-sac form together with it what is called the egg-apparatus and play some part in the process of fertilisation. The remaining division falls freely into the living protoplasm of the embryo-sac, and it is probable, judging from a comparison with other cases, that it fuses with a division from the lower group to form the nucleus of the embryo-sac, which is thus itself formed by the fusion of two cells. The remaining divisions of the lower group remain sterile, and may be regarded as vegetative and not reproductive. The embryo-sac mother-cell, therefore, to sum up, gives origin to two atrophied spores, one fertile and one sterile.

—— ORCHIDS AT THE VICTORIA AND PARADISE NURSERIES.—Many fine specimen Orchids are just now in great perfection of bloom here. There are literally hundreds of flowers now open. Amongst the more conspicuous are two very fine examples of Lælia anceps, one of which had fourteen spikes and the other fifteen of its noble heads of flower fully expanded —a grand sight ; some fine specimens of Cœlogyne cristata, nearly 3 feet in diameter, with an abundance of snowy white flowers just expanding ; and two large specimens of Angræcum sesquipedale in full beauty, the white waxy-looking flowers being very large. We were pleased to see many good plants of Saccolabium giganteum, some of them 18 inches high, with a profusion of sweetly perfumed flowers drooping over the foliage. Some of these have been in bloom for six weeks, and now there are many spikes opening. Lycaste Skinneri is finely in bloom, also the new Oncidium curtum, which has most lovely flowers. There are three varieties here, some of the blooms being large, golden-yellow and crimson in colour. Of Odontoglossum Alexandræ there are several plants which were imported last year by Mr. WILLIAMS, amongst them being some very good varieties. Amongst the Masdevallias there are several of M. tovarense, carrying its snow-white flowers ; Odontoglossum cristatum is also well in bloom, as well as several plants of O. cirrhosum, one of which is a large showy variety. Next to this is the pretty O. madrense, and a fine plant of Oncidium macranthum, showing two spikes of flower, which will soon be in bloom. In the East Indian-house the Vandas are showing well for bloom, and the true V. suavis is in full beauty with two spikes of flowers. A specimen of Phalænopsis Schilleriana is coming into bloom with four spikes ; it is the largest specimen we have ever seen, and produced upwards of 300 flowers last year. There are also six varieties of Cypripedium, with many flowers, and which have been blooming all the winter. There has been a large show of Calanthes, but they are now getting far advanced and are losing their beauty, with the exception of Calanthe Turnerii which is just opening its pretty blossoms. There are many other Orchids in bloom, but we have only mentioned a few of the best.

—— HORTICULTURAL CLUB.—The annual meeting and dinner took place at the Club-house on January 13, when it was announced that during the year a further sum had been invested in the Funds, leaving also a balance in hand at the end of the year. Mr. JOHN LEE was re-elected Chairman, and the names of Mr. GEO. PAUL and Mr. T. FRANCIS RIVERS added to the Committee. Much satisfaction was expressed at the excellent arrangements of the Club, and those present undertook to do what they could to still further increase its numbers and thereby extend its usefulness.

—— CATALPA SPECIOSA.—The credit of the discovery of this species is due, not to Professor SARGENT, as we inadvertently stated, but to Dr. WARDER. Professor SARGENT informed us of the mistake, which we accordingly corrected, not in time, however, to prevent its being stigmatised as a "European error." Dr. WARDER found, as long ago as 1853, in the streets of Dayton, Ohio, some Catalpa trees of more erect habit, and which bloomed two or three weeks earlier than the common sort, C. bignonioides. The flowers were larger and more showy, being whiter, hence the name speciosa was applied to it, and nurserymen were urged to confine their propagation to this variety, as it was then supposed to be. Two brothers, J. C. and E. Y. TEAS, of Raysville, Indiana, propagated it largely and distributed it widely as an ornamental tree, and sent it out under this name. For the last two years Dr. WARDER has been investigating this tree, and endeavouring to trace out its natural habitats, and comparing it in these respects with C. bignonioides. In so doing the Doctor has travelled over 5000 miles. Dr. WARDER mentioned this as a new Catalpa in 1853 in the *Western Horticultural Review*, then under the editorship of the worthy Doctor. Dr. ENGELMANN stood sponsor for the new Catalpa, and gave it its name, speciosa. Whether this tree will prove of any value in this country has yet to be proved, but it is very doubtful, as we believe some growers have experienced difficulty in keeping the seedlings alive, even with the protection of a frame.

—— FOSSIL PLANTS OF SHEPPEY.—In the rapidly wasting mud cliffs of the Isle of Sheppey are stored up the remains of a vegetation which once clothed the island with forms very different from those which now grow on the banks of the Thames. These Sheppey fossils have long attracted the attention of the naturalist, but a more complete investigation of them has lately been made by Professor Baron ETTINGSHAUSEN, who has contributed the results of his investigations to the Royal Society. The Professor enumerates 200 species, distributed into forty-one families. The climate must have been of a subtropical character, as is evidenced by the occurrence of leaves of Musas, Pandani, several Palms, Agave, Smilax, Proteads, Cinchonads, Loganiads, Sapotads, Ebenads, Byttneriads, &c. Some of the fruits and seeds are supposed to belong to genera which no longer exist in a living state, and it is interesting to note that the number of these extinct forms is relatively much larger than in the newer Miocene strata. Among the coniferous plants seeds of Salisburia have been found.

—— MARKET GARDENS.—It is well for market growers of garden produce that they are naturally endowed with an abundance of fortitude and faith. Several years of bad seasons and poor crops, with consequent wretched returns—which the widespread commercial depression has helped to render even smaller during the past winter—might well make men pause in the yearly routine of work and ask whether market gardening has not seen its palmiest days. Within 20 miles of the metropolis thousands of acres of good land have been converted from agricultural uses to the produce of vegetables and fruits, rents consequently have gone up to the maximum, and with it rates and taxes are most oppressive. Though near to London, yet, as compared with growers of market vegetables more remote, market gardeners are heavily handicapped, by reason of the large payments to be made out of profits for the above purposes, besides the greater cost of labour, which averages 18*s*. to 20*s*. per man per week throughout the metropolitan district. In spite, however, of all these drawbacks the growers are again sowing and planting and preparing for the coming summer, with the same determination that was evinced when a few years ago all was *couleur de rose*. No doubt it is the right thing to do, even though the obstacles to progress are many. Remissions of rent are rarities amongst market growers, perhaps because they do not present in the aggregate such an important political factor as does the great body of tenant-farmers, or it may be that their more intimate relation to active business pursuits renders them more reliant on their own efforts and less dependent upon landlords. Professionally and nationally we cannot but desire that the cycle of bad seasons for our market gardeners has passed by, and that a long period of prosperous and fruitful ones is now in store for them.

—— SOWING CELERY SEED.—Those who grow Celery for exhibition in August and September sow the seed about the middle of March in a hotbed stimulated by a gentle heat, covering the bed with about 2 inches of light soil, with which is mixed a good portion of clean sharp sand, and on this the seed is scattered thinly, not covering it, but simply pressing it into the soil with a smooth flat piece of board or something of the kind. When the plants are up damp has to be guarded against if the weather be moist and too cold to admit of much air being given. When damp occurs it is a pretty safe practice to dust some fine dry white sand over the leaves, which, while it checks the spread of damp, incites the plants to make growth. A bed is then prepared on a warm border made up of rich soil, and on a dull growing day the plants are pricked out here, and shaded from the sun and screened from spring frosts till strong enough not to need protection, and finally they are placed out in the Celery trenches.

—— A SANITARY VIEW OF THE PAST YEAR.—Writing to the *Times* on the 19th inst., Mr. BAILEY DENTON points out that the year just closed (1879) has been subject to several meteorological conditions of an extraordinary, if not exceptional, character, which may have a future as well as a passing influence. Not only has the rainfall of the summer months—April to September inclusive—on the eastern (corn-producing) side of the country amounted to as much as the average fall of twelve months during the last sixty years, but the number of wet days has been as many as two out of three, while the temperature has averaged very nearly 5° below the mean. Thus the rain of summer, which is generally evaporated as it falls, has found its way into the ground and helped to replenish the subterranean supplies. Unlike the condition of former years, the writer's gauge-well (at Stevenage), 70 feet deep, has continued to rise without intermission from January last (1879) up to the present time, and Mr. BAILEY DENTON believes this to be an indication of what has generally occurred. It is fortunate that such has been the case, for the rainfall of the three principal months upon which all the rivers and springs of this country depend for their summer flow—

October, November, and December — has been unprecedentedly small. The average fall of rain during these three months in the east of England is close upon 7 inches. In the last year the amount barely reached 2¾ inches, and this is rather less than the rainfall of any one of the summer months. Though it is certain that the excess of filtration over evaporation during the last summer will go some way to make up the deficiency of October, November, and December, it is not improbable that the general water supply of the country will be deficient during the coming summer, and it may be well to point out to rural sanitary authorities that they should watch with great care the condition of wells upon which the inhabitants of villages depend for water, inasmuch as the unsatisfactory quality of this description of supply will necessarily be rendered worse by the deficiency of the rainfall during the three months to which Mr. DENTON has called attention. Speaking generally, that deficiency has amounted to 4½ inches.

—— THE USE OF THE FEET IN SOWING SEEDS. —Mr. PETER HENDERSON recommends the use of the feet in sowing seeds, and computes the loss to the American horticulturists through the neglect of the simple operation of firming the soil around seeds to amount to an enormous sum annually. The market gardeners cultivate thousands of acres of Cabbage, Cauliflower, and Celery, but their seed-beds failed last year, Celery not being one-fourth of a crop, and Cabbage and Cauliflowers hardly half. This failure he believes is due to no other cause than that they persist in sowing their seeds without even taking the precaution to make the soil firm by rolling. Mr. HENDERSON sows annually about 4 acres of Celery, Cabbage, and Cauliflower plants, which produce probably 5,000,000 in number, which in the neighbourhood he never fails to sell, mostly to market gardeners, who have, many of them, better facilities for raising these plants if they would only do as he does—"firm" the seed after sowing. In light land this advice may be safely followed.

—— THE CLOVER AND GRASS SEED CROPS OF 1879.—Messrs. HURST & SON have just issued some notes respecting the Clover and Grass seed crops in the producing countries of Europe and America: and they intimate that their returns are based upon reliable information received from correspondents in each district. The crop of English red Clover, owing to the protracted rains of last summer, and the unusually late harvest, is *nil*. Not a single sample of new seed has put in an appearance as yet, but there remains on hand a large quantity of seed of 1879 crop, and this is fetching a considerable advance upon last year's prices. Cow-grass, or the commonly cultivated perennial Red Clover, shows but a small crop, and the few lots of yearling seed will soon become exhausted, and it is expected the supply will close before the season has far advanced. Of foreign red Clovers there are large crops, and in most instances they are unusually good. The smallest yield comes from France, and the average quality of the French seed is not good. Germany has a fair crop, of superior quality; the seeds from Central and Southern Germany are bold, but full of noxious weeds, and to sow them without machine cleaning would be to foul the land beyond measure; the most injurious weeds are those having small seeds, and they are therefore easily separated from the Clover. The United States and Canada furnish large crops of red Clover of the finest quality yet seen from those countries, and they will no doubt supply the largest proportion of the seed sown in this country next spring. The English crop of Trefoil is almost a failure, and though France shows a fair crop the summer rains so discoloured and injured the seeds that those of yearling growth will have to be relied on mainly. The finest samples of the English crop of 1879 are now realising high prices, and they are likely to hold their present values. The crops of white and Alsike Clovers are almost entirely confined this year to Germany, but reliable information as to the extent of the crops of each is not as yet forthcoming; the prices of white Clover are now exceedingly high, but as the great bulk of the seed is not threshed out until after the commencement of the new year, probable prices can only be hazarded at present. Alsike is at present cheaper than white Clover. Lucerne is both a small crop and of indifferent quality. Of Sainfoin there are hardly any English saved seeds, and the French crop not being up to the average prices are high. In respect of Italian and perennial Rye grasses, the French crop of the former is not up to last year's, nor is the quality fine. There is no doubt a substantial rise will take place in the prices of the finest samples. The Irish crop is small and generally of inferior quality. Both the Irish and Scotch crops of perennial Rye-grasses are far below the average, and it is found dealers are preferring one year old seed to new. All samples of heavy weight are unusually high in price, and it is recommended these be purchased for sowing instead of the lighter seed, even if half the usual crop be sown, as the latter are of inferior quality. Natural grasses are mostly in good supply, and of fair average quality, the Continental harvest being superior to the home one. Timothy-grass has risen considerably in value, and as the consumption of this grass increases prices are likely to rule higher. The new crop of white Mustard is not a large one, and the quality the worst ever known, but there is a fair quantity of yearling seed of good character. Rape is a short crop, of inferior quality, and prices will no doubt advance with the season.

—— FAILURES OF PLANTS IN FORECOURT GARDENS.—It must be stated these are a formidable and, in the matter of the loss of choice plants, a distressing list. The wet weather of summer began the work of decay, and the hard frost and freezing winds of December completed the ruin. In very many cases it is the old tale of an unmanageable and unsuitable soil, the fertile earth removed and replaced by rubbish of the worst character for growing flowers, in which a stiff retentive clay forms a large part. Let it be trenched or dug, or covered with better soil, it comes to the surface, and makes all clammy and unyielding. The expense of remaking these gardens entirely is too heavy to be borne by many tenants, and if it were attempted to burn the clay so as to make it more friable and lighter, the act of doing so might become a nuisance to the neighbourhood. A good dressing of cinder-ashes will do something to render the stubborn soil lighter, and the addition of some good loam as a surface dressing—loam of a fibry character, if it can be obtained—will be of great service. It to this can be added the sand swept up from the roadside and leaf-mould, something will have been done towards obtaining a more tractable soil. When the subsoil is clayey, it is well in planting choice subjects to endeavour to secure some drainage for them, by placing brick rubble, or something of the kind, below them. Such a stubborn soil will not yield all at once, but in course of time it can be made much more serviceable than it has been in the past.

—— THE RAINFALL AT PEASMARSH, HAWKHURST, SUSSEX, DURING THE YEAR 1879.—Mr. G. WILLIAMS, gr. to CHAS. LIDDELL, Esq., of Peasmarsh Place, states that the rainfall at that period during 1879 was:—Jan., 3.54 inches; Feb., 4.50 inches; March, 0.97 inch; April, 3.33 inches; May, 3.38 inches; June, 4.04 inches; July, 3.42 inches; Aug., 4.02 inches; Sept., 2.81 inches; Oct., 1.48 inch; Nov., 0.84 inch; Dec., 1.28 inch —the total for the year being 33.61 inches. The number of days on which 0.01 inch of rain or more fell was 157. In 1878 the depth of rain that fell was 35.05 inches; and the number of days on which 0.01 inch or more rain fell was 147.

—— SOWING GLADIOLUS SEED.—The pleasure experienced in raising and flowering seedlings is shown by many persons, and the subjects on which they try their hands are of a varied character. Looking through a garden last autumn we saw a fine lot of Gladioli which had been obtained from seed, and it was stated that by raising seedlings every year, the overflow of the plants, after the best have been selected, served for the decoration of shrubbery borders, &c. The plan adopted to raise seedlings ensures good bulbs to flower the second year. The seed is sown the first week in March, in deep pots filled with good soil to within a few inches or so of the top, the space being left to admit of some top-dressing being applied in the summer. The seed is sown thinly so as to have about twenty plants in each pot, 10-inch pots being preferred for the purpose, and they are placed in a slight heat to induce germination. After the plants are up, air is given, but the pots are kept as near the glass as possible, and then gradually hardened off, so that the plants can be stood out-of-doors in a warm and sheltered position about the end of May: and here they remain in their seed-pots throughout the summer, being carefully looked after in the matter of watering, and about July top-dressed with some rich compost. About the first week in October the pots are lifted into a place of shelter from frost, where the plants ripen themselves off, water being withheld as the leaves turn brown; and when this results the bulbs are taken up, put into paper bags, and kept in a dry room till the first week in March, when they are planted out in a well-prepared bed, as in the case of blooming roots.

—— LONDON CENTRAL FRUIT AND VEGETABLE MARKET.—The *Builder* of Saturday last contains the ground plan and elevation of the new market now being erected at the west end of the Central Poultry and Provision Market fronting the streets or roads—Farringdon Road, Charterhouse Street, western roadway, and a new road on the south side now being constructed running from the south-western corner of the Central Poultry Market to the foot of Snow Hill, at its junction with Farringdon Road. The general principle adopted in the arrangement or plan of the market has been to make the main floor as nearly as possible the level of the poultry market, so as to make the entire range of central markets, of which this will form the westernmost building, all readily approachable the one from the other. There being a difference of level of some 10 feet between the western and Farringdon Roads, the main entrances to the market area are placed—1st, that on the east opposite the western entrance to the poultry market; 2d, that on the north, in Charterhouse Street, near the corner of the western roadway; and 3d, that on the south, in the southern roadway, in a corresponding position to that in Charterhouse Street. The floor of the market will be level, a slight gradient being necessary only at the several entrances. The plan of the market shows an area of nearly 44,000 feet, devoted to wholesale market purposes, surrounded by forty-one shops, fronting the four streets before mentioned, which can be used for retail or other purposes, and these occupy an area of 16,800 feet in addition. The general or market area is approached by three main or vehicular entrances, and by two further entrances for foot passengers from the Farringdon Road corners of Charterhouse Street and southern roadway. The market consists of a series of shops, thirty-three in number, having in front pitching stands for goods, and waggon stands, the whole approached by a roadway having a width of 18 feet always clear for vehicular traffic. In the middle of the market area is a further arrangement for pitching stands, and an area of about 4400 feet, including gangways. In roofing the market, the floor has been kept as clear and open as possible, the detached main roof supports or columns being sixteen in number, and the clear span of the roofs is 47 feet 6 inches and 56 feet respectively, with a centre octagonal cupola roof of 56 feet diameter. The roofs are of light construction, with a range of glass louvres at the plate and ridge levels, affording an ample amount of light and air, so requsite for a market of this character, but materially excluding the prejudicial glare of the sun. The height of the roofs generally will be 28 feet to the level of the plate, and to the ridge of the louvres 45 feet, the central roof rising to a height of 70 feet.

—— PUBLICATIONS RECEIVED. — *Ireland and England*. By an M.P. A reprint from the January number of *Fraser's Magazine* (LONGMANS).—VICK'S *Floral Guide*.

—— THE WEATHER.—General remarks on the weather during the week ending January 19, 1880, issued by the Meteorological Office, London:—The weather was fine generally in Ireland and Scotland; dull, gloomy, and misty over England until the 16th, when it became fine and bright there also. The temperature was again below the mean for the time of year in all districts; over the greater part of England the deficits ranged from 5° to 7°, and elsewhere from 3° to 4°. The thermometer was highest on the 16th, but subsequently fell quickly, the lowest of the minimum readings (13° at Shrewsbury) being registered on the 19th. The wind was variable between N.W. and N.E. during the first five days, but on the 18th a moderate easterly breeze set in over the greater part of the kingdom, and continued till the close of the period. The rainfall was again much less than the mean in all districts.

JAPANESE CONIFERS.—VI.

(*Continued from vol. xii., p* 788.)

PICEA (Abies, Hort. Angl.) AJANENSIS, Fischer.*—The history of this beautiful Spruce Fir, a native of North-east Asia and Japan, has become involved, owing to its having been confounded with two other nearly allied Spruces, one, P. sitchensis *alias* P. Menziesii of English gardens, a native of North-west America; the other, Abies or Picea Alcockiana, a native of Japan only, so far as we know. That there is a great similarity between them is no doubt true, but there are differences in the form and anatomical structure of the leaves, as well as in other points, which amply suffice to distinguish them for garden purposes.

At Combe Wood, and in other nurseries, under the name of Alcockiana, two or three different plants are grown, as we shall hereafter have occasion to mention. This has arisen from the fact that Mr. J. G. Veitch, who made known the plants to our gardens, was not himself able to collect seeds, the country not being then open to foreigners; consequently he had to depend on others, whose competence, or veracity, or both, might not have been trustworthy. In any case, it is clear the seeds got considerably mixed. Moreover, there is a discrepancy between the description of A. Alcoquiana (J. G. Veitch *in litt. ex Gardeners' Chronicle*, p. 23, 1861) and his type specimens, now before us. Mr. Veitch probably wrote from Japan, and had no opportunity of revising his manuscript; at any rate, the fact remains that in his description flat leaves are mentioned, while his type specimens have 4-sided leaves. We prefer to rely on the evidence of the type rather than of the description.

P. ajanensis is, according to our experience, the plant most frequently cultivated in English nurseries and gardens under the name of Alcockiana, but having examined type specimens of ajanensis and having, through the kindness of Messrs. Veitch, been enabled to study the authentic type of Alcockiana also, we are enabled to state that the two species named are quite distinct one from the other, unless the two forms be states of one and the same species, which in this case is very improbable, and indeed of which there is at present no evidence. Even if it were so, the name ajanensis would still have precedence of five or six years over Veitch's name of Alcockiana.

P. ajanensis (the Alcockiana of most nurseries) is an elegant Spruce Fir, with the general habit and appearance of the common Spruce, but with more refined elegant foliage, the leaves being flatter, shorter, dark green upon one surface, glaucous-blue on the other. The plant is doubtless variable, for the specimens in the nurseries vary very considerably in length and breadth of foliage and degree of glaucous hue, some being much more blue than others. All, however, have a peculiar disposition of the resin canals, as shown in the figure (fig. 22). In most species when these channels exist they are close to the under surface of the leaf, or free in the ground tissue, but in P. ajanensis, in all its forms (and we have examined scores of specimens living and dried), the resin canals are placed near the upper surface of the leaves, so that the green surface of the leaf appears to be marked by three ridges, the central ridge corresponding to the slightly prominent midrib, while the ridge on each side indicates the position of the resin canal as seen more distinctly in transverse section under a low power of the microscope.

Habit.—That of the common Spruce, P. excelsa, but more elegant.

Shoots glabrous or villosulous when young, yellowish-brown marked with oblong, smooth, prominent cushions or pulvini, the upper free portions of which on the lateral shoots are more or less twisted and deflexed. The cicatrices of the leaves are rhomboid.

Leaves on the leader shoots appressed, the green surface anterior-inferior, that is away from the stem, the glaucous surface posterior-superior or next the stem, contrary to what happens in other Firs; those on the side shoots in many rows, but twisted at the base so as to be all in the same horizontal plane, and spreading horizontally from the branch at an angle of about 50°. Leaves on the upper surface of the branch appressed, parallel in direction to the branch, all flattish, linear-oblong, rather obtuse, thinner and rhomboid near the apex, not spine-tipped (or rarely spine-tipped?), thickened at the margins, midrib prominent on both surfaces, dark shining green, 3-ribbed, and with few stomates on the upper surface, glaucous and 1-ribbed beneath, with 4—6 lines of stomata on each side of the midrib. On transverse section the hypoderm cells are seen to be continuous, and in a double layer over the middle and edges. The palisade cells are sometimes well marked, in other specimens indistinctly so, but in any case the resin canals are placed above, not (as usually) below the palisade cells, and immediately beneath the green surface of the leaf.

Stamens:—Connective of anther according to the figure cited deflexed denticulate.

Cones of type specimens, erect, 1—2 by $\frac{3}{4}$ inch, oblong, tapering to each end; scales, shining brown, oblong-ovate, undulated and erose on the free edge; bracts minute suborbicular; wing of seed ovate-oblong.

From the North-west American P. sitchensis (*alias* Menziesii) the present species differs in its

FIG. 22.—TRANSVERSE SECTION OF LEAF OF P. AJANENSIS, MAGN.

flatter, less deeply keeled and blunter leaves. In the leaves of the American species, moreover, there are usually no resin canals. Dr. Engelmann also informs us in a letter that the bracts of ajanensis are very minute, short, and oval, the scales being undulate, while in P. Sitchensis the bracts are stout lanceolate, about half as long as the oblong scarcely undulate scale.

From P. Alcockiana the leaves differ in their flattish, not 4-sided shape, the presence of palisade cells, while the cones differ from those of P. Alcockiana in their more oblong, erose, not semicircular sub-entire scales.

Murray, *Pines and Firs of Japan*, p. 68, has apparently described and figured the leaves of this plant under the head of A. Alcockiana.

PICEA AJANENSIS VAR. MICROSPERMA.—This, as appears from the evidence in the herbarium, is clearly only a variety of P. ajanensis, and is equally certainly the Abies microsperma of Lindley, and the P. ajanensis var. japonica of Maximowicz. The form and the internal structure of the leaves is the same as in the type. The cones measure $1\frac{1}{4}$ by $\frac{3}{4}$ inch long, and in form are like those of the type, as also are the scales and seeds.

Whether Siebold's P. jezoensis, with its spine-tipped leaves, belongs to this species, or to this variety, or is specifically distinct, is at present uncertain. It seems to differ only in the spine-tipped leaves as far as is known at present. Some of the specimens of microsperma, however, have spine-tipped leaves; so the further information is wanted before the identity or otherwise can be decided. Meantime, for garden purposes, we here keep ajanensis with its blunt leaves distinct from jezoensis with its spine-tipped leaves, though with a very strong impression that, specifically, they are not distinct. Both, moreover, grow in the Island of Yesso.

As a rough guide for garden purposes we give the following table, showing the distinctions between the three Japanese Spruces most often confounded:—

A. Leaves flattish; cone-scales oblong, erose, or lacerate.
  Leaves acute, not spine-tipped. } 1. AJANENSIS (including MICROSPERMA).
  Leaves spine-tipped. 2. JEZOENSIS.
B. Leaves distinctly 4-sided.
  Cone-scales rounded, nearly entire. } 3. ALCOCKIANA (= PICROLOR).

The internal structure of the leaf in the two first is the same, and different from that in No. 3. *M. T. M.*

* 1856. PICEA AJANENSIS, Fischer, Florula Ochotensis; Trautvetter and Meyer, Fl. Ochot in Middendorff Reise, p. 87, t. 22—24; Maximowicz, Primit. Flor. Amur. 1859: Abies ajanensis, Lindl. et Gordon, Journ. Hort. Soc. London, v., 212: Picea ajanensis, Carrière, Traité Générale, 259.

Pinus Menziesii, Parlatore, in DC. Prod. xvi. 2, p. 418 (1868), quoad plantam Asiaticam (synon. exclusis).

? Abies Menziesii var. ajanensis, Hort. Kew.

Abies Alcockiana, Hort. plurim.; Murray, Pines and Firs of Japan, p. 66, quoad folia; J. G. Veitch in Gard. Chron., p. 23, 1861, quoad descriptionem specimina autem typica cum descriptione haud congruunt.

Abies (Pinus) sitchensis, Koch, Dendrologie, ii., pars 2 (1873), p. 247, haud Bongard.

Picea Jezoensis, Maximowicz.

Hab. Amur, Maximowicz!; Japan, Sapporo, Maries, n. 74!

Var. MICROSPERMA.

? A. Jezoensis, Sieb. et Zucc., ii, 19, t. 110.

1861. Abies microsperma, Lindl. in Gard. Chron. 1861, p. 22; Veitch in Gard. Chron. 1862, April 5; Murray, Pines and Firs of Japan, 1863, p. 69, fig. 129—136.

Picea ajanensis var. japonica, Maximowicz, iter sec.

Hab. Hakodadi, Yesso, J. G. Veitch!; Japan, Maximowicz iter secund. Oldham, n. 979!, 814!, Maries

A TRAMP IN LINCOLNSHIRE: A PLEA FOR MARSHLAND.

INSTANCES of the reclamation of vast tracts of land, from a state of comparative inutility to that of great agricultural value, are nowhere more instructively presented than in the lowlands of Lincolnshire. Leaving the bold undulations of Lincolnshire, or Northamptonshire, strongly characterised by far-spreading woodlands, broad pastures, and stately mansions, and passing over the range of limestone hills which run through the upper part of Lincolnshire, forming in their development northwards the well known wolds of the county, we soon reach the long, low level track which constitutes the lowlands, and which have given valuable extension to the fertile area of this large and important county.

The change from an upland country of hill and dale, and frequent woodland, to an almost treeless plain, level as the ocean that bounds it on one side, is startling, and not over-pleasing to an unaccustomed visitor, who is apt to be affected by the monotony of a long journey through scenery the most noticeable features of which seem to be endlessly reproduced; but resting for a few days in the country we are much mistaken if the visitor's views will not greatly be modified, and he will discover that special pictures of interest, if not of beauty, are to be found even in low Lincolnshire

There is a pleasure, to which few are insensible, in looking over an almost limitless extent of highly cultivated land, and seeing indications in the system pursued, and in the character of stock evidence of agricultural intelligence of a high order; and when the eye is carried far over the country and substantial farmhouses, well filled stackyards, and well built and comfortable cottages meet the view in endless repetition, one is apt to believe that some advantages belong to the pursuit of farming, and to regard with satisfaction this aspect of Fenland.

Is it not pleasant again to meet with instances where great nutural obstacles have been successfully overcome? And in looking over the level plains we are continually reminded that, without the well-directed skill and energy and perseverance of intelligent and far-seeing men, this land would have remained a source of trouble and danger rather than profit to the country. Throughout the low country the drainage of the land has been the work of scientific engineers for ages past. The system embraces vast areas, all natural waterways are employed, and great arterial dykes traverse the land, into which the minor drains pour their collected waters; and it is strange to travel through a country where the roads and paths are bounded by deep dykes and the divisions of the fields are effected by the same means, and stranger still that, for agricultural purposes, much of this low land should be as dry and workable as any in the kingdom.

The advantages of unimpeded sunlight from earliest dawn until evening, when the last rays of the sun fall on the level landscape, are of no mean importance to a district; and the successful culture of several crops, and the maturation of Turnip, Mangel, and other seeds may be, in conjunction with the excellent land, ascribed to the fact that every ray of sunlight falls on the land. Dwellers in picturesque valleys, whose view of the sun is limited to a few hours at mid-day, may well envy the unobscured daylight that falls on the plains of Lincolnshire. But whatever may be thought by outsiders, the denizens of the low lands have learned the value and appreciate the advantages belonging to their district, and can well afford to laugh at the jokes, originating in the old time, and still levelled at them, regarding a

certain identity in complexion with eels, on which they (the fen-men) where popularly supposed principally to subsist.

We have been tempted to make what seemed to us very obvious remarks in passing through low Lincolnshire on our way to the coast; we will now without further preface proceed on our journey. Traversing a portion of the land of dykes and high cultivation, and passing the little town of Wainfleet, which is connected by a tidal stream with the sea, we followed the direction of the retiring waters, and crossing the river by a slough or lock, made our way to the mud-flats that extend along the shores of Boston Deeps in the direction of that town, and at once entered on a scene as wild and dreary, and as opposite in aspect to those presented by the reclaimed land, within the massive embankment that guards it, as could well be conceived. It enables one to realise the changes which have been effected in the enclosed land. The sea, though prone to invade the land in one place somewhat capriciously, makes restitution in another. The mud and silt carried into the estuary by the Witham, and by the large arterial drains, is gradually being thrown up on its shores, and future ages may see smiling crops of corn on this vast far-spreading muddy shore. But waste and solitary as it appears at present, it should not be without some interest to a naturalist; such spots occasionally afford examples of our British flora not met with elsewhere; and in such savage and rarely-visited places we may expect to find instances of bird life (even the bittern has been met with) unusual in other localities. Equipped for each contingency, we sallied out into the marshes.

Above the low, but within reach of the full tides, we were soon amongst the curious vegetation, that seems half of the sea and half of the land, of which Salicornia herbacea is the representative plant; it seems the pioneer of its class of thirsty plants, and as the land is lifted up by new deposits it steadily advances seawards: very many acres are here covered with it. It is locally called samphire, and under this name is collected and pickled. Better sources of supply having been discovered, it is no longer burnt for barilla. Associated with it, and sometimes clinging to the hummocky lumps of soil amongst which it grows, is Atriplex portulacoides, a plant that seems well to hold its own and aid the work of holding up the silt. Carpetting the raised masses of hardened mud, and clinging to them and holding them together, is a tough little grass, Glyceria procumbens—a small thing to maintain its hold of the land against the pull of the sea. Beyond this fringe of vegetation is illimitable mud-flat, intersected with tortuous watercourses. Resting on the smooth mud seawards we could distinguish great flocks of stints, Tringa minuta, and knobs, Tringa canulus, which we endeavoured unsuccessfully to stalk. Thus collected, they are very wary, but in smaller clusters, feeding by the numerous rivulets of water, they were more easily approached, and thus we obtained the required specimen.

A few godwits and wild ducks were the only other birds to be found, but flocks of golden plover occasionally passed over the Deeps. The absence of gulls seemed singular, until we remembered observing on our way through Marshland large flocks in nearly every arable field, and innumerable plovers in the pastures, replacing the rooks of the upland country. Retracing our steps, and making our way to the mouth of the Haver, we hailed a gunner just paddling his little punt along the stream, who, with a caution as to the crankiness of his small craft, took us across, landing us near his habitation—a vessel stranded on the muddy shore. We were glad to accept his invitation to rest awhile in his snug little home, gladdened by wife and children; and, after a pleasant talk about birds and seals and fish, we started for the sea-bank easterwards, crossing some flats awkwardly intersected with dykes, and covered with a growth of Salicornia intermixed with grass, reached the commencement of the sea-bank, called Gibraltar Point, thence travelling along the beach northwards we found a welcome change from the mud of the Haver to the firm clean sand of the sea-shore.

Sand-banks covered with tall waving grasses here form a bulwark against the sea, and extend along the coast as far as the eye can reach, rising from 15 to 20 feet in height. Without the assistance given by these wonderful grasses the heaped up sand-dunes would be as unstable and uncertain as water itself—the play of the winds and waves; but bound together by their clasping roots the bank is held together, and forms a sufficient rampart against the waves. Associated with these grasses—Elymus arenarius and Psamma arenaria—is Sea Buckthorn (Hippophaë rhamnoides), which appears to have found a congenial position on the sandy hillsides and hollows; its thickly clustered orange-red berries give it an ornamental character at this season. Making our way through the thick grass covers our clothes became coated with the burrs of Hound's-tongue (Cynoglossum officinale), which, hardly distinguishable amongst the grasses, thus fixes its seeds for distribution; but the shore affording better footing than the irregular bank, we descended, and in doing so flushed a little party of snow buntings—recent arrivals from the far North; our old Scandinavian friend, the grey crow, frequently rises from the beach: trustful in his Norwegian home, he has already learned to be wary here. Springing from little sand-heaps at the foot of the bank we found several clusters of Sea Rocket (Cakile maritima): the firm sand was an absolute delight to walk on, and we could not but notice the wonderful way the sea has of assorting gravels and sands and silts in their various degrees of size on different portions of the shore; then the ripple-marks, like mimic seas, record the gentle play of the waves, just as the wreckage met with occasionally proved its mighty power. A walk of five miles along this coast brought us to the rising town of Skegness, where, under good auspices, houses are rising of the best construction; a public garden has been formed, a pier subscribed for, so that the place promises to be a second Trouville: and here we were glad to find a resting-place for the night, hoping to pursue our walk along the shore on the morrow. *W. Ingram, Belvoir.*

DOUBLE PRIMULAS.

EVER since the year 1820, when, I believe, the original type of this plant was introduced into this country, there has been a growing liking for it and the numerous and beautiful progeny which has issued through various agencies from it. The variety in the single-flowered forms is great, and there are shades of colours whose number is almost legion. An enormous quantity is annually grown and disposed of, while at the same time there is evidently an increased appreciation, and consequently a large demand for it. The plants certainly possess merits which at once make them favourites. But however useful and ornamental the single-flowered kinds are, they are surpassed by the duplex forms. As a grower, without being infatuated or over-enthusiastic, I am bound to push this point, namely, that they are one of the most valuable of decorative plants the cultivator can bestow his pains upon. Their value for the decoration of the conservatory cannot be over-estimated.

There is one thing absolutely necessary in keeping them in good floral display during the winter, which is a dry atmosphere; in such they will keep perfectly healthy and free from damping, and will flower through the whole winter. Lowness of temperature need not prevent the cultivator from growing them, for my experience this season is charged with surprises in the case of these plants. In one house, where were my finest examples of fimbriata (double-flowered form) it happened most unfortunately that the boiler was wrong during the most severe night we had, and the result was that the balls of the plants were frozen, and the leafstalks broke like icicles. Of course, not having before witnessed such a state of things, I thought all was over with them, but let me say that at this moment there are on those same plants some of the finest flowers of that variety I ever saw. Strong Pelargoniums were quite killed by the side of the same plants, but they survived the ordeal without any apparent hurt.

The house in question had a very dry atmosphere, and the plants were not surfeited with water, which is most fatal to them, during the winter season especially. Judicious watering, like judicious training, results advantageously to the operator: this particularly holds good in the case of double Primulas. One of the most enthusiastic growers of these things holds to these facts. Their value for bouquet making, or for any floral decorative purpose, is not to be over-estimated. Unlike their single kindred the flowers are persistent, and much more durable even in a state of beauty. The demand for these flowers is enormous. I know no reason why they are not more generally grown; it is true they are largely cultivated, but there is still ample room for their much more extended cultivation. The results they bring are certainly beyond those furnished by many other plants grown. Flowering as they do through all the dullest portion of the year should be in itself a sufficient attraction. No amateur with anything like a greenhouse need be without double Primulas in flower at Christmas. They commence to flower in good earnest during the late autumn months and continue till spring is fairly in, and would flower the whole year through if allowed, but I do not allow them to do so.

PROPAGATION.

A few words as to their propagation and after-growth will suffice. Supposing the old plants are to be cut up every season—which is a practice I heartily commend—this may be done in spring by removing all the side-shoots with as much heel as possible, carefully cleaning the cuttings from all decaying matter, and inserting them in the smallest thumb-pots, in a compost of half fibrous loam finely prepared, and half sharp silver-sand, potting each cutting firmly, so that it is fast in the soil; if there is not sufficient heel to keep it so, secure the cutting by two or three small pieces of wood. Plunge the pots in a bottom temperature of about 65° or 70°, or stand them under a handlight in a house with that temperature, keeping them well shaded during sunshine, and giving air during early morning, with the soil moderately damp.

With this treatment a good percentage of the cuttings will soon root, when they may be removed to a house with a temperature of 60° or 65°, standing if possible upon a cool bottom. If when the old plants are being cut up, some shoots are found with roots upon them, which is sure to be the case if the plants have been previously treated as they should be, in potting matters they should be potted in small pots and kept close a few days, when they will speedily establish themselves. The remaining shoot, which is left after the rest are removed, I shake out and pot in a small pot, and grow on with the rest. Some growers keep the plants more than one year, when by that time the shoots are rather lengthened, and in the summer they fill the pot well up with gritty soil, and by the following spring the shoots have become rooted, when they are simply cut through, and with the roots are potted. But I prefer the former practice as better plants are produced and finer flowers, and a larger stock may be obtained in a given space of time, which is a consideration in many instances.

POTTING.

After the small pots are filled with roots we shift them on into "fifty-four" pots, using as soil two parts good fibrous yellow loam, one part leaf-soil, and one part well-matured cow manure, with a good supply of sharp sand; good road sand is much better than silver-sand. Pot the plants firmly and well down, quite to the base of the leaf-stalks, otherwise in a short time the plants will become very loose, when they are very liable to be broken off. Place them in the same temperature, keeping them shaded from direct sunlight, which none of the Primula family enjoy, and water carefully but sufficiently. To allow them to become dry is most injurious in their growing stages. By the end of June they should be removed to a cold pit, in a shady position; if that is not at hand, artificial shading must be given them during all sunshine, and they are best placed on other inverted pots, so as to place them nearer the glass, and allow a free current of air between them, which is a sure preventive of damp and a promoter of strong and healthy growth.

Always ventilate by tilting the front portion of the lights, and they may have good ventilation night and day after they have been in the pit about a fortnight, which will suffice to harden them off a bit. The 54-pots will soon be filled with roots, and they must be shifted on into larger ones, say 7 or even 8-inch pots; 32-sized pots are very convenient, and, as a rule, are large enough for convenience, and good plants may be grown in that size. In this potting, as well as all previous ones, good drainage is an absolute necessity to ensure success. The same soil may be employed, potting firmly and placing the plants well down, after which all that remains to be done is to give them careful waterings and ventilation, remov-

ing any decaying leaves when necessary, and watch them make wonderful progress. After the pots are well filled with roots and the plants in good healthy action, occasional waterings with weak manure-water will be beneficial to them. They may remain in the pit until the end of September, when they should be removed to the house intended to winter them in, which should not have a temperature of more than 55° at night. If they are stood upon a bed they are best on other inverted pots, so as to have a free circulation of air and nearness to the glass. Never syringe or sprinkle water on the foliage, or dampness will be the result. Wooden stages with spaces between the bars suit them well during the winter, as that ensures dryness.

The selection of varieties must depend upon the taste of the cultivator, and, of course, upon the means at hand. There are now so many excellent kinds to be secured that there is no difficulty to get suited. Certain of our plant producers make them a speciality, while the majority of them are possessors of some kinds.

I select some of the best kinds extant, all of which I know to be worth cultivating :—

WHITE AND BLUSH FLOWERED VARIETIES.

The old kind known as alba plena is well worth growing but it is far surpassed by fimbriata, which produces much larger flowers, very double, and finely fimbriated ; this is an excellent variety for cutting purposes. Candidissima is a robust-growing kind, with large full flowers of the purest white, and very durable. Water Nymph, a new kind, belongs to the Fern-leaved section, and has large double white flowers nicely fringed. Empress is also a lovely Fern-leaved variety, the trusses are large, producing numerous large very double flowers, exquisitely fringed. Princess of Wales is certainly unrivalled ; the flowers are very full, of great substance, copiously fringed, pure white. I regard this as the best of all the white-flowered series. Blushing Beauty is a very strong-growing kind, marvellously floriferous ; flowers immense, finely fringed, white suffused with rose, grown for bouquets. Miss Eyre Crabbe produces large trusses bearing large double white flowers, slightly striped or blotched with red. Exquisite produces white flowers sweetly flushed with rose ; it is of close growth, most easily grown, and very free flowering.

RED AND CRIMSON FLOWERED VARIETIES.

The old double red known as rubra-plena is well worth growing ; the flowers are deep rosy-red fading to purplish-rose, very free, and of good constitution. Atro-rosea plena is a very superior form with velvety crimson flowers, very large, and full-petalled—a charming kind for cutting. Emperor : this is a grand associate for Empress in the other class, producing rich crimson flowers, with Fern-like foliage ; the flowers are very double and most lovely. Miss Eva Fish is a novel flower ; it is very full, produced in large trusses setting well above the foliage, of a rosy-lilac colour, passing to blush, with a good white margin ; a very fine variety. Magnifica is a strong growing kind, bearing very large and full flowers of a rich magenta colour finely fimbriated. King of the Purples produces enormous flowers, very full, of a rich purple colour, assuming a very deep tinge as it is passing off ; a most attractive variety, of free and vigorous growth. Rubra grandiflora is a very useful kind ; the flowers are rich crimson, very full, and of good substance combined with a strong constitution and a first-rate habit.

There are several other kinds known in our plant collections which possess equal merits in certain details, but, viewing them from all stand-points, the above are the best and the most generally useful. Before concluding I would add, as an impetus to amateur friends, that seed of double-flowered varieties can now be easily procured from good seedsmen, which give a very fair percentage of good flowers, some of which have proved to be distinct and quite equal to many of the named kinds. If the seeds are treated in the way recommended for the single-flowered kinds, they will readily germinate, and their after-treatment may be similar to that described for the cuttings above, encouraging the plants to as much good growth as possible, so as to ensure good flowers in the following autumn after being sown in the spring. The merits can easily be judged when compared with the already existing forms ; if they are much inferior, they must make room for other better things, by being consigned to the waste-heap. *N.*

Home Correspondence.

Standard Ivies.—To any one requiring plants of a somewhat formal character for architectural flower gardens and terraces in exposed situations or near the seacoast, I would strongly recommend standard Ivies. I consider them far preferable to Sweet Bays, Laurustinus, and plants generally used for such purposes, because they are so hardy that once in position they may be left to take care of themselves, as they defy storms of every description with impunity. Here there are between twenty and thirty planted in various positions, which appear to awake a considerable amount of interest amongst visitors. The stems are about 5 feet high and 18 inches in circumference, and are comparatively as straight as a gun-barrel. The heads average 4 feet through. Last year some of them had become too large, consequently we cut them hard in, which almost deprived them of foliage, but in six weeks they were quite green and bore no appearance of having been so recently reduced. Periodically, knife in hand, we go over them and take out all points and straggling shoots, which we generally find sufficient to keep them sizable and in good order. *A. L. H., Lancashire.*

Free Bearing Apples.—Bad as the season was last year for fruit generally, and thin as most kinds of Apples were in districts that are not exceptionally favoured, trees of Lord Suffield and Keswick Codlin could be seen bearing heavy crops, and it is very remarkable that these two varieties seldom or never fail, even after the worst of springs. Why they should escape frost and set their blooms when others are cut off I am unable to say, but that they generally do so is nevertheless a fact, and it is surprising that this immunity does not make them more sought after among growers, especially those who send their produce to market, as the above-named sorts are in and fit for cooking long before any others are ready. Not only are they marvellously free bearers, but they are excellent culinary kinds, and highly prized in kitchens for sauce, as they are very soft and pulpy, and can therefore be beaten up smooth. Besides being so valuable for cooking, Lord Suffield is not bad for dessert when fully ripe, and being large and handsome it makes a showy dish on the table, where it is quite an acquisition in helping to make a display at a time when other fruit is scarce. In addition to being good croppers, they are excellent doers, and will grow in almost any kind of soil, but like most Apples they succeed best in that which is of a deep loamy nature. *J. S.*

The Champion Potato.—At p. 52, Mr. Greaves has pointed out an error or two made by me at p. 964 in your last volume; the error as regards the distance between row and row I cannot satisfy myself was mine at all. So far as I can recollect, at the planting time Mr. Greaves asked me what distance I thought the dealer wanted to put the Potatos between row and row, and from what I remember I said perhaps 3 feet, and he replied "Nay, four." I thought no more about the distance until I went to see the Potatos taken up, and in jumping from ridge to ridge, without measuring, I fixed on the 4 feet without thinking any more about it ; no doubt many of the rows were 4 feet although not intended to be so, in many places, at least I thought so. The next error is the bulk, which Mr. Greaves must have thought was going to be something wonderful, for he invited me several times as the crop progressed, but I had no opportunity of going to see them until Mr. Greaves sent to say they were being taken up. I inspected the ridges with Mr. Greaves ; we next went to those that were being ploughed out, and Mr. Greaves was careful to find the last Potato, to show how many there were at a root, and as I said in my last communication they were packed as only Nature could pack them. The ridges were full of Potatos. We next inspected the heap : a third or nearly was in the heap, which was a grand sight. Here Mr. Greaves said he had weighed the Potatoes from so many roots, and had come to the conclusion that the crops weighed seven and a half tons to the acre. I made the remark that they appeared more like ten tons, to this Mr. Greaves made no demur. This conversation was repeated over and over without a word of dissent. I put more faith in his judgment than I did in my own, as he was more accustomed to see heaps of Potatos than I was. Therefore, if there was a mistake, Mr. Greaves was a consenting party to that mistake. For my own part, I had no interest in writing a false statement. I like to see a bit of good cultivation, and this was grand in every way. The letters I have received on this subject will show that the whole has been appreciated ; and to finish this, I ask your readers to believe that especial means were used, and that with a wise mixture of manure a wonderful crop was the result. *William Culverwell, Thorpe Perrow, North Yorkshire.*

Effects of Bitter-Sweet on Animals.—The effect of Bitter-Sweet (Solanum Dulcamara) on animals, when experiments have been made, is first great sickness followed by lethargic drowsiness. A dog, it is said, will swallow sixty berries without any very appreciable result. *Helen Watney.*

What is a Measure ?—In the west of Cheshire fruit and nearly everything else is sold by the measure. Every one agrees that a measure means a particular number of pounds weight, but that number appears to be indefinite and variable. I am told that a measure of Plums or Apples means 60 lb. weight, and a measure of Potatos 90 lb. weight. As for corn, it seems to me that a measure may be defined to mean "as much as the seller will give, and as little as the buyer will take for a particular sum," for I have at different times received as a measure of Oats 40 lb., 50 lb., and 56 lb. I live halfway between Chester and Whitchurch, and have been told that a Chester measure of corn is 40 lb., and a Whitchurch measure 50 lb., and a legal measure 56 lb. But if all is done by weight, why should the term "measure" be retained in these dealings, as it only serves to puzzle strangers ? *C. W. Dod, Edge Hill, Malpas.* [Some day the Weights and Measures Act will—act. EDS.]

Cool Orchids.—Being an ardent lover of Orchids, whether hot, warm, cool, or cold, I was much interested by accounts in some of your contemporaries of a collection in Scotland, where the East Indian-house is an agreeable lounge for gentlemen, and the other Orchids are grown in proportionately airy and frigid atmospheres. Having never tried the experiment of cultivating natives of some of the hottest places on earth in a house apparently admirably suited for the coolest "children of the mist," the very nebulous and nubigene of Odontoglots and Oncids, I can but wonder and admire ; but with regard to what must be an exceptionally cool treatment of so-called cool Orchids, my experience points in a diametrically contrary direction. For some years the coolest house here was kept at a temperature varying from 45° maximum to 35° minimum, during which time the plants were on the whole healthy indeed, but produced from year to year bulbs of the same size as the last, with a regularity truly monotonous, varied occasionally on the diminuendo, but seldom if ever on the crescendo scale. So that there seemed but small chance of any one, were he even to reach the age of old Methusaleh, ever seeing them attain to the dignity of respectable plants. Under a new *régime nous avons changé tout cela.* With the temperature ranging from 10° to 12° higher a striking improvement soon showed itself, and in this, the third year it has been tried, the Odontoglossums, Alexandræ especially, with hardly any exceptions, are making bulbs at least one fourth larger than those of last year, and are producing spikes with from twelve to twenty flowers. Nor do O. macranthum, O. Pescatorei and others, Masdevallias, &c., resent a higher temperature, as their increasing bulbs, and, in the case of O. macranthum, flower-spikes 12 to 14 feet long, sufficiently attest. The writer of one of the letters referred to gives one piece of excellent advice : "Let not the grower whose treatment is succeeding well be in any hurry to change it," and he might very well have added this caution, "lest in doing so he should discover some facts, doubtless highly interesting, but not altogether satisfactory to himself, about cool Orchids and how to kill them." *Philorchis.*

Sheep Poisoned by Nightshade Berries.—In reply to the Rev. C. Wolly Dod's queries respecting the above, and the editorial note on the same, all I can say is that the death of the sheep referred to occurred some years ago, and as the flock were all healthy and well previous to being turned into the field, and they were found browsing on the hedgerow where they had eaten the greater portion of the plants of Solanum Dulcamara with which the banks abounded, and which was found in their stomachs with nothing else but the Turnips, no other conclusion could be arrived at but that they were poisoned, which was further confirmed by the immediate removal of the remainder, when no more were lost. That the berries are poisonous to animals there can be no doubt, and I find it stated in Miller's *Botanical Dictionary* that thirty killed a dog in three hours, and according to Withering, a once celebrated English botanist, the general properties of Solanum Dulcamara and Atropa Belladonna are much the same. It appears that the use of the former medicinally in large doses produces violent sickness, with headache, giddiness, drowsiness, and

other dangerous symptoms, and that it has to be administered with great caution. Turning to Paxton I find it there remarked that S. nigrum and some others are highly virulent poisons, and in face of such testimony it appears very imprudent to turn cattle into fields where they are. *J. S.*

Pescatorea Klabochorum, Rchb. f.—A glorious flower of this has just come to hand from Messrs. Backhouse. The colours are nearly as warm as in the best variety of P. Dayana, which are so charming. The white is as shining as in the finest dish of Devonshire cream. The purple colour begins to turn to mauve. The styliform processes and warts of the lip are of the colour of dark Cherries, while the keels of the callus are almost black. Since this is the first flower the plant has developed, I entertain a certain hope, founded on what I have observed in Pescatoreas, that Messrs. Backhouse may by-and-by get some giant flowers from this plant, like the typical specimen in my herbarium. I should like to show it to those sneering Orchidists, who are suspicious that I praise hideous things; but if they do not see the evidence, why do they say so? Is there no individuality? Just now I have a very useful lesson to give to the great followers of Saint Thomas. My late good friend Francis Klaboch, who has joined that glorious army of martyrs for horticulture and botany, brought a very good Pescatorea plant to Hamburgh, which he believed to be P. Dayana, thinking that the single Pescatorea Klabochorum (whose flower is my typical herbarium flower) was in the hands of Messrs. Veitch. We were pleased to have P. Dayana a standard plant, both on account of its own merits as for its glorious name. Herr Ulrich Donat, our zealous and enthusiastic Orchid grower, was made very happy in a comparatively short time, by the sight of a bud, which grew, and finally expanded as a Christmas-box. It was Pescatorea Klabochorum itself! Now, in lieu of having the extent and the glorious colours of Messrs. Backhouse's specimen, it was much smaller, and replaced the purple, coming near mauve by a certain colour that has a frightful resemblance to that of the bricks of old English buildings. What a *lettre à cheval* should I have obtained from one of my dear English correspondents, if he had flowered such a *cretin* in lieu of the genuine Adonis? *H. G. Rchb. f.*

The Thuja (Arbor-vitæ) (see Enquiry, p. 90).—This is not considered poisonous in America. It is a very aromatic shrub, and its leaves are beneficial in rheumatism. I have heard that the American preparation called "Bay Rum," a most delicious wash for the hair, is made from their foliage. *Helen Watney.*

—— I can say from experience that cattle and horses are very fond of it, and will destroy any hedge or specimens that they can get near, providing they are not kept out of reach by means of a fence. I never saw any ill effect caused by their browsing upon them. *Jack Sharp, Rochester.*

Improved Potatos.—I think I may claim to be entitled to speak as an "experimentalist" (see p. 81) with the Potato. If so, and in answer to "a *Vox*, &c.," allow me to say that when a Potato has been given sufficient time, say five years from its seed-berry, to become established in type, no after "selection" from the tubers will ever create the slightest difference. Selection *ad nauseam* must be given to every batch of new seedlings for fully the above period before an election of them can be made and a guarantee for commerce; after that their failure or success must depend upon their constitution, as no after-selection will ever alter their types one way or the other. Soil may refine or add grossness to the stock, but no human agency will alter their types unless, perchance, by sowing the seed from the natural berry, or grafting, or cross-hybridisation be resorted to. This is my experience, and it has been gained during near upon half a century. When I am tempted to give advice for furthering the progress and improvement of the Potato, I say do so by hybridisation, and aim at selecting those seedlings only which show signs of earliness and which are comparatively proof against disease. I lost quite ten years when I began beating about the bush for Potato improvements by natural selection from the tubers; but select as I would, and after all the care that I could give them, they would remain kidney and round in type, with all their other distinguishing peculiarities, to the end of the chapter. Natural seedlings from the berry added quite another cycle to my enterprise, with no result for improvement. Then cross-hybridisation and the grafting process for fully twenty-five years more, through the horticultural press and at the exhibition tables at South Kensington, &c., have given full evidence of what I could achieve in those ways; and cross-hybridisation has decidedly won, and no doubt will win more and more for those who are coming after me, though, should I be spared a few years more, I hope, even so far as I am concerned, to prove one great means of freeing the public from the fear of the Potato disease. Of course our large seed firms have to take great precautions to keep their strains pure, and herein lies the great difficulty. What is a strain? Out of the batch of seedlings I raised between the Old Ashleaf and Turner's Union Round, were three of that strain which I sent to the Royal Horticultural Society's (Chiswick) trials of Potatos. I provisionally named them Eliza, John, and James Fenn; they were so nearly alike in type, that the committee decided to mix them up as one, and certificated and christened it Fenn's Early Market. Nevertheless, I kept them separate, with the result that Eliza and John proved to have no constitution, but James remains with me as Fenn's Early Market, vigorous of the strain. The stock was sent out to the public, however, mixed, as decided upon at Chiswick, and I believe the result has proved the same as the mixed strains would with me had I allowed them to do so—bad for reputation. Exactly so with Ashleafs, &c.; there are strains and strains, the types and constitutions of which being "set," will always remain true for the eye of judgment, and care, and commerce. *Robt. Fenn, Sulhamstead Abbotts, Berks, January* 20.

Scutellaria Mociniana.—Of the many species of Scutellaria, S. Mociniana is by far the best and most brilliant, and when well managed is one of the showiest and most useful of stove plants, as it is just of that size and character that renders it specially adapted for general decorative purposes, and being sufficiently hardy to stand in a greenhouse or conservatory during the autumn, it is doubly valuable on that account, and deserving of being largely grown for the embellishment of those structures. Its habit of flowering is so profuse that even the smallest specimens of it in 4 or 6-inch pots carry large heads of bloom, as every shoot and lateral branch they form is crowded with rich clusters of blossoms, which, with their combination of bright scarlet and yellow colours, have a most striking effect. If kept free from insects this Scutellaria is of very easy culture, but unfortunately it is remarkably subject to red-spider, and unless grown in a moist atmosphere, it is a difficult matter to keep these pests under. If allowed to become established, these soon cripple and disfigure the leaves to such an extent as to cause them to drop. The best way of treating the plants in summer is to give them a small frame to themselves, as then they can receive special treatment by being heavily syringed overhead and shut up early—a mode of management that just suits soft-wooded subjects like this. If plunged near the glass, so as to get plenty of light, the shoots come very short-jointed, and stiff enough to support the numerous heads of bloom without any tying. Cuttings put in now, or any time within a month or so, will make first-class stuff, and are generally better than old plants kept over and pruned back; but if any of extra size are wanted, they may be had by growing these later on, and pinching the ends instead of cutting them in the usual manner before giving them a fresh start. Although Scutellaria Mociniana will do in almost any soil, it succeeds best in peat or a mixture of this and loam, or the latter and leaf-mould, to which some sand should be added to keep them open and porous. For ordinary furnishing purposes it will be found that 6-inch pots are quite large enough for the plants, which only grow about 1½ foot high, and bushy in proportion, and such as these when in flower are charming ornaments in windows or any other position. *J. S.*

Seed Sowing.—The remarks on seed sowing in last week's *Gardeners' Chronicle* are most opportune, and deserve special notice during this critical season, and every means should be used to diffuse this wise caution to all who expect to reap a crop from the seeds they sow. The season of 1879 having failed to ripen a great portion of the seed crops, and the small portion that was saved being very late and damaged by rain, required a long time to dry and get into condition, indeed many sorts were not safely housed until two or three months after the usual time, consequently new seeds are weaker than usual, and certainly will not thrive if sown too early, or before the land is in condition. The anxiety of gardeners generally, and especially those who provide for markets, to get the earliest produce, naturally drives them to sow before the proper season (the result is too often a failure, causing them considerable loss), yet I cannot trace during the last twenty years any advantage in sowing too early, and reports from various growers seem to prove that early Peas (for instance) sown in the middle of February are generally gathered as soon as the same sort sown in December or January, and avoid the risks to which the early sown ones are liable. Wrinkled Peas should not be sown till March. *Seedsman.*

Soot on Boilers.—One of your correspondents states at p. 55:—"On breaking up Weeks' boiler I found the tubes coated on the outside with about half an inch of soot, which, being a non-conductor, must have caused a great loss of heat." Again, another correspondent says, also on p. 55:—"Everybody knows how much quicker a kettle with a clean bottom will boil than a foul one." Permit me to ask if these statements are consistent with sound logic? Would it not have been more correct to have said:—"Soot, a good absorber of heat, being in contact with the boiler or kettle, both good conductors, the heat, freely absorbed by the soot, was freely conducted to the water." In short, will not the water in a kettle with a foul bottom boil quicker than if the bottom be clean?—and more quickly still if the top and those parts not exposed to the fire be kept clean and bright? To some these may seem useless questions, yet in practice they often make all the difference between economy and waste. *T. Challis.*

Rainfall at Greenlands, Henley-on-Thames, in 1879.—The following is a monthly account of the rainfall here last year:—Jan., 3.48 inches; Feb., 3.56 inches; March, 0.71 inch; April, 3.31 inches; May, 2.92 inches; June, 4.27 inches; July, 4.15 inches; Aug., 7.43 inches; Sept., 2.54 inches; Oct., 1.17 inch; Nov., 0.11 inch; Dec., 0.79 inch. Total, 34.44 inches. From the foregoing it will be seen that August was our wettest month, no less than nearly 7½ inches having fallen; and the greatest fall in twenty-four hours, 2¼ inches, was registered on the morning of the 3d of that month. In 1877, the total fall was 30.77 inches; and in 1878, 26.51 inches. *W. H. G., Greenlands, Henley-on-Thames, Oxon.*

Brussels Sprouts.—It may interest Mr. Fish to know that there are some of these good in the country; ours, although not up to their usual standard of excellence, which is doubtless owing to the past wet cold season, are nevertheless good. The plants, unlike your correpondent's, are dwarfer than we have previously had them, but carry with few exceptions such well developed sprouts that we find no difficulty in keeping up the usual full supply for the dining-room table. The seed was sown in a similar manner to that described by Mr. Fish, viz., in a gentle hotbed early in February, and the plants were pricked out in a cold frame, and carefully hardened previous to planting them out into well prepared quarters. The varieties, the Imported and Scrymgeour's Giant, have done equally well, and were obtained from the Messrs. Veitch of Chelsea. With the exception of Savoys and Snow's Broccoli—the latter were planted in a rather unfavourable situation, especially as the weather proved so adverse to their well-doing—all the Brassica family have done fairly well with us, indeed more than one horticultural traveller has told me that, taken as a whole, they are the best crops of the kind they have seen this season, yet they are not so good as usual. When in Surrey a short time since I noticed crops of Broccoli totally destroyed by frost, and I hear complaints from other districts. So far this winter we have been fortunate enough to escape without injury, but we are threatened at the present time, having had 19° of frost this morning, which is more than we have hitherto registered this winter. *Thos. Coomber, Hendre Gardens, January* 20.

Poinsettia pulcherrima plenissima.—A short time since I noticed some remarks in your columns respecting heads of bloom of these beautiful winter-flowering plants, measuring 13 inches in diameter. This morning I saw at Rouge Bouillon House, the residence of Charles Godfray, Esq., heads of both the double and single varieties, which measured nearly 15 inches in diameter, and of the most brilliant colour. I thought them so beautiful, especially the double variety (the centre of which was fairly filled up with its crimson leaflets, the central ones being erect, and forming a splendid head of bloom), as to be worthy of being placed on record. *C. B. S., Jersey.*

Pinks.—Since the advent of perpetual Carnations they appear to have risen in such favour for pot culture as to have quite taken the place of Pinks; but, useful as they are for winter flowering, the latter are far more beautiful, the markings of some of the best of them being simply exquisite, and the blooms of that perfect form and character as to leave nothing to be desired. Besides the richly laced varieties, there are several selfs, one of the best of which is Lee's coccinea, a remarkably bright floriferous-habited variety, and one that is very valuable for cutting. Another equally desirable kind is Lady Blanche, which is equally free, and, being of a pure white colour, is of great use for working up in bouquets. Among the marked varieties, Clark's Derby Day is the most perfect, the flowers being large and full, with heavy lacing of bright red. Lord Lyons, too, by the same raiser, is a very beautiful kind, but rather too late in blooming for pot culture, and yet it is one that expands well without bursting, and a variety that no one can can fail to admire. For forcing purposes, the old Anne Boleyn is yet unsurpassed, and to have these good the cuttings should be put in early, and the plants got well established in pots

before winter sets in. "Grass," or young shoots from Pinks, always strike best after having made a little growth in gentle heat, when, taken off clean close to a joint, and inserted in sandy soil under a bell or in a propagating-box, scarcely one in a hundred will fail. Managed in this way, and grown, they will be found to succeed the perpetual Carnations, and when they have done flowering they come in admirably for filling gaps in borders, where during the summer they form fine tufts that make a grand display the year after. *J. S.*

Fielder's White Azalea (see Enquiry, p. 59). — This old variety is still the best white Azalea we have for early work, but it is in danger of getting into disuse, from what cause is not easily seen, except that it is old-fashioned. When I used to visit the Luxembourg Gardens at Paris some years ago, M. Rivière, the late *jardinier-en-chef* there, pointed out to me some hundreds of this white Azalea (I think he told me had nearly a thousand), that he brought on to flower early for the decoration of the Hôtel de Ville de Paris—so much was it valued on festive or great occasions at this once famous municipal building. They were grown *au naturel*, like the hardy Ghent varieties; crooked and straight and tall and slim, were all alike used and grouped in the decoration of this place and at the Luxembourg Palace; in this way they were subjected to little or no culture, but simply potted biennially or triennially as was thought desirable, and as may be supposed gave little trouble in summer beyond watering occasionally, for they were plunged out-of-doors in beds of decomposed leaves or dung, after a little recovery from the effects of decoration. Apart from its purity as a white flowering plant, it is moreover a free flowering plant, easily grown and giving little or no trouble. The flowers when cut last a long time in beauty, but to send to a distance they are better cut just before opening. I mention the Luxembourg Gardens specially, where it was extensively used, but in all gardens of note in France it was equally prized. *Henry Knight, Floors.*

Select Vegetables.—Out of a number of excellent kinds of vegetables we grow here annually, there are a few which I look upon as special favourites—standard first-class varieties. Vick's Criterion Tomato is one which outstrips all other sorts hitherto grown here, both in quality and quantity of produce. Dickson, Brown & Tait's Eclipse Cauliflower is another of superior merit, having all the superior characteristics of Veitch's, but dwarfer and hardier than that popular variety. Stuart, Mein & Allan's No 1 Cabbage, which in reality is a high selection of Enfield Market, is the earliest Cabbage, as in some seasons it has been cut in February, and is by far the best for general purposes—in fact, I grow no other. I have formed a very high opinion also of the old Lemon Kidney Potato. The few I grew of it last year determines me to grow it extensively this year; compared with the old Ashleaf and Gloucestershire Kidney, it was much less diseased: it is a heavy cropper, and superior in flavour. Hammersmith Hardy Lettuce cannot be too highly recommended for standing the winter, and coming in early at this season. William the First Pea is decidedly the best early Pea grown, and is moreover a good cropper, and the right medium size for the cook. Leicester Red Celery maintains its superiority both for general excellence and its characteristic hardiness. *K., Tweedside.*

Adiantum fulvum.—I wish to call the attention of Fern cultivators to the fact that the plant invariably, so far as my own observations have gone, grown as Adiantum fulvum, and figured as such by Lowe, is not A. fulvum of Raoul, and consequently of Hooker's *Sp. Filicum*, the *Synopsis Filicum*, &c. It had long struck me as singular that a plant so closely resembling A. hispidulum, especially in its pedate habit, should (supposing it to be correctly named) be placed, not in the "pedatum" group of the *Synopsis*, but in a quite remote section of the genus. I therefore took the opportunity of a visit to Kew herbarium to consult Mr. J. G. Baker and to compare fronds of the so-called fulvum with the specimens in the herbarium. The result was to satisfy both Mr. Baker and myself that A. fulvum of Lowe and gardeners generally is only a variety of A. hispidulum, from which it differs mainly in having shorter and rounder pinnules, a somewhat stiffer habit, and the young fronds of a tawny colour, from which latter character no doubt the specific name has been erroneously given to it. The true A. fulvum (Raoul), on the other hand, so closely resembles A. affine (Willd.) = Cunninghami (Hooker), that in the opinion of Sir Joseph Hooker (*Flora of New Zealand*) it cannot be satisfactorily separated from it. Mr. Baker, in a letter he was good enough to write me on the subject, defines fulvum "as differing from hispidulum by showing no tendency to a pedate mode of branching, by its less hairy rachises, larger, less closely placed segments, and larger involucres." He adds that it is desirable that cultivators should look at their specimens, to see if any of the fulvum in the country is the right thing, and that he will be glad to compare any specimens sent in with the type. If I may venture to express an opinion on the subject, having made a special study of the genus Adiantum, I would suggest that A. fulvum (Raoul) be merged as a mere variety in A. affine (Willd.), and that the species now so generally known to gardeners as fulvum retain that name as a variety of hispidulum. *Alfred O. Walker.*

The Bees Again.—Early Peach-house in full general blossom, and many advanced sets of nearly the size of Peas. The blossom is exceptionally strong, notwithstanding the sunless spring, summer, and autumn of last year. Bees for the fifth year steadily and joyously at work. It may be interesting to some of your readers to know that the hive which made the campaign of the Peach-houses last winter, and spring was though rather late, the first hive in our apiary to swarm. *Wm. Miller, Combe Abbey Gardens, Jan.* 17.

The "Acme" Labels.—Messrs. Stevens & Pinches, 48, Leicester Square, and 27, Oxendon Street, have registered and introduced a new label, which they call the "Acme," and for which they

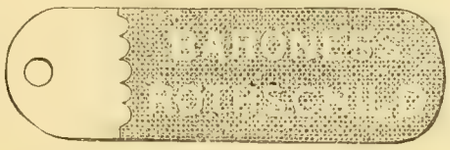

FIG. 23.—THE "ACME" ROSE LABEL.

claim the advantages of durability, distinctness, lightness, and neatness. A sample before us enables us to say that they have not overrated the merits of the "Acme" labels, which are made of stoutish zinc, with the name embossed, and they appear to be practically everlasting. Fig. 23 is a fac-simile in size and style of the Rose label; and fig. 24 of the one designed for fruit trees; while another in the T form is manufactured for Orchids and all plants grown in pots and

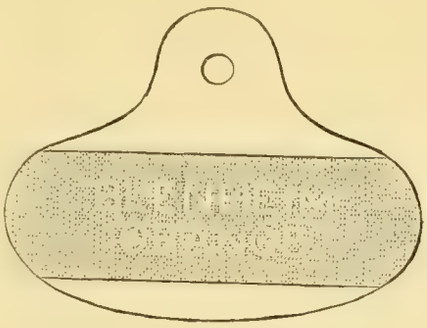

FIG. 24.—THE "ACME" FRUIT TREE LABEL.

borders. They are very cheap—the Rose label, for instance, costing 1*s.* 3*d.* per dozen; and we should add that a large selection are kept in stock.

Clover and Rib-grass.—A customer of mine maintains that the Rib-grass found in samples of red Clover are not grown with the crop. I have seldom seen a sample of red Clover seed without some Rib seed in it. I find it in American, German, and French reds, and I have seen samples grown by farmers in Herefordshire containing nearly a fourth of Rib-grass. My customer maintains that Rib-grass comes into seed much earlier than Clover, consequently the Rib found in red Clover samples is put into the bulk by the dealers. The latter assertion I strongly deny, as we have been to a large expense in getting sieves and machines to try and take the Rib-grass out of red Clover samples. Would you kindly give us your opinion? *W. C.* [Unless the percentage of Rib-grass is very large, we should not think it likely that any seedsman would adulterate his Clover with it. EDS.]

Poor Soil (see Enquiry, p. 87). — I notice in your issue of the 17th "Woking Sands'" enquiry as to "the best way of treating a neglected estate with gardens and grass lands of peaty sandy soil with subsoil of clay, and running sand full of water; also as to the cheapest way of draining, &c." There can be no doubt as to what requires to be done to make such an estate as this productive in the highest degree, viz., to get rid of the surplus water in the subsoil, and so to manipulate the surface soil that it may be composed of a suitable mixture of the three substances which abound so largely—peat, sand, and clay—excellent constituents for a good soil, and only requiring, in case the clay is not of a calcareous nature, the addition of a small quantity of chalk or lime to make it approach to something near perfection. The best means for carrying out these desirable improvements depends much on the conformation of the country and other local circumstances, such as the distribution of the underlying strata and the position or proximity of the natural watercourses. The water in the subsoil, passing through a pervious stratum of sand overlying an impervious stratum of clay, on its way from a higher to a lower level, requires to be intercepted by a drain of sufficient size and depth, cut at right angles to the general slant of the surface of the estate and at its highest level, and then led off in an open or covered drain by the shortest or easiest route to the nearest watercourse. This would clear the subsoil of all water except that which would fall in rain from above its own surface, and which, seeing that the surface soil is of such a porous and dry nature, would not be more than sufficient. No one can doubt but that applications of clay to soil composed of sand and peat materially increase its productiveness; the extent to which such applications are likely to be profitable, however, depends entirely on the cost of carrying the work out. In this instance, if, as I imagine, the clay underlies the whole or a great portion of the estate at no great depth from the surface, this is not likely to prove a very expensive matter. The clay may be obtained by opening pits at convenient spots and carting it over the surfaee, or it may be obtained from wells or drains opened at intervals, dug out, and spread over the surface. An analysis of the soil in its present condition as well as of the clay should be obtained in order to enable a correct judgment to be formed as to whether an application of chalk or lime would be necessary or advisable, and as to what manures would be most useful. It is probable, I think, that in a soil composed of peat, sand, and clay in suitable proportions, comparatively small quantities only of manure would be requisite. *J. E. Ewing, Norwich, January* 19.

Horticultural Boilers.—While bowing to the decision of the Editors, that this discussion should now cease, we, in justice to ourselves, feel compelled to ask to be allowed to correct the impression likely to be conveyed by Mr. Baines' last remarks. True, they do not alter the fact that the first three saddles failed, and that the second three failed also, but for which circumstance our tubulars would not have been called into requisition. How to remove these boilers was the difficulty, for it was practically impossible for Mr. Bull to do without heat, and therefore they could only be removed one at a time. The first and second were taken out forthwith, but when two of the tubulars had got to work, an agreeable change took place in the aspect of affairs, for they were found to consume a great deal less fuel and to create a greater heat than the three saddles combined. In fact, for the first time the amount of temperature was all that was required, and a feeling of profound anxiety gave place to a sense of great relief. This is vouched for by all concerned, and especially by Mr. Bull's excellent foreman, and also by the stoker. The third saddle boiler is now only awaiting removal (for Mr. Bull has resolved to replace it by a third tubular) until the weather is sufficiently favourable to admit of some slight alterations to the apparatus being made, and a fire has been lighted in it solely upon the ground that—as everbody knows—it is better to work three boilers moderately than to push two. The third tubular will be fixed as an auxiliary for severe winter work and as a reserve power—an arrangement for which should always be made in large establishments, especially when, like Mr. Bull's, they contain a very valuable collection of plants. As we stated several weeks back, our desire is that the public should do us the favour of inspecting these boilers. *J. Weeks & Co.* [In justice to Messrs. Weeks we insert their explanation, but no further discussion on the subject can be permitted. EDS.]

Houses *v.* Pits.—Common brick pits are very useful, and perhaps better adapted for certain purposes than any other class of structure; but to my thinking they are not the most suitable for many uses for which they are in some places still built, and in others the only convenience yet employed—I refer to the growing of Pines, early Melons, and Cucumbers, and forcing Beans in winter. That these under skilful management are sometimes successfully grown in them I am well aware, but to accomplish this considerable more time and care has to be rendered by the grower than would be necessary if he had suitable houses at his command. Pits, when compared with convenient houses for such purposes, have many disadvantages, and not the least of these is their liability to drip, which alone sometimes causes the failure of a crop. There is also discomfort and inconvenience in

cold, windy, and wet weather in attending to anything which they may contain. It not unfrequently happens in the early spring months, when, day after day, we have piercingly cold winds, that the tender occupants of these pits are subjected to a check, either from exposure when the lights are opened that their wants may be attended to, or from want of attention, because it is unsafe to open them. I have a recollection of once living under an energetic, severe gardener, where we had a long range of pits entirely devoted in the winter months to growing Beans, which were planted in rows over beds of leaves, and did remarkably well but for the constant nightly visits of slugs. Every mild night these depredators were hand-picked by the unfortunate who was unluckily "on duty." Many and many a half-hour have I been thus employed, murmuring during the time about the pits, and wishing for houses with a walking-way through them in their place, to mitigate in some degree the disagreeableness of the unthankful office. I would recommend to all who have a number of pits, and are deficient of low, useful houses, and have a difficulty in getting new ones erected, to do as we have done here, *i.e.*, convert the former into the latter. It requires but little ingenuity to make of pits serviceable lean-to's, span, or half-span houses; the best way of doing this will readily suggest itself to all. It need not be an expensive undertaking, and the improved and more certain crops which should follow will soon repay the outlay. We altered two ranges, as follows: of one which had lights 10 feet long we made half-spans; of the other, which had 7 feet sashes, spans were made. Of course this necessitated some alteration in the brickwork, and extra piping to keep up the required temperature. This was done for us by the Messrs. Weeks, of Chelsea; and may I mention, at a time when there is so much controversy respecting the merits of boilers, that their duplex tubulars are doing their work for us in every way satisfactory. *T. Coomber, Hendre, Monmouth.*

Sternbergia lutea.—Sutherland, and Hemsley in his Handbook based on the French work of Decaisne and Naudin, give Sternbergia lutea as flowering in September and October; so does Vilmorin, who adds that its French synonym is "Narcisse d'automne." I was surprised, therefore, yesterday to see its leaves appearing, but your correspondent "J. S." speaks of it as a spring flowerer, vying with the Christmas Rose as to which shall peep out of its prison-house first. Will some kind reader explain this apparent anomaly? *A.*

Unseasonable Leafage—The peculiar tenacity with which leaves that should under ordinary conditions have long since fallen, still remain attached to the trees, is not confined to Peach trees, but may be seen abundantly evidenced on Apple trees, especially on young robust trees where the season's growth was strong and luxuriant. Most common are tufts of leaves, blackened by frost and cold, but still hanging on, and seeming to defy the force of all the elements to remove them. The old fable of the traveller and his cloak is recalled to mind by this unusual incident. All the force of the wind and the sterner elements combined only caused him to wrap his covering closer and more firmly round his body; but the moment the genial sun with its delicious warmth burst upon him the cloak was removed. Had the sun shed the persuasive influence of his power a little more freely last autumn, there would have been no leaves clinging firmly amidst the frost and storm to the Apple tree tops; but what the sun failed to do the winter cannot accomplish. Curious and interesting as is the unseasonable spectacle of deciduous trees carrying leafage through the winter months, it is not one that brings any pleasing associations. The clusters of leaves mean much green unripe wood, such as cannot prove fruitful next summer, and the hope of a crop of fruit is made more dim. Of course Apple trees rarely fruit upon the preceding year's wood; but the lack of maturity found there may most probably be also found in the actual fruiting wood and in the fruit-buds. If a good season for hardy fruits should come, it will, to some extent, confound our generally received opinions as to the connection that exists between cause and effect—between well matured ripe wood and a fruit crop. The subject is an interesting one, and no doubt the effects of one of the wettest and coldest summers of the century upon our probable fruit crop of next summer will be watched eagerly by all gardeners and fruitists. *A. D.*

Winter and Spring Vegetables.—Looking round gardens it is quite lamentable to witness the destruction the hard winter has wrought among vegetables, of which there must be a great dearth in the spring, as plantations of Broccoli and even old Cabbage stumps, so much depended on for furnishing pickings of greens, are nearly all killed, and no wonder, for everything was growing away freely when frost set in, and being caught in such an unprepared condition to meet excess of cold, all except the most hardy were bound to succumb. Fortunately, Brussels Sprouts have escaped, which shows, if further proof were needed, what a trustworthy crop they are, and yet for all this they are not cultivated to anything like the extent their merits deserve, as not only are they to be depended on in all weathers, but they are unapproachable for delicacy of flavour. This latter good quality, however, only applies to them when the buttons are large and firm—a state they are rarely in except under the best management, as witness the rubbish one often sees in our markets, where stems are sold at from 3*d.* each, which is not only a dear way of buying what little they have on them, but cutting them in that manner entails much waste, as were they left to grow on and the Sprouts gathered when fit, if they ever reached that desirable stage, the yield would be considerably greater. To get them to a fine state of perfection the seed is very rarely sown early enough, for to produce and develope the side shoots the plants must have great size and strength, which takes a long season for them to attain. In a general way the sowing is deferred till the middle of March, a period that is quite a month too late, and it will be found that the gatherings from such as are raised then bear no comparison to such as are obtained from plants got up in February, as with care and proper nursing these latter in good soils grow at least a yard high and have stems proportionate to their stature. To think of raising seed on unprotected borders at the season named is of course quite out of the question, as to get it to germinate the shelter of glass is necessary, together with a little bottom-heat, on which, if sown thinly in rows about 6 inches apart, the plants can stand till ready for pricking off later on in any cold frame, where they can stand and be hardened for their final removal in April or May. In order to give them every chance, the ground to receive them at that time should have been previously trenched and heavily manured, as they require great depth of tilth during the summer, otherwise their roots cannot get down, and any check has a tendency to bring on the blues, a malady to which the Brassica tribe are all subject in dry weather. It will be found a great help if before planting drills are drawn, like those made for Potatos, the use of these being that liquid manure can be poured into them, and during the hoeing for the purpose of keeping down weeds these depressions gradually fill in, when the soil forms a great stay to the stems by assisting in keeping them erect. In ordinary winters nothing can be more useful up to Christmas than Couve Tronchuda, which in my opinion takes as high rank among Cabbage as the best Marrows do among Peas, the flavour being mild and delicious, and yet with all its good qualities it is seldom met with in gardens. Being a native of Portugal it is unfortunately rather tender, and although not actually killed by frost its quality is greatly deteriorated by its action, as has been the case this year. Like Brussels Sprouts it cannot well be sown too soon, and is quite deserving of all the attention advised for them, as when got in early and liberally treated, the heads come very large and heavy, a good one being sufficient for a moderate sized family. The several varieties of Scotch Kale are all valuable for winter and spring, the tops and sprouts being remarkably tender and good. The same may be said of the purple sprouting Broccoli, which is so useful and productive that it should be much more largely grown than it is. The thing with these is to sow early and thin, and to plant out before they become drawn, as it is surprising what a difference this makes in their favour. Those who have good breadths of young Cabbage this year will be fortunate, as they will be at a premium by-and-by, coming in as they always do when they are very acceptable, and assuredly they will be doubly so this season, for from present appearances there will not be much else to fall back on. To start them on and expedite their growth, it is a great help to run the hoe amongst them occasionally, so as to break the crust and let in the warm air, and the same with Spinach, which will be greatly quickened and benefited by a sprinkling of soot. *J. S.* [The best of all the hardy greens is the Cottager's Kale. EDS.]

The Weather in Sutherland in 1879.—The weather in the North during the past year has, as in other parts of the kingdom, been wet and cold, while the season of growth was mostly wet and unfavourable for the growth of crops. From what I can learn, however, we were on the whole better off in regard to the weather than our more southern neighbours. Should that have been the case, a few notes by way of comparison may be interesting. To begin with the winter 1878–79, it was in the North one of the most severe and protracted winters on record. The total snowfall here, close to the sea, amounted to $3\frac{1}{2}$ feet. The thermometer went down to freezing point, or below it, on 103 nights. The lowest point reached was on December 28, when the protected thermometer registered 18° or 14° of frost. The ground was covered with snow fully three months. Hill farmers had in most cases to send their stock to within reach of rail, and immense quantities of forage had to be brought into the North by rail to tide the stock over the winter. Had it not been for railway communication, the winter would probably have been as disastrous to stock as that of 1614, which is thus described by Sir Robert Gordon in his *History of Sutherland*:—"During the winter season the yeir of God 1614, ther fell out great abundance of snow, more than ordinairie, throughout all Scotland, which stormes continued all the spring, evin until the moneth of May nixt ensuing, whereby the most pairt of all the hors, nolt, and sheip of the Kingdome did perish, bot chieflie in the north." There was wonderfully little damage done to plants and shrubs last winter by frost. Roses suffered most. A good few of the weakly growers appeared to be hard hit in the spring, but lingered on a few weeks between death and life, and in most cases ultimately died. Most of the Roses bought in last winter to make up vacancies very speedily followed those they replaced, leaving nothing but the labels to look at for the outlay. The spring months were fairly good after the beginning of April to the end of May—some heavy rains occurring about the middle and end of the latter month; however, June, July, and August were excessively wet, with dull cloudy weather and a generally low temperature; and to the prevalence of this state of things during these three growing and ripening months is due the lateness of the crops, and probably most of the failures in outdoor fruit and vegetables. The rainfall for these three months is $11\frac{1}{2}$ inches, with 53 wet days—July alone contributing $5\frac{1}{10}$ inches with seventeen wet days. Compare this with 1878—a fairly good year: during the same period we had $7\frac{1}{2}$ inches for the three months with thirty-eight wet days, while July of that year shows $1\frac{2}{10}$ inch with ten wet days. By the end of August things began to mend; a spell of fine breezy ripening weather set in, which long-looked-for change for the better lasted all through September and October, and came just in time to ripen and to harvest grain crops, and to materially improve the Potato and Turnip fields. For some garden crops the change came too late, the chief failure in the way of fruit being Strawberries. There was an appearance of a great crop, but the greater part of the fruit either did not swell up or rotted before ripening, a very small proportion only arriving at maturity. Apples were a good crop, but did not get properly matured, and were consequently more fitted for kitchen use than dessert. Plums ripened fairly well, notably Coe's Golden Drop and Victoria, though somewhat deficient in flavour. Small fruit was plentiful and good. Gooseberries were an extraordinary crop, and of good flavour considering the season. Among flowers Mignonette was a total failure; some of the more tender half-hardy annuals did badly, but the bedded-out plants, on which we depended for a display in the flower gardens and principal flower borders, did splendidly. It was generally remarked that the flower gardens here last September looked quite as well as in any former year. The rainfall during September and October was $3\frac{3}{4}$ inches, while for the same two months in 1878 it was $7\frac{1}{2}$ inches. The rainfall for the year 1879 was $29\frac{6}{10}$ inches, with 187 days on which 0.01 or more of rain fell, being fully 2 inches under the average of the last ten years. The rainfall for 1878 was $33\frac{3}{10}$ inches, with 180 wet days; while in 1877 (the worst year we have had here for many years) the rainfall was $40\frac{6}{10}$ inches, with 244 wet days, being about 9 inches over the average. *D. Melville, Dunrobin Castle Gardens.*

Early Strawberries.—I made a small gathering yesterday, and a few fruits were gathered off the same plants in December. This batch was taken inside in the early part of November: they are old plants that had been forced last year, then shaken out and repotted. The variety is President, but had it been Vicomtesse Héricart de Thury I should have had a better return. I must mention that some of the fruits were set before they were brought in. President we know is not by any means the best to choose as an early forcer, although I have gathered it first-class in March, and they must be in ere this to do it. From off a batch of thirty-eight plants of President last year I gathered 17 lb.; these gatherings extended three weeks in April. *W. Ravenhill, Southgate, Jan. 19.*

Hardiness of Maurandya.—I have now (January 21) a Maurandya Barclayana green, untouched by frost, on the south side of the house, on the north of which I have just registered 12° of frost under a pent-house porch. The plant was self-sown in the cleft of some stonework, through drainage. *W. S. M.*

Chinese Primroses.—An extraordinary and beautiful collection of the above are growing and flowering, in the vigour of health and variety of colour, at Rouge Bouillon House, at the present time, some of the plants being more than a foot in diameter, with large heads of bloom raised 6 and 8 inches above the foliage—the individual florets being more than 2 inches in diameter, single, semi-double, and double,

and of the prettiest hues of rose, lavender, and white, sometimes striped. What further progress can be made in the cultivation of these winter-flowering favourites is a puzzle, as some of these are as much larger than the varieties in general cultivation as large-flowering Dahlias are than the Pompon varieties. *C. B. S., Jersey.*

PLANT PORTRAITS.

ANTHURIUM COLOCASÆFOLIUM, *Revue Horticole*, 1879, p. 452.

ARISÆMA GALEATUM, N. E. Brown, *Bot. Mag.*, t. 6457.—Native of Sikkim, flowered at Chiswick. Described by Mr. N. E. Brown in our columns, vol. xii., 1879, p. 102.

CHIONODOXA NANA, Boiss. et Heldr., *Bot. Mag.*, t. 6453.—Sometimes, but erroneously, called Puschkinia scilloides. It is far inferior for horticultural purposes to C. Luciliæ.

CŒLOGYNE MASSANGEANA, *Floral Magazine*, t. 373.—See *Gardeners' Chronicle*, 1878, vol. x, p. 684.

EURYCLES AMBOINENSIS, *Revue Horticole*, p. 457, 1879.

GERANIUM ATLANTICUM, Boiss., *Bot. Mag.*, t. 6452.—A native of Algiers, whence it was introduced by Mr. Thiselton Dyer. It is like G. sylvaticum, but has more deeply divided silky leaves.

HÆMANTHUS KALBREYERI, Baker, *Illust. Horticole*, t. 354 (see *Gard. Chron.* 1878, p. 202).

ODONTOGLOSSUM CORDATUM, Lindl., *Illust. Hort.*, t. 355.—Sepals yellow with transverse bars of brown petals yellow, with brown dots; lip cordate, white with a lilac blotch near the base, and spotted brown near the apex. Mexico.

ODONTOGLOSSUM MACULATUM, Llave, *Bot. Mag.*, t. 6455.—The plant figured under this name in 1855 is, it appears, the O. cordatum of Lindley. In the present plant the sepals are brown, the petals and lip yellow, with brown spots.

PAVONIA WIOTI, Ed. Mn., *Revue d'Horticulture Belge*, October 1, 1879.—A Brazilian Malvaceous plant, remarkable for the involucres surrounding each flower, and which consist of numerous narrow bracts of a rose-pink colour.

PEAR BERGAMOTTE HERTRICH, *Revue Horticole*, October 1, 1879.—Raised by M. Hertrich, of Colmar, about 1856, from seeds of Bergamotte Fortunei. The fruit ripens in March and April, and is of excellent quality.

PEAR RIVAL DUMONT, *Bulletin d'Arboriculture*, November.—Fruit large, pyriform; stalk short, thick; eye shallow; skin yellowish-brown, spotted with red; flesh melting, juicy, fragrant.

POTHOS GLAUCA, *Revue Horticole*, p. 453, 1879.

PRIMULA CAPITATA, Hook., *Gartenflora*, t. 985: see *Bot. Mag.*, t. 4550; *Garden*, Dec. 13.—Leaves oblong, tapering at the base; flowers lilac, in dense globose heads.

PSYCHOTRIA JASMINIFLORA, Hook. f., *Bot. Mag.*, t. 6454.—This is the Gloneria jasminiflora of Lind. and André. A figure was given in our columns, 1879, vol. xii., p. 201.

RHODODENDRON KATE WATERER, *Garden*, October 4, 1879.—One of Mr. John Waterer's (Bagshot) raising. It is of good habit, hardy, with a fine bold truss of flowers. The latter are rose-coloured, with a yellowish tinge on the uppermost petal, which is moreover studded with brownish spots.

ROSE BARONNE PREVOST, *Journal des Roses*, October 1, 1879.—Raised by Desprez in 1841. Of this Alphonse Karr writes, "This is one of the beautiful flowers which has survived the revolutions of fashion."

ROSE JULES CHRÉTIEN, W. Paul's *Rose Annual*, 1879.—H.P.; habit robust; flowers large, finely shaped, deep bright red shaded with purple. J. Schwarz.

ROSE LITTLE GEM, W. Paul's *Rose Annual*, 1879.—A lovely little Moss Rose like the old Moss de Meaux, but the flowers are deeper and fresher in colour. W. Paul & Son.

ROSE MASTERPIECE, W. Paul's *Rose Annual*, 1879.—A seedling from Beauty of Waltham, with rich bright rosy-crimson flowers; growth vigorous, habit good. W. Paul & Son.

ROSE PRIDE OF WALTHAM, W. Paul's *Rose Annual*, 1879.—Habit of Countess of Oxford; flowers large, full, flesh-coloured, shaded with bright rose. W. Paul & Son.

ROSES SOUVENIR D'ELISE VARDEN, MARIE VAN HOUTTE; *Garden*, October 11, 1879.

SCUTELLARIA PURPURASCENS, Swartz, *Bot. Mag.*, t. 6464.—Herbaceous pulverulous with long-stalked cordate, ovate acute, remotely dentate leaves, and terminal racemes of flowers; the calyx has the curious form peculiar to the genus; the corolla tube is much longer than the calyx, slender, the central lobe of the lip deep violet. Brazil, Hort. Kew.

SYMPHYTUM PEREGRINUM, Ledebour, *Bot. Mag.*, t. 6466.—A tall-growing rough-skinned hardy perennial, with coarse ovate lanceolate stalked leaves, the upper ones sessile, narrower, and decurrent; flowers pink or bluish, in curved racemes; the five sepals are free nearly to the base and half the length of the corolla. Some interest attaches to this plant, as it is the Prickly Comfrey lately introduced as a forage plant. It is, however, not the true Symphytum asperrimum. Sir J. Hooker considers that it may be merely a variety of S. officinale.

TRITONIA MACOWANI, *Revue Horticole*, Oct. 16, 1879.—A dwarf-growing species, with brilliant red flowers. T. maroccana is given as a synonym for it.

VERONICA LYALLII, Hook. f., *Bot Mag.*, t. 6456.—A creeping New Zealand species, with small ovate serrate, sessile leaves, and racemes of pale blue flowers. Introduced by Mr. Anderson-Henry.

WOODSIA, SPECIES OF, *European Ferns*, part ii.—The species figured are M. glabella, ilvensis, and hyperborea.

THE KURAM AND HARIAB VALLEYS.

IN a practical point of view, says Dr. Aitchison, who has recently returned from Afghanistan, the great value to be attached to a botanical examination of the Kuram and Hariab valleys is its vegetable products, and the value they may possess for any export trade. The first of these is timber. The Deodar, our finest Indian Himalayan timber tree, forms dense forests, many of which it will be found can be easily worked. There is at present no limit to the amount and quality of this timber that can be obtained: means of exportation and forest conservancy are the subjects that now require to be studied.

Deodar timber used to be exported from near the Kuram river in Mongul territory by floating down the Kuram *viâ* Thull to near Banu, but this has for some years been given up.

In grain these valleys have heretofore had no export trade, producing no more grain than was absolutely required for local consumption. I may say the same of their fruits, except perhaps Walnuts and Amlok (Diospyros). The cause of this is simply oppression. There is land enough to double or treble the produce.

With a very little more than ordinary care of the water as it is expended, one-third more ground could be brought into cultivation; by appliances of a cheap nature, as wooden troughs, one-third more; and more expensive plant would enable it to be doubled.

The very first effects of our rule in this valley will show itself even this season in there being grain enough for our troops locally produced, and next year exportation will begin to take place towards the Punjab for exchange for cotton goods, which are at present expensive.

I cannot come to any opinion as to whether the nuts of Gerard's Pine were exported as a real trade article from the Hariab. I know that it is so from Khost.

The natives use no oil, splinters of the roots of Gerard's Pine, or of the stems of Pinus excelsa, being used in place of lights. A crude tar is made from the roots of the above Pines for local use. This is their nearest approach to oil. It is employed for local application to wounds and sores.

A little silk is produced at Shaluzan and some other villages; but in this there is no trade.

Probably the substance in which most trade is done, both on a large scale and barter, is honey. This is extensively exported by through-carriers to Kabul and the Khost country. Nearly every house in a village has its bees, from Kuram to Ali Khel.

In a scientific point of view, the great value of a thorough and careful research in the vegetation of this altogether new to science district is the material assistance it will give to the better knowledge of the geographical distribution of plants, and the meeting of the several floras of Europe, Persia, Afghanistan, Tibetan, Himalayan, and Punjab tropical, which I already see radiate round the Safed Koh range as a focus, besides enabling one to obtain a more detailed and extensive knowledge of the peculiarities in the distribution of plants dependent on climatic zones, more or less influenced by a moist or dry atmosphere.

From the 600 species I have already collected, I can see already the immense value likely to accrue to scientific botanists by the collections I am now making, and consider that the Government should permit of the subject being thoroughly worked out.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JANUARY 21, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100	Wind: Average Direction.	Rainfall.
	In.	In.	°	°	°	°	°	°	°		In.
Jan. 15	30.05	+0.33	35.4	30.5	4.9	33.2	— 3.3	27.1	78	WSW: W.	0.06
16	29.82	+0.09	38.5	31.3	7.2	35.4	— 1.3	34.4	96	WSW: WNW	0.14
17	29.90	+0.17	37.3	29.0	8.3	33.0	— 3.8	28.8	84	E.: NNW	0.00
18	29.89	+0.15	36.8	25.0	11.8	30.6	— 6.3	28.4	91	S.E.: Calm	0.00
19	30.32	+0.58	31.9	21.0	10.9	26.4	—10.6	19.4	74	E.S.E.	0.00
20	30.44	+0.70	27.8	17.2	10.6	22.8	—14.4	18.5	84	S.W.	0.00
21	30.42	+0.67	32.8	18.0	14.8	26.2	—11.1	21.4	82	S.W.: WSW	0.00
Mean	30.12	+0.38	34.4	24.6	9.8	29.7	— 7.3	25.4	84	variable	sum 0.20

Jan. 15.—Dull till 11 A.M., fine and bright after till evening, then overcast. Snow fell between 7 and 9 P.M.
— 16.—A cold miserable day. Thin rain throughout. Damp.
— 17.—A fine pleasant day. Sunshine. Very cold.
— 18.—A fine morning. Hoar frost. Dull in afternoon and foggy. Very dark from 1 to 2 P.M. Clearer at night.
— 19.—A fine bright day. Raw cold. Cutting wind. Hoar frost. Very dry.
— 20.—A dull, bitterly cold day. Fine at night. Hoar frost. The coldest day since December 24, 1878, when the mean temperature of the day was 22°.
— 21.—A dull, overcast day. Very cold. Hoar frost. The maximum temperature occurred at midnight, viz., 32°.8.

LONDON: *Barometer.*—During the week ending Saturday, January 17, in the vicinity of London the reading of the barometer at the level of the sea increased from 30.56 inches at the beginning of the week to 30.61 inches by the morning of the 12th; decreased to 30.08 inches by the evening of the 16th, increased to 30.08 inches by the morning of the 17th, and decreased to 30.01 inches by the end of the week. The mean reading for the week at sea level was 30.33 inches, being 0.23 inch below that of the preceding week, and 0.42 inch above the average. The mean daily readings were above their averages on every day; the greatest departures in excess were 0.68 inch and 0.69 inch on the 11th and 12th.

Temperature.—The highest temperatures of the air observed by day varied from 38½° on the 16th, to 35° on the 11th, 13th, and 14th; the mean value for the week being 36¼°. The lowest temperatures of the air observed by night varied from 25¾° on the 13th, and 28° on the 12th and 14th, to 31¼ on the 16th; the mean value for the week was 29°. The mean daily range of temperature in the week was 7¼°; the greatest range in the day being 9¼°, on the 12th and 13th, and the least 5°, on the 11th and 15th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Jan. 11, 32°.8, — 3°.5; 12th, 32°.6, — 3°.8; 13th, 30°.5, — 5°.9; 14th, 31°.4, — 5°.1; 15th, 33°.2, — 3°.3; 16th, 35°.4, — 1°.3; 17th, 33°, — 3°.8. The mean temperature of the air for the week was 32°.7, being 3°.8 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 78¾° on the 12th, and 78° on the 17th; on the 14th and 16th the reading did not rise above 40°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 22½° on the 13th, and 23½° on the 12th. The mean of the seven lowest readings was 26°.

Wind.—The direction of the wind was variable, and its strength almost calm, except on the 11th, when it was moderately strong.

The weather during the week was cold, fine at times, but frequently very dull.

Snow fell on the 13th and 15th,

Rain or snow fell on three days during the week; the amount collected was 0.21 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, January 17, the highest temperatures of the air observed by day were above 42½° at Truro, Plymouth, and Liverpool, and below 39½° at Brighton, Blackheath (London), and Hull; the mean value for the week from all stations was 41°. The lowest temperatures of the air observed by night were below 26½° at Truro, Bristol, Blackheath, Cambridge, Wolverhampton, Hull, and Bradford, and above 29° at Plymouth and Liverpool; the mean from all places was 27°. The extreme range of temperature in the week was above 20½° at Truro, and below 11° at Brighton; the mean range of temperature from all stations was 14°.

The mean of the seven high day temperatures was above 41½° at both Truro and Plymouth, and below 37° at Bristol, Blackheath, Wolverhampton, Nottingham, and Bradford; the mean value from all places was 37¾°. The mean of the seven low night temperatures was below 30° at Blackheath, Wolverhampton, and Hull, and above 34° at both Truro and Plymouth; the general mean from all stations was 30¾°. The mean daily range of temperature in the week was above 9° at Truro, and below 6° at Bristol, Norwich, and Sunderland; the mean daily range from all places was 7°.

The mean temperature of the air for the week from all stations was 34¼°, being 1¼° lower than the value for the corresponding week in 1879. The mean temperature was above 36½° at both Truro and Plymouth, and below 33° at both Blackheath and Wolverhampton.

Rain or *snow* fell on two or three days in the week at most places. The heaviest falls were at Liverpool, 0.64 inch, Truro, 0.58 inch, Brighton, 0.51 inch, Wolverhampton, 0.50 inch, and Plymouth, 0.49 inch; and the least falls were at Norwich, 0.02 inch, Bradford, 0.04 inch, and Sheffield, Hull, and Leeds, all 0.06 inch; the average fall over the country was 0.29 inch.

The weather during the week was dull and cold, with slight *fogs* and occasional falls of snow and sleet.

SCOTLAND: *Temperature.*—During the week ending Saturday, January 17, the highest temperatures of the air observed by day varied from 49° at Perth to 39° at Edinburgh; the mean value from all places was 43¼°. The lowest temperatures of the air observed by night varied from 22° at Perth to 28° at Glasgow, Greenock, and Paisley; the general mean from all stations was 26°. The mean range of temperature in the week from all places was 17¼°.

The mean temperature of the air for the week from all stations was 33½°, being ¼° lower than the value for the corresponding week in 1879. The highest was at Greenock, 35°, and the lowest at Edinburgh, 31¾°.

Rain or *snow* was measured at Aberdeen to the amount of 0.47 inch, and at Edinburgh to the amount of 0.44 inch, at Paisley only 0.07 inch was recorded; the average fall over the country was 0.25 inch.

DUBLIN.—The highest temperature of the air observed by day was 42¼°, the lowest observed by night was 27¼°, the extreme range was 15°, the mean temperature for the week was 35¾°; and the amount of rain and snow was 0.34 inch.

JAMES GLAISHER, F.R.S.

Variorum.

FIORIN GRASS: AGROSTIS STOLONIFERA.—Fiorin is a long, creeping Grass, with a joint in each 6 or 8 inches of its length. From each joint it buds or shoots. In one county in the North it is grown extensively on "spent" or run-out bog. I have seen the most wonderful crops of hay from this Grass I ever saw growing. One farmer told me he often had 7 tons per Irish acre on spent bog which would, for other crops, be almost useless. I saw how it was planted by the same man. There was a large flat of cut-out bog, one half of which was under meadow of Fiorin planted the year before; the other half had been in Potatos, which were just raised. This was in November. After the Potatos were cleared off, the harrow was run over the land to level and collect weeds, &c. Two men were started at one side of the plot, one at each end, to meet each other. Their work was to shovel about 2 inches off the surface of a breadth of about 3 to 4 feet. This they cast back over the ground unplanted. Two women followed, one after each man, strewing or spreading this Grass in its full length, being just fresh mown off a little patch on the adjoiniug meadow left for the purpose. After the Grass had been strewn on the space opened by the men, they then turned, and the surface of the next breadth was spread over the strewn Grass. This was the usual way of planting this crop in the part of the country I refer to; but I believe a better plan is to have the Grass cut up into short lengths, thus admitting of its being more regularly distributed. I think the value of this Grass is not generally known in this country, as I have travelled and lived in many parts of Ireland and never saw it grown only in the one district. The quality of the hay from Fiorin Grass surpasses, I believe, any other for sweetness and nutrition. It is a pity to see such large tracts of black land in this country in a state of waste comparatively, when it might be returning its owner a large crop of hay. I hope this may be in season just at present, when there is so much being done in improvement by landowners. I should mention that this Grass suits well for irrigation. The meadows I refer to were irrigated from an open drain at the head of the ground. This plan is worth trying. I speak from what I saw of the crop and mode of planting. *A. M'Elwaine, Gilford, co. Down, in "Irish Farmers' Gazette."*

TITHE COMMUTATION—SEPTENNIAL AVERAGES.—Mr. Montague Marriott, Editor of Wallich's *Tithe Commutation Tables*, writes:—As the result of the corn averages for the seven years to Christmas, 1879, published in the *London Gazette*, viz.:—

Wheat ..	.. ..	6*s.* 3½*d.*	per imperial bushel.
Barley ..	.. ..	4*s.* 10¼*d.*	,, ,,
Oats ..	.. ..	3*s.* 2¾*d.*	,, ,,

I beg to state that each £100 of tithe rent-charge will for the year 1880 amount to £109 17*s.* 9¼*d.*, or £1 17*s.* 4¼*d.* per cent. less than last year. The following shows the worth of £100 tithe rent-charge for the last seven years:—

1874 ..	.. £112 7 3	1878 ..	.. £112 7 5¼
1875 ..	.. 112 15 6¾	1879 ..	.. 111 15 1½
1876 ..	.. 110 14 11	1880 ..	.. 109 17 9¼
1877 ..	.. 109 16 11½		

The average value of £100 tithe rent-charge for the forty-four years elapsed since the passing of the Tithe Commutation Act is £103 2*s.* 1¼*d. Jan.* 6.

Enquiries.

He that questioneth much shall learn much.—BACON.

NUMBER OF MEN REQUIRED TO WORK A GARDEN.—Will some of your correspondents kindly give their opinion of the number of men that it will take to efficiently work the following extent of ground:—2 acres of walled-in kitchen garden; 2 acres of ground planted half with bush-fruits, the remainder used for kitchen crops; and 11 acres of lawn and shrubberies, including flower-garden in proportion. *W. A. C.*

Answers to Correspondents.

CAMELLIA: *Camellia.* If the plant (or plants) is in a healthy state, and has got into a straggling condition of growth, it may be cut back with advantage to any extent, and if placed in gentle warmth will produce young shoots which will permit of its being fashioned into a handsome plant again. Of course this will take time. Perhaps, if you have several plants in this condition, it would be advisable to cut down a portion of them, leaving the rest till these are again furnished.

HOLLIES: *W. D. & Sons.* As Hollies cross readily enough, no doubt the suggested explanation of the origin of the several varieties is correct. We have seen a pinkish-fruited form before; but whether this, or the yellow-fruited, are the same as those already in cultivation can only be ascertained by growing on young plants in the open. The growth in the woods from the seedling plants is lax and rank, which makes it impracticable to say what it would be under ordinary culture. They are worth trial. The fruit of the scarlet variety is distinctly obovate.

NAMES OF PLANTS: *M. J.* Dasylirion acrotrichum; 2, Adiantum trapeziforme; 3, A. concinnum; 4, Scolopendrium vulgare marginatum; 5, Asplenium fragrans; 6, crushed.—*A. B. C.* 1, Myrsiphyllum asparagoides; 2, Eranthemum pulchellum.—*A. Paul.* Apparently Oncidium crispum.

NOTICE TO LEAVE: *Enquirer.* Under the circumstances described, we should consider a three months' notice the most fair arrangement for both parties.

SCALE ON PINE: *G. Clark.* It is the white scale, a very troublesome insect to remove, because it cannot be thoroughly got at. It has been destroyed by inverting the plants or suckers over hot fermenting dung in a close frame. Your best plan, perhaps, would be to syringe well with a mixture of a wineglass of paraffin to 4 gallons of water, and immeditely rinse them in pure water, and invert them till the liquid has drained away, so that it may not settle in the heart or in the axils of the leaves.

SEAKALE: *J. Garland.* If you will send a sample of the grubs we will have them examined to see if it is likely they are the cause of the mischief. We should be rather inclined to think the gravelly soil is at fault. Try a dressing of salt, and work in some fibry soil and leaf-mould.

SMUT: *Old Forester.* The smut on your leaves indicates a dirty condition of the plants, from the presence of insects. Give the plants a good cutting-in now, and clean them thoroughly; then, by fumigating and other means, including plentiful syringings, keep them clear of such pests in future.

SEWAGE FARM: *G. Randall.* By the aid of the sewage the land should prodcce in fair condition any of the ordinary garden crops, and we should grow those which would be most readily disposed of in your locality—Cabbages, Celery, Onions, Broccoli or Cauliflowers, Rhubarb, &c.

TUBEROSES: *W. H. E.* The difference between American and Italian Tuberoses consists only in the difference in size between the roots imported from the two countries; those coming from America being the largest and best. Pearl is the American name of a variety which is recommended as being of dwarfer habit than the typical plant. We understand, however, that the difference in height is only seen when the plants are grown in cool houses; though we have no actual experience on this point.

VINES INFESTED WITH PHYLLOXERA: *F.* Yes; certainly.

CATALOGUES RECEIVED:—Messrs. W. Paul & Son (Waltham Cross, Herts), Catalogue of Vegetable, Flower, and Agricultural Seeds.—Messrs. Thos. Perkins & Sons (34, The Drapery, Northampton), Catalogue of Vegetable and Flower Seeds.—Messrs. Haage & Schmidt (Erfurt, Prussia), Catalogue of Seeds and of Plants, &c.—William Rumsey (Waltham Cross, N.), Catalogue of Garden, Flower, and Farm Seeds.—James Cocker & Sons (82, Union Street, Aberdeen), Descriptive Catalogue of Vegetable and Flower Seeds.—Louis Van Houtte (Ghent, Belgium), Catalogue of Gesneraceous Plants.—J. W. Mackey (23, Upper Sackville Street, Dublin), Seed Catalogue and Amateur's Guide.—Messrs. Austin & M'Aslan (16, Buchanan Street, Glasgow), Catalogue of Bulbs, Seeds, &c.—Messrs. Thos. Kennedy & Co. (Dumfries), Catalogue of Vegetable and Flower Seeds.—Hermann A. Frommer (Karlsringstrasse, Budapest), Catalogue of Flower and Vegetable Seeds.—G. E. Elliott (97, Bradford Road, Huddersfield), Seed Catalogue for 1880.—Messrs. Lucombe, Pince & Co. (Exeter), Descriptive Catalogue of Flower, Vegetable, and Farm Seeds.—Major Hallett (Manor House, Brighton), Lists of Pedigree Cereals and Potatos.—G. C. Short (Market Place, Stokesley), Catalogue of Flower and Vegetable Seeds.

COMMUNICATIONS RECEIVED.—Sir T. L.—G. B. C.—T. J. D.—J. D.—A. F.—S. & S.—W. J.—M. D.—W. M.—G. T. M.—W. G.—E. B.—W. H. D.—S.—A. B.—Staffordshire.—One who is Curious to Know.—B. S. W.—W. O. G.—R. G.—T. H.—H. G. Rchb. f.—E. B.—F. V.—S. P. O.—Berlin Horticultural Society.—T. M.—J. L. S. B.—J. A. W.—Foreman.

DIED, at Forres Cottage, Haverstock Hill, Hampstead, on the 20th inst., ALEXANDER BOWIE, aged sixty-one: deeply regretted. New Zealand and Scotch papers, please copy.

Markets.

COVENT GARDEN, January 22.

The return of frost is again seriously affecting the supplies of outdoor goods to the market, causing a rise in the value of all sorts of vegetables. Our Apple market is dormant, there being but few inquiries. Cucumbers are in demand, supply being short, and fancy prices made. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve ..	2 0– 6 0	Lemons, per 100 ..	3 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100 ..	6 0–12 0
Cob Nuts, per lb. ..	1 0– ..	Pears, per dozen ..	3 6– 6 0
Grapes, per lb. ..	1 6– 6 0	Pine-apples, per lb.	2 0– 3 0
— Muscat, per lb...	3 6– 8 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0– 7 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle ..	1 0– ..	Lettuces, Cabbage, per doz.	1 6– ..
— French, per bun.	7 0– ..	Mint, green, bunch..	2 0– ..
Beet, per doz. ..	1 0– 2 0	Onions, new, p. bun.	0 6– ..
Brussels Sprouts, lb.	0 6– ..	Parsley, per bunch..	0 6– ..
Cabbages, per doz. ..	1 0– 2 0	Peas, per lb. ..	1 0– ..
Carrots, per bunch ..	0 8– ..	Potatos (new), per lb.	0 3– 0 9
— New Fr., p. bun.	1 0– ..	Rhubarb (Leeds), per bundle	0 9– ..
Cauliflowers, per doz.	2 0– 5 0	Seakale, per punnet	3 0– ..
Celery, per bundle ..	1 6– 4 0	Shallots, per lb. ..	0 6– ..
Chilis, per 100 ..	3 0– ..	Spinach, per bushel	5 0– 6 0
Cucumbers, each ..	1 6– 5 0	Tomatos, per dozen	3 0– ..
Endive, per score ..	4 6– ..	Turnips, new, bunch.	0 6– ..
Garlic, per lb. ..	0 6– ..		
Herbs, per bunch ..	0 2– 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 150*s.*; and Champions, 130*s.* to 150*s.* per ton. German produce is making from 4*s.* to 7*s.* per bag. The supply is stopped now in consequence of the frost.

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	12 0–24 0	Ficus elastica, each	2 6–15 0
Azaleas, per dozen .	30 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz. ..	6 0–18 0	Fuchsias, per dozen	12 0–18 0
Bouvardias, per doz.	12 0–24 0	Hyacinths, per doz..	9 0–18 0
Cinerarias, per doz..	12 0–18 0	Myrtles, per doz. ..	6 0–12 0
Cyclamen, per dozen	12 0–30 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	9 0–18 0
Dracæna terminalis	30 0–60 0	Poinsettia, per dozen	12 0–24 0
— viridis, per doz...	18 0–24 0	Primula, single, per dozen	6 0–12 0
Erica gracilis, per dozen	9 0–18 0	Solanum, per dozen..	9 0–24 0
— hyemalis, p. doz.	12 0–30 0	Tulips, 12 pots ..	8 0–12 0
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

CUT FLOWERS.

	s.	d.	s.	d.		s.	d.	s.	d.
Abutilon, 12 blooms	0	6-	1	0	Lily of Val., 12 spr.	1	0-	4	0
Arum Lilies, per dozen	9	0-	18	0	Mignonette, 12 bun.	6	0-	9	0
Azalea, 12 sprays ..	1	0-	3	0	Narcissus, Paper-white, 12 spikes ..	2	6-	6	0
Bouvardias, per bun.	1	0-	4	0	Pelargoniums, 12 spr.	1	6-	3	0
Camellias, per doz...	3	0-	12	0	— zonal, 12 sprays	0	9-	2	0
Carnations, per dozen	1	0-	3	0	Poinsettia, 12 blms...	3	0-	9	0
Chrysanthem., large flowers, per doz...	3	0-	9	0	Primula, double, per bunch	1	6-	3	0
Cyclamen, 12 blms..	0	4-	1	6	— single, per bunch	0	6-	1	6
Epiphyllum, 12 blms.	0	9-	2	0	Roses (indoor), doz.	2	0-	9	0
Eucharis, per doz. ..	6	0-	12	0	Spiræa, 12 sprays ..	3	0-	6	0
Euphorbia, 12 sprays	3	0-	6	0	Tropæolum, 12 bun.	1	0-	3	0
Gardenias, 12 blms..	12	0-	24	0	Tuberoses, per dozen	4	0-	6	0
Heliotropes, 12 sp...	0	6-	1	0	Tulips, 12 blooms ..	1	6-	3	0
Hyacinths, 12 spikes	6	0-	12	0	Violets, Fr., per bun.	6	0-	9	0
— small	3	0-	6	0	White Lilac, Fr., per bundle	10	0-	15	0
— Roman, 12 spikes	2	0-	4	0					

SEEDS.

LONDON: *Jan.* 21. — There is now more enquiry generally for farm seeds. Red Clover keeps steady. The high prices which have been obtainable on Mark Lane for choice yearling English red have brought forward a good number of samples, the majority, however, of which show very poor quality. French seed is dull. Some fair arrivals here of American and Canadian Clover may shortly be expected. Alsike, white, and Trefoil meet a quiet demand. In Italian Rye-grass the late advance is well maintained; no seed appears to be now left in the hands of French growers. Perennials find buyers on former terms. For Lucerne and Sainfoin the enquiry is small. Timothy seed continues exceedingly scarce. Tares, both spring and winter, are in brisk request at hardening currencies; stocks of either variety are light. With regard to Canary seed values are drooping, but Hemp and Millet are firm. Owing to the colder weather, there is more enquiry for boiling Peas. Haricots and Lentils are neglected. For Linseed the sale is slow. *John Shaw & Sons, Seed Merchants*, 37, *Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday there was very little life in the trade. As regards Wheat, prices were 1*s.* per quarter lower. Holders were firm at this reduction, but millers operated very slowly. Fine malting Barley was scarce and pretty steady in price; but there was a dull sale for all feeding qualities. Malt was quiet at about late rates. Oats were in good supply, but the demand was very poor. Maize was perhaps rather better held; but no positive improvement could be reported. Beans and Peas were dull, but without material change. Flour was in limited request, and rates moved somewhat in favour of buyers.—On Wednesday holders of Wheat were firm, but no decided rise in prices could be reported. Barley was slow of sale, and all feeding qualities were easy in price. Oats were steady. Maize was rather more sought after, and quotations were better supported. Beans and Peas changed hands on former terms. Flour was neglected, and quotations were nominally without change. —Average prices of corn for the week ending Jan. 17: —Wheat, 45*s.* 11*d.*; Barley, 37*s.* 2*d.*; Oats, 21*s.* 1*d.* For the corresponding period last year: — Wheat, 38*s.* 11*d.*; Barley, 36*s.* 11*d.*; Oats, 19*s.* 8*d.*

HAY.

The Whitechapel Market report for Tuesday states that there was a fair supply of fodder, the demand for which remained dull at about late rates. Prime Clover, 100*s.* to 120*s.*; inferior, 70*s.* to 95*s.*; prime meadow hay, 80*s.* to 95*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 37*s.* per load. On Thursday there was a fair supply. Trade was dull for inferior qualities, but the prices were unchanged for best stuffs. — Cumberland Market quotations: — Superior meadow hay, 98*s.* to 105*s.*; inferior, 40*s.* to 72*s.*; superior Clover, 118*s.* to 130*s.*; inferior, 80*s.* to 95*s.*; and straw, 35*s.* to 40*s.* per load of 36 trusses.

POTATOS.

At the Borough and Spitalfields Markets there has been a pretty fair demand for Potatos, and all good descriptions remain firm in price. The supplies are moderate. Scotch Regents, 140*s.* to 160*s.*; do. Champions, 140*s.* to 150*s.*; Lincoln Regents, 140*s.* to 150*s.*; Victorias, 160*s.* to 180*s.*; French whites, 85*s.* to 95*s.* per ton. Belgian kidneys, 5*s.* 3*d.* per hundredweight.—The imports into London last week comprised 17,557 barrels from Hamburg, 1000 from Bremen, 1000 Harlingen, 490 Ghent, and 50 tons from Antwerp.

COALS.

The prices current at market during the week have been as follows:—East Wylam, 16*s.*; West Hartley, 14*s.* 6*d.*; Walls End—Hetton, 16*s.* 6*d.*; Hetton Lyons, 15*s.*; Lambton, 16*s.*; Original Hartlepool, 16*s.* 6*d.*; Wear, 15*s.*; South Hetton, 16*s.* 6*d.*; Chilton Tees, 15*s.* 6*d.*; East Hetton, 16*s.*; Tees, 16*s.* 3*d.*; Hawthorns, 15*s.* 3*d.*; Tunstall, 15*s.*; East Hartlepool, 16*s.*; South Hartlepool, 15*s.* 6*d.*; Radford Navigation, 16*s.*

Government Stock.—The closing price for Consols on Monday was 97⅞ to 98, for both delivery and the account. The same figures were registered at the close of Tuesday's transactions. Wednesday's closing price was 98 to 98⅛ for both delivery and the account. The final quotation on Thursday was, for both delivery and account, 98⅜ to 98¼.

GYDE'S
IMPERIAL FERTILISER
FOR
Flowers, Fruit, & Vegetables.

Established 1839.

40 YEARS of

INCREASING SUCCESS.

Perfection in Artificial Manures for all Plants on British Soil and Conservatories.

Numerous Testimonials from all parts of the Kingdom justify us in stating that our different Manures and Plant Foods are perfect.

THE IMPERIAL FERTILISER

Is a highly-concentrated Manure, and is admitted by all practical Men who have tried it to be the very best ever offered to the public. Some Manures give beauty of bloom at the expense of the plant's vitality, causing a consumption of the plant's stamina and roots, in order to produce, as it were, a hectic flush of short duration; whereas in every case the bloom on a plant nourished on our Imperial Fertiliser is a proof of sound health.

It also gives abundant growth to Vegetables, and fertility to all.

RESPONSIBLE AGENTS WANTED.

1 cwt., **16s.**; ½ cwt., **9s. 6d.**; ¼ cwt., **7s.**; 14 lb., **5s.**; Tin, **1s.**

To be obtained of principal Florists and Seedsmen.

GYDE'S AMAZONAS SANA COPIA POTATO MANURE
(REGISTERED)

Is a high-class Fertiliser. It is also a great Preventive of Disease, and by using a fair quantity will increase the size and yield twofold.

We wish to call attention to the extract below, from *Farm Journal*, Jan. 17, 1880:—

EXTRACT.

"One step in the right direction has been taken by the proprietors of Gyde's Chemical Manure Works, Stroud, Gloucester, in that, confident of the success of their Amazonas Sana Copia Potato Manure, they have established a register of those who use their manure, so that growers in distant parts may exchange sound seedlings. This is manifestly a great advantage. We do not, of course, profess any practical knowledge of the Sana Copia Manure; but we have seen letters of perfect satisfaction concerning it, speaking in such terms as have led us to hope the evil days for the Potato may soon leave us. These letters, or testimonials, would not of themselves justify us in calling the attention of our readers to a comparatively unknown article; but we have every confidence in the firm, that they conscientiously believe what they say concerning it. One paragraph in their circular particularly took our notice. They profess that their Sana Copia Manure so strengthens the plant that it can defy unfavourable atmospheric influences; and we cannot see that it can do this without also enabling it to resist disease through the soil."

Supplied in 1 cwt. Bags.
Price, £12 per ton; 12s. 6d. per cwt.
Carriage paid on orders of 5 cwt. and upwards within 100 miles of the Works.

Post-office Orders to W. TRINDER,
STROUD CHEMICAL MANURE WORKS,
STROUD, GLOUCESTERSHIRE.
Cheques crossed County of Gloucester Bank.
SPECIAL QUOTATIONS TO LARGE CONSUMERS.

COCOA-NUT FIBRE WASTE, 1*s.* per bag, 30 bags for 20*s.* No charge for bags. Truck-load (loose), free to rail, 25*s.*—BULBECK AND SON, Suffolk Place, Snow's Fields, Bermondsey, S.E.

TRY AMIES' MANURE.
It has stood the public test for 9 years, and proved to be the most Successful and the Cheapest Manure for
FLOWERS, FRUITS, AND VEGETABLES.
Before ordering Manure send Post Card for our
New Pamphlet, Post Free.

AMIES' CHEMICAL MANURE COMPANY, LIMITED,
79, MARK LANE, LONDON, E.C.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen in Boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

An Important Discovery.

SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1*s.* 6*d.*, 2*s.* 6*d.* and 12*s.* 6*d.* each. Special quotations for large quantities.

London Agents: HOOPER AND SONS, Covent Garden and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

GAWITH'S FIREFLY CIGARETTE, for destroying Thrip, Greenfly, and other greenhouse Pests. The advantages of fumigation over all other methods of destroying these enemies must be apparent to all horticulturists. However skilfully applied, insect-destroying powders cannot reach every one, whereas by rendering the atmosphere of a house destructive, all are reached. These Cigarettes are clean and effective; one trial is enough to convince the most sceptical that a long-looked-for handy and clean destroyer has at last been found. The Cigarette merely requires suspending by the wire attached, lighting at each end as in ordinary fireworks, and does its own work without further attention.

Price 1*s.* 6*d.* each. To be had from Seedsmen, and from JOHN E. GAWITH, Sole Manufacturer, Lowther Street Tobacco Manufactory, Kendal.

One Fume effectually destroys the whole family of
APHIDES.

Two Fumes in quick succession will annihilate the
THRIP.

IN IRON, 6s. 6d.

IN COPPER 21s.

IMPROVED FUMIGATING PAN,
ALSO THE IMPROVED AND ONLY GENUINE
MEDICATED TOBACCO PAPER,
"Ready Cut Up," "Self Consuming,"
"Most Effective," "Perfectly Safe."

This "Special" Article has now been extensively used by Horticulturists for some years, and hundreds can bear testimony to the fact that it is the cheapest, safest, and most efficacious Asphyxiate in the market.

TO BE OBTAINED *ONLY* FROM
JAMES DICKSON & SONS,
108, EASTGATE ST., CHESTER.
Who will be pleased to send, post-free, on application, Circular containing Testimonials and all particulars.
Price, 1s. 8d. per pound.
Carriage Paid on Orders of 28 lb. and upwards.

ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.

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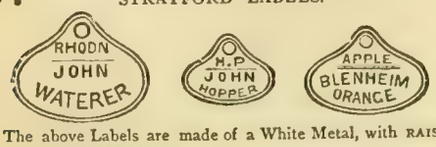

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The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

CUPISS'S CONSTITUTION BALLS.

This justly celebrated Medicine for more than 30 years has proved to be the best and cheapest for

HORSES AND NEAT CATTLE,

Cheaper because required to be given only once a week, and not every second or third day,

PRESERVING HEALTH, VIGOUR AND CONDITION.

Their cost, too, is saved by the food turning to a better account, for it is a fact that Horses will keep up their condition better upon three feeds of Oats daily when a Ball is occasionally given than with four feeds without the Balls.

REARERS OF NEAT CATTLE

Will find the Balls most valuable, not only in case of disease, but in Rearing Young Stock, they will Grow to a Larger Size, come to Perfection Sooner, and to a Greater Weight with the same quantity of food if a Dose (see directions) of the Balls is given occasionally.

Prepared by the Proprietor,

FRANCIS CUPISS, M.R.V.C.S.,

DISS, NORFOLK.

Author of the PRIZE ESSAY on the "Diseases of the Liver of the Horse."

☞ Sold by all Chemists, in Packets at **1s. 9d.** and **3s 6d.** each; or **7** large Packets for **21s.**, or **7** small for **10s. 6d.**

Gentlemen using the Balls may consult the Proprietor gratuitously.

ANDERSON'S RUSSIA MATS

For COVERING, TYING, and PACKING,

are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

MATS, RAFFIA for TYING,

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Bamboo Canes, Virgin Cork, &c.

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RAFFIA FIBRE.—Special parcel imported.

Fine quality, and in hanks.

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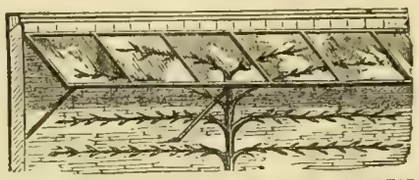

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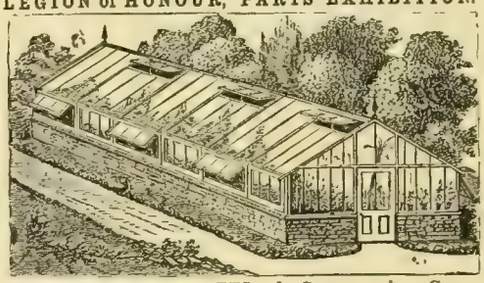

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The Patent Bent Wood Curved Greenhouses can be erected at the same cost as a Plain Straight one. They are much lighter, better in appearance, and can be glazed with straight Glass. For particulars apply to the Patentee and Manufacturer,

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P.S.—The Boiler is in action at the Nurseries, open to inspection, three minutes from the Midland Railway Station.

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ENGINEERS and IRONFOUNDERS,

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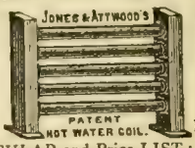
JONES'S IMPROVED EXPANSION JOINT.

THE BEST HOT-WATER JOINT.

Medal Awarded Horticultural Show, Aston, 1875.

SIMPLE, DURABLE, NEAT, CHEAP.



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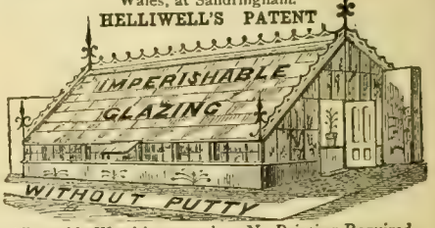
As adopted for the Prince of Wales, at Sandringham.

HELLIWELL'S PATENT



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For Estimates, Drawings, or Particulars, apply to the Patentee, T. W. HELLIWELL, Brighouse, Yorkshire.

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Applied to Conservatories and Greenhouses.

With Illustrations, Prices, &c.

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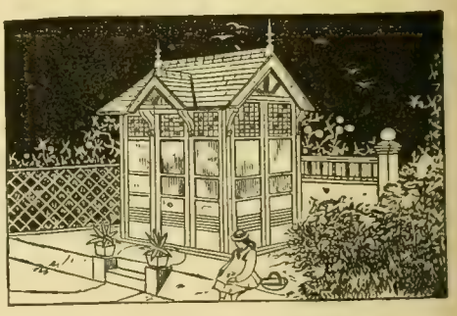
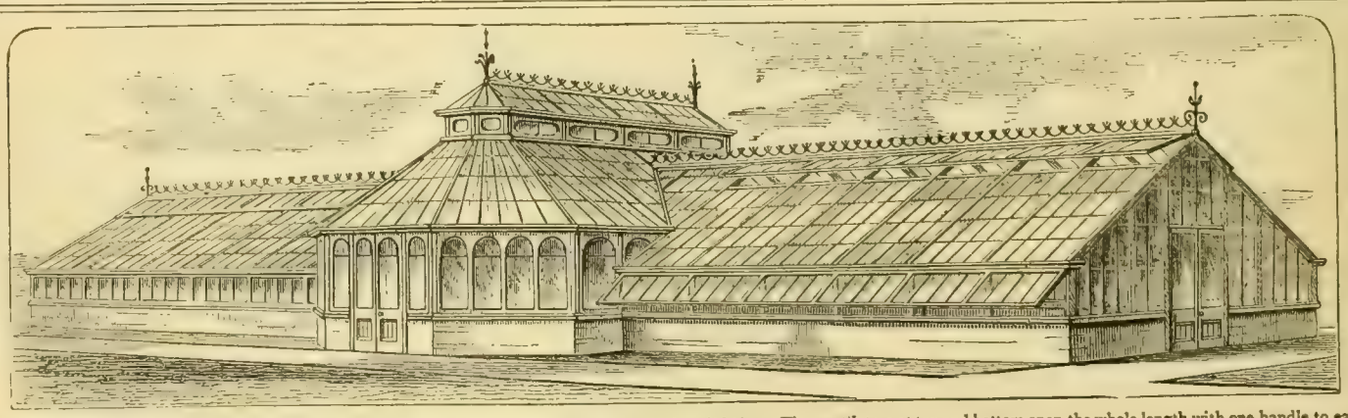


TWO GOLD MEDALS Awarded to us by Royal Horticultural Society,



At the Grand Show at Preston July, 1878, Out of Fourteen Competitors.

Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very *best class of buildings* at an extremely *low price.* As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions.

Our buildings are constructed so as to combine great strength, simplicity, and durability, with extreme lightness, and being made of the very best materials, will, with ordinary care, *last a lifetime.* The ventilators at top and bottom open the whole length with one handle to each series. The glass used is 21-oz. British sheet, and the paint the best *genuine* white lead and oil.

HEATING APPARATUS, with thoroughly *reliable Boilers* supplied and fixed in the most practical and efficient manner, and guaranteed to work economically and answer its purpose in all seasons. We devote special personal attention to this branch of our business, and have *never* had a *failure.*

Plans, Estimates, and Catalogues free. Customers waited on in any part of the Kingdom.

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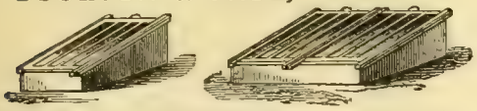

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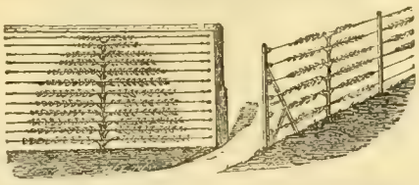

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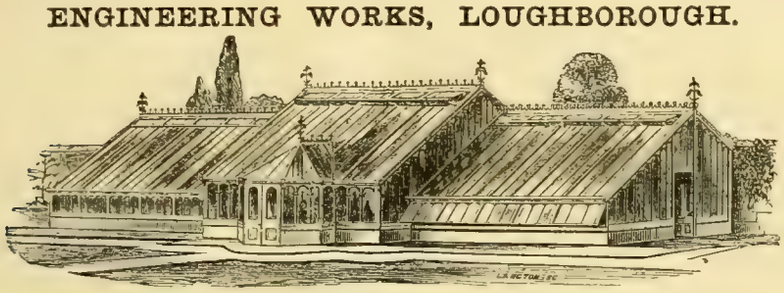

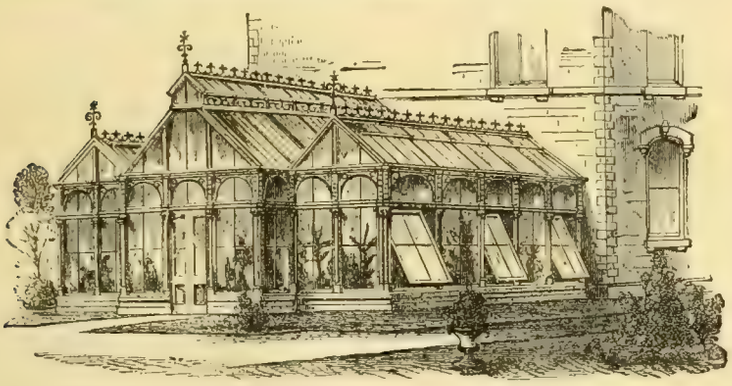

Horticultural Buildings erected on MESSENGER & Co.'s Patent Method of Construction are very strong, *most durable, light, elegant, amply ventilated, perfect efficiency* for intended purpose is *guaranteed*, are economical *in cost and maintenance;* combine the peculiar advantages of Wooden and of Iron Houses, without their disadvantages.

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Hot-water and Hot-air Apparatus erected complete, or the Materials supplied.
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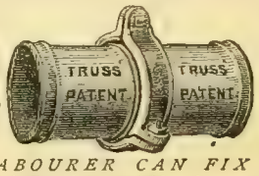
also SINGLE, DOUBLE, TREBLE, or QUADRUPLE COILS, with EXPANSIVE LEAKLESS JOINTS.



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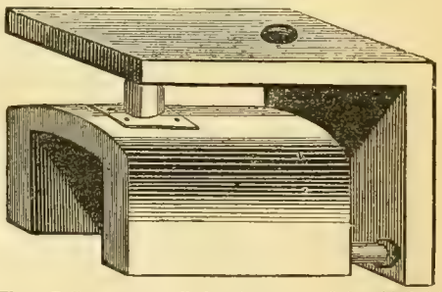

These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

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24 „	24 „	24 „	700	12	0	0
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1879-80.	Two of Weeks's Patent Duplex Boilers, now in use, burn	9½ Chaldrons of Coke per week.

Clear Gain in Fuel by use of Weeks's Boilers, 12 Chaldrons per week.

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1876.—COALS (culm), 64 tons 18 cwt., at 22*s.* per ton	...	£71	7	9
CHALK (the getting), 10 tons, at 1*s.* 6*d.* per ton	...	0	15	0
1877.—COALS (culm), 55 tons 17 cwt., at 20*s.* per ton	...	55	17	0
CHALK (the getting), 18 tons, at 1*s.* 6*d.* per ton	...	1	7	0
1878.—COALS (culm), 61 tons 14 cwt., at 19*s.* per ton	...	58	12	3
CHALK (the getting), 20 tons, at 1*s.* 6*d.* per ton	...	1	10	0
Total Cost for 3 years	... ...	£189	9	0
Deduct value of Lime burned and used in the Garden, 168 quarters at 4*s.* per quarter	...	33	12	0
Cost of Fuel for 3 years	... ..	£155	17	0

Or for 1 year, £51 19*s.* There being 18 compartments, about 33 feet by 12 feet, it costs £2 17*s.* 8½*d.* per year, or 1¾*d.* per day to heat each.

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FUEL CONSUMED.

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Total length of Houses ... 1080 feet.

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A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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Volume XII., JULY to DECEMBER, 1879.

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THUJOPSIS, dolabrata, 3 to 4 inches, 10s.; 6 to 9 inches, 18s.; &c.

Large Evergreen Shrubs, &c.

JAMES IVERY AND SON, having a quantity of the following well-grown stuff to dispose of at a cheap rate, will be pleased to receive early orders:—

LAURELS, 6 to 7 feet, strong.
YEWS, 8 to 9 feet.
HOLLIES, Green, 6 to 8 feet.
AUCUBAS, 2 to 3 feet, bushy.
COB and other NUTS, 2 to 5 feet, clean and healthy.
BEECH, Copper, 4 to 7 feet, good strong well-feathered stuff, will make fine Pyramids.

Prices on application.

The Nurseries, Dorking, Surrey.

TO THE TRADE.

VINES—VINES—VINES.

W. G. CALDWELL AND SONS can still supply extra strong Fruiting CANES, at 4s. 6d. each, of the following varieties:—Black Hamburgh, Madresfield Court, Foster's Seedling, Mrs. Pince, Lady Downe's, Muscat of Alexandria.

Also a few strong Planting Canes at 3s. each.

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JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.

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TREE PLANTING:

AN INVESTMENT.

That Timber Growing will be found to be a profitable application of the soil, and a sound investment to Capitalists in the future, is being made obvious by the increasing demand for Wood, and its anticipated scarcity in places abroad.

Nurseries have long been noted in Scotland for successfully and cheaply raising FOREST and other TREES, and the Subscribers devote every attention to conducting efficiently one of the largest establishments in the country.

In connection with their business arrangements Correspondents are respectfully reminded that their Priced CATALOGUES are sent, post-free, on application. The prices are quoted as reasonable as any. Plants are fibrous-rooted, robust, and grown unsheltered. Inspection of Nurseries invited, but if inconvenient, Samples of Trees will be furnished. Planting contracted for, Carriage Rates lessened, and Packages saved by using "Through Trucks." Export Orders carefully supplied, and Correspondence solicited.

BENJAMIN REID & CO.,

FOREST TREE NURSERIES, ABERDEEN, SCOTLAND.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to
Mr. JEAN NUYTENS VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium.
London Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

To the Trade.

JOHN PERKINS AND SON offer the following:—
ROSES, strong, on Manetti, 30*s.* per 100
APPLES, Pyramids, 50*s.* per 100
APRICOTS, Moor Park, dwarf, cut back, 50*s.* per 100
CURRANTS, Black, strong, 10*s.* per 100, 80*s.* per 1000
,, Red, ditto, 10*s.* per 100, 80*s.* per 1000
ELMS, Wych, 3 to 4 feet, 20*s.* per 1000
HAZEL, 2 to 3 feet, 18*s.* per 1000; 3 to 3½ feet, 20*s.* per 1000; 3½ to 4½ feet, 30*s.* per 1000
PRIVET, Evergreen, 2 to 3 feet, 20*s.* per 1000
LAURELS, Common, 2 to 2½ feet, 12*s.* per 100
,, Portugal, 1½ to 2 feet, 20*s.* per 100
YEWS, English, 2½ to 3 feet, 30*s.* per 100; 3 to 4 feet, 60*s.* per 100
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NEW ZONAL GERANIUMS of 1879. PEARSON'S SET of thirteen splendid varieties, 8*d.* each; the set for 6*s.*, post-free.
Selected varieties:—Jeanne d'Arc, finest single white; Candidissima plena, double white; Zonal Tricolor H. M. Pollett, Mr. Parker, Lord Gifford, Arnobius, Brennus, Laverna, Numitor, Syressa, Tereus, 8*d.* each, 12 for 6*s.*, post-free.
Executors of H. WALTON, Edge End Nursery, Brierfield, near Burnley.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS.
H. AND F. SHARPE are prepared to make special offers of their choice stocks of HOME-GROWN GARDEN and FIELD SEEDS to those who have not yet completed their supplies for the coming season.
Seed Growing Establishment, Wisbech.

New Cucumber, Sir Garnet Wolseley.

JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, post-free for 30 stamps.
"The points in which Cucumber Sir Garnet Wolseley surpasses all other long-fruited varieties are the symmetry of its fruit, and the abundance with which they are produced; there being no shank or handle to Sir Garnet." — *Gardeners' Chronicle*, September 27, 1879.

TREE SEEDS.—
ABIES DOUGLASII, post-free, 2*s.* 6*d.* per ounce.
,, MENZIESII, post-free, 4*s.* per ounce.
PICEA NOBILIS, post-free, 4*s.* per ounce.
PINUS MONTICOLA, post-free, 3*s.* per ounce.
LARCH, Native, 2*s.* per pound.
The above are all of crop 1879, and collected from Trees grown in Scotland, and may be fully relied on for purity and hardiness.
Special prices for large quantities, and to the Trade on application.
BEN. REID AND CO., Nurserymen and Seedsmen, Aberdeen.

LEICESTER RED CELERY has again proved itself to be the hardiest, sweetest, most solid, and best Celery this unfavourable season; when most kinds have been soft and watery this has been good in every way. Those wishing to obtain the true article should have it in printed packets, price 1*s.*; post-free on receipt of 13 stamps.
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HARRISON'S "LEICESTER SEEDS," of choicest quality, are supplied in collections of 21*s.* and upwards, sent carriage free. Trade Prices and full particulars on application to
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Webb's Prize Cob Nut Trees.

CALCOT GARDENS, NEAR READING, BERKS.
MR. COOPER, having succeeded to these Gardens, and being about to make considerable alterations, is desirous of reducing the valuable stock of PRIZE COB FILBERT TREES, for the cultivation of which the late Mr. Webb was so justly celebrated.
Mr. COOPER desires to caution the public in purchasing Nut Trees advertised as WEBB'S PRIZE COB FILBERT TREES, as no one is authorised by him to sell them.
Early applications should be made, addressed
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FOR SALE, the following Choice FERNS, part of a Prize Collection.
In pots from 11 to 15 inches.

4 Adiantum cuneatum	1 Platycerium alcicorne
1 ,, formosum	1 Phlebodium aureum
1 ,, decorum	1 Davallia canadense
1 ,, assimilum, in basket	1 Pteris serrulata
1 Asplenium nidus-avis	1 ,, ,, cristata
1 ,, fœniculatum	1 ,, albo-lineata
1 ,, bulbiferum	1 ,, orientalis
1 Nephrolepis exaltata	1 Lomaria gibba
1 Blechnum corcovadense	

In 7-inch pots.

1 Adiantum gracillimum	1 Gymnogramma elegantissima
1 ,, trapeziforme	1 Pteris argyrea
1 ,, glaucophyllum	1 Eucharis amazonica
1 ,, reniforme	7 ,, small plants
1 Dicksonia antarctica	

For further particulars apply to
WILLIAM THORPE, Field Place, Uppingham, Rutland.

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THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.
Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

TOMATOS ALL THE YEAR ROUND.

NISBET'S VICTORIA.

Tomatos may be gathered almost every day in the year from the above new variety.

Mr. Nisbet says:—
"The original plant, which"
"has been bearing fruit since"
"last May, I destroyed a few"
"days ago, to make room for"
"Melons; and plants struck"
"from cuttings are now bear-"
"ing fruit: these will grow on"
"and *continue fruiting during*"
"*the Spring and Summer.*"

Price 2s. 6d. per Packet, post-free.

CHARLES SHARPE & CO.,
SEED MERCHANTS, SLEAFORD.

The Largest Rose Gardens in England

CRANSTON'S NURSERIES,
HEREFORD.
(*ESTABLISHED* 1785.)

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GERANIUMS.—Stock Plants of New and valuable Geraniums with cuttings, for cash.
The magnificent new Silver-edged Geraniums, with grand flowers of all colours, strong plants 4*s.* 6*d.* per dozen, 25*s.* per 100, packed and put on rail. Strong rooted cuttings of all the best sorts 3*s.* per dozen, or 18*s.* per 100, by post. Cuttings 10*s.* 6*d.* per 100, post-free
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WM. VIRGO, Wonersh Nurseries, Guildford, has the undermentioned FOREST STUFFS for Planting:—
50,000 Alder, 4, 5, to 6 feet; Withy and Osier, 3 to 5 feet; 10,000 Crab Stocks; Limes, 10 to 12 feet; Yews, 4 to 6 feet; austriaca, 4 to 6 feet; Spruce Fir, 4 to 6 feet; Paul's Standard Double Scarlet Thorns, Pink ditto; Lombardy, Black Italian, and White Abele Poplar, 8 to 10 feet; Scarlet Oak, 6 to 9 feet; Sycamore, 8 to 10 feet; Hornbeam, 6 to 10 feet; Beech, 6 to 10 feet; Mountain Ash, 6 to 10 feet; Birch, 6 to 10 feet; Ailantus, 8 to 10 feet; 2-yr. seedling Hazel; do. fine Spanish Chesnut.
Samples, and Prices and CATALOGUES on application.

SPIRÆA PALMATA.—This beautiful pink variety, with immense flower bunches, justly called "The Queen of Spiræas," is offered at 20*s.* per 100, strong clumps.
Wholesale CATALOGUES free on application.
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W. TAIT AND CO. are offering strong well-grown CANES of this wonderful variety, at 5*s.*, 7*s.* 6*d.*, and 10*s.* 6*d.* each, grown from eyes taken from the parent Vine. See *Gardeners' Chronicle*, Dec. 20, 1879, page 794. Orders from strangers should be accompanied with remittance.
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R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.
All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
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COB NUTS, fine Kentish; Kentish PLUMS, CHERRIES, PEARS, DAMSONS and APPLES; specimen MULBERRIES, large AUCUBAS, large LIMES, YUCCAS, and the finest general stock of FRUIT TREES in the Kingdom, some 200,000 to choose from.
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The Trade supplied
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To the Trade and Large Buyers.

ISAAC MATTHEWS AND SON'S
Special offer:—
200,000 ASH, Mountain, 3 to 4 and 4 to 5 feet.
100,000 ,, Common, 3 to 4 feet.
50,000 ALDER, 3 to 4 and 4 to 5 feet.
150,000 FIR, Scotch, 15 to 18 inches and 1½ to 2 feet.
50,000 ,, Spruce, 1½ to 2 feet and 2 to 2½ feet.
50,000 PRIVET, Evergreen, 2 to 3 feet.
50,000 WILLOWS, Osier, 3 to 4 feet.
20,000 RHODODENDRON, splendidum, white.
20,000 ,, Jacksoni.
50,000 ,, Ponticum, 1½ to 2 feet and 2 to 2½ feet.
50,000 ,, Hybrid Ponticum, seedlings, 1½ to 2 feet.
20,000 ,, named varieties, 2 feet.
50,000 YEWS, English, 1½ to 2 feet.
For prices and particulars apply to
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S. MAHOOD AND SON have to offer a large stock of HARDY and ORNAMENTAL SHRUBS and TREES, in great variety, comprising Hollies, Cupressus, Thujopsis, Cedrus Deodara, Box Trees, &c., 6 to 8 feet high, good specimens; a large quantity of smaller Shrubs, Aucubas, Portugal Laurels, &c.; also a large quantity of Golden Euonymus, 9 to 18 inches high, good bushy stuff. All in good condition for moving, and at low prices. An inspection invited.

TREES for AVENUE, PARK, or STREET PLANTING.
ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
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LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
,, Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.
They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.
The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.
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THE FAMOUS SCOTCH CHAMPION,

ACKNOWLEDGED BY EVERYBODY TO BE

the best Disease Resisting variety grown.

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Applicants will please state quantity and kind required.

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A Large Quantity of Carrots, Mangels and Swedes, for Horses and Cattle, for Sale.

APPLY

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AMERICAN EARLY ROSE	2*s.* 6*d.*	9*s.* 0*d.*
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Special quotations for large quantities.

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	Per 100—£	s.	d.
DIELYTRA, spectabilis, strong plants	0	10	0
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Fit for Immediate Working.

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Rosa multiflora de la Grifferaie, 20*s.* per 1000, £7 10*s.* per 10,000.

May be had Gratis on application.

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SPECIAL RATES FOR LARGE QUANTITIES.

MAGNUM BONUM POTATO.

All who desire to obtain the true stock of this celebrated Disease-resisting Potato, of which so many spurious stocks are in the market, are recommended to send direct to the original introducers,

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FLOWER SEEDS.

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H. & F. SHARPE

Invite the attention of the Trade to their Special PRICED LIST of SEED POTATOS, issued last November,

Which comprises, amongst many others, the following excellent varieties, viz. :—

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MAGNUM BONUM,
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BRESEE'S KING OF THE EARLIES.

The above have been Grown from the Finest Selected Stocks, are of Splendid Quality, and Free from Disease.

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UPPER GROUND STREET,

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HOT-WATER BOILERS, PIPES, and CONNECTIONS,

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NURSERYMEN, SEEDSMEN and FLORISTS,

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Westwood Park Late White Broccoli.

RICHARD SMITH AND CO. have pleasure in again offering this excellent BROCCOLI, and respectfully solicit early Orders, as the stock this season is limited. Price 1s. 6d. per packet, the usual discount to the Trade.

From *The Gardener*, July, 1876 :—"The most valuable Broccoli we have seen this year is a kind coming into use in June; it is very white, and of large size before the leaves expand, and though yet in a private garden, we hope to see it comeatable by the public. It is growing in Westwood Gardens, near Droitwich, and Mr Gough, the gardener, has been saving seed from the finest heads for some years, and has been rewarded with great success."

RICHARD SMITH AND CO., Seed Merchants, Worcester.

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LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.

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Reading, Jan. 31, 1880. Sutton & Sons

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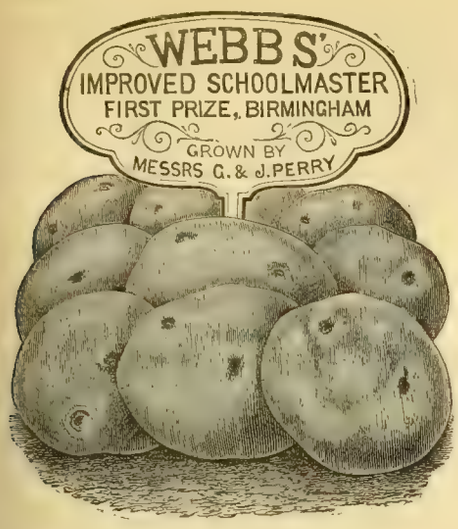

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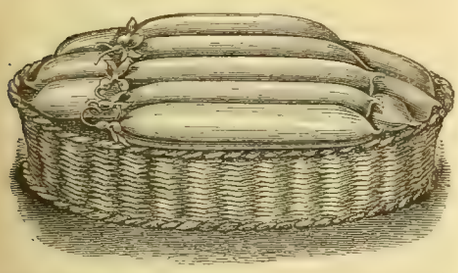

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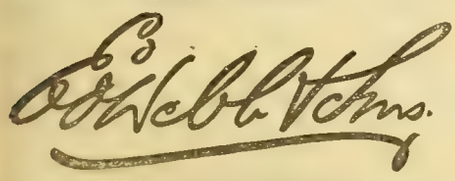

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SUTTON'S NEW WHITE PRIMULA, "PEARL."

A charming novelty, now introduced for the first time; selected from a great number of seedlings raised by ourselves. The flowers are larger than those of our superb white Primula, and even more beautifully fringed; habit, the most perfect of any white Primula yet introduced.

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BEGONIA MONTE ROSA.

A single variety of the most delicate rose colour. The flowers are immense in size, with all the petals of one uniform shape; habit, very compact.

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THE

Gardeners' Chronicle.

SATURDAY, JANUARY 31, 1880.

ROSES IN POTS.

PERHAPS there is no flower so universally cultivated as the Rose. Living, as I do, in the neighbourhood of London, and coming into frequent contact with the owners of villa and suburban residences, I am constantly asked to give advice as to the best flowers to plant. After advice is given, the soil and site of the garden considered in all its bearings, if the circumstances do not admit of the Rose being mentioned, depend upon it the owner of the garden will anxiously ask the question, whether or not it would be desirable to plant a few Roses. Every lover of beautiful and sweet-scented flowers longs to grow Roses in his garden; he would like Roses such as he has seen at the flower shows, and one scarcely has the heart to tell him that this is impossible. In the first place the soil of many such gardens is unsuitable; next the atmosphere is not sufficiently pure; buildings interfere, and neighbours have shrubs or trees that aggravate other evils. In our own garden the soil is very light, shallow, and resting on a gravel subsoil—the worst for Roses. Under such conditions one is almost driven to the culture of Roses in pots.

During the last twenty-five years very rapid strides have been made in this method of cultivating the Rose. Plants grown in pots are much more under the control of the cultivator, and as regards the potting material, neither Mr. Turner, of Slough, nor Messrs. Paul, of Cheshunt, have any greater advantages than the rest of us. They may have one advantage, but to most growers it is a doubtful one, and that is, the possession of the largest plants in the world. These immense veterans, when in full flower, are worthy of the higest encomiums that can be bestowed upon them, and show what can be done with the Rose under skilful management. They may be magnificent, but they are certainly not more beautiful than a bank of Roses grown to perfection in 8-inch pots, with from six to a dozen well developed flowers on each; and when the flowers are set-off with the varied beauties of healthy rich green foliage, the picture is complete, the mind is satisfied.

Well, says some ardent admirer of the Rose, anybody can grow these small specimens. Not so fast, my friend: anybody cannot grow them. The same skill that produced the large specimens has been lavished on the smaller ones; they have received the same attention, and it is only those who are willing to give their flowers and plants unremitting care who can hope to be successful. There are few more beautiful objects in floriculture than a well grown Rose bush in an 8-inch pot; and those who are willing to give their plants that attention they need will be amply rewarded. To ensure success a good start must be made, and those who have no plants could not do

better than purchase a collection established in 8-inch pots. At the same time a sufficient number of small plants in 5-inch pots should be obtained to succeed them. The plants may be worked on the Manetti stock, the Brier, or on their own roots. The last method of propagating Roses is not often resorted to now, but many varieties give grand results on their own roots. Perhaps the largest proportion of those obtained through the trade are worked upon the Manetti, and such Roses are well adapted for early forcing.

One point gained in pot culture is the advantage of obtaining early flowers. The last Rose of summer is interesting enough, but it is often a poor mouldy thing, whereas the first Rose of spring inspires us with redoubled ardour as it slowly unfolds its beauties in a warm greenhouse. For early forcing I like the plants to be established in their pots by the end of September; indeed they ought to be potted into their flowering pots early in August. The compost should have been prepared, say, two months previously to potting, and it should neither be too rich nor too dry at the time. The reason for mixing the compost so long before potting is to allow of its being well incorporated together. Take of rotted turfy moderately clayey loam four parts, one part of decayed manure (I like to use cow and horse-manure in equal portions), add to this a 9-inch potful of ¼-inch bones to each barrowload of compost, and probably some sand should the loam be too adhesive.

In repotting it may be necessary to carefully remove some of the old soil with a pointed stick. If there is a good ball of healthy roots less will need to be removed. If a plant has not made many roots it may be repotted in the same sized pot; a healthy plant well furnished with roots must be placed in one at least 2 inches wider. At the time of potting the plants will be in full leaf; they should be placed out-of-doors as they were, but made quite secure from winds, and be syringed twice daily to prevent flagging at first. Tea and other tender Roses should be placed under glass after repotting. While the Roses are making their growth they must be kept quite healthy; no greenfly must suck the juices—the very life of the plants; the breathing pores must not be choked by the orange fungus or the insidious mildew; red-spider must also be watched for. The best way to destroy the above is to lay the pots on their sides, and well syringe the leaves underneath with soft-soapy water, to every two gallons of which has been added a quarter of a pound of flowers of sulphur.

Careful watering is another prime agent in successful culture. When the plants are exposed out-of-doors it is necessary to look over them twice a day in hot, dry weather. The leaves must be kept bright and clean until they drop naturally. When the leaves fall off the plants must be placed under cover, and those intended to be placed first in the forcing-house should be pruned as soon as they are rather dry at the roots. The wounds speedily heal when the stems are not charged with sap. The cut portions may be painted with styptic, to prevent bleeding. Give a good watering at the roots when the wounds are healed; the Rose should never be dried up at the roots—these organs are always active unless they are dried up or frozen. The first week of the new year would be a good time to place the first selection in the forcing-house. This should be a light, airy structure, and the plants must be placed near the glass. If the pots can be placed over a bed of fermenting material, not plunged in it, so much the better. The heat from the fermenting material causes the roots to act with the tops, and the moisture from it is conducive to vigorous development.

In a temperature of 45° at first, or even 50° when it is mild out-of-doors, the buds will soon start, and as growth progresses let it be raised to 55° and 60°. I certainly do not like a higher temperature than 60° as a minimum for the Rose, and even at that it is better to have a "notch" of air on all night. In very severe frosts it would be most undesirable to over-heat the pipes to obtain 60°: better to let the temperature fall below 55°. Some varieties produce too many shoots, others not more than enough. It will be necessary to thin out the weak ones when there are too many. This may be done when they are 6 inches long, else the growths will be drawn up weakly, and the flowers are certain to be inferior. When the growths are fairly started and numerous young roots are being formed, manure-water should be applied once or twice a week. Half a bushel of cow-manure soaked in 20 gallons of water is excellent for the purpose. The manure should be well stirred up in the water, and it should be allowed twelve hours to settle before using it. Paul's Rose manure is easily applied, and I have proved it to be very efficient in promoting strong healthy growth, always the precursor of well-formed full-sized flowers. A small portion of the manure is spread on the surface of the soil, and repeated waterings with clean rain-water speedily wash it out of sight. Gently dew the plants overhead daily, as well as moistening the paths and walls of the house.

The Rose also delights in pure air, and the ventilators must be opened whenever it is possible to do so without reducing the temperature. Many of the plants will require no sticks to be placed to the flowers; others require that each flower be supported with a neat stick. If they have to be removed any distance to an exhibition, or for any other purpose, a stick must be placed to each flower. Osiers with the bark left on are as good as any other. They are cheap, easily cut, strong enough to support the flowers, and last for one season. More expensive sticks often do no more than this.

Many persons would doubtless like to have a list of the best varieties for pot culture. The following are the best for growing into large specimens:—

Charles Lawson	Paul Perras
Juno	Paul Verdier
Miss Ingram	

The above are hybrid China or Bourbon: the following are hybrid perpetuals:—

Annie Alexieff	John Hopper
Alfred Colomb	La France
Annie Laxton	Madame Clémence Joigneaux
Avocat Duvivier	Madame Lacharme
Beauty of Waltham	Madame Laurent
Camille Bernardin	Madame Thérèse Levet
Charles Lefebvre	Madame Victor Verdier
Comtesse de Serenye	Marie Baumann
Duchesse de Vallombrosa	Marie Rady
Dupuy Jamin	Marquise de Castellane
Dr. Andry	Princess Mary of Cambridge
Duchesse de Caylus	Victor Verdier
Duke of Edinburgh	Noisette Céline Forestier
François Fontaine	
Général Jacqueminot	
Horace Vernet	

The Teas also form handsome specimens; the best of them are:—

Adam	Madame Maurin
Madame de St. Joseph	Madame Villermoz
Madame Lambard	President
Madame Margottin	Souvenir d'un Ami

The following varieties have been grown and exhibited in small pots by Messrs. Paul & Son, of Cheshunt, and Mr. Charles Turner, of Slough, and are all well adapted for this purpose:—

Abel Grand	Fisher Holmes
Annie Laxton	François Michelon
A. K. Williams	John Stuart Mill
Annie Wood	Julie Touvais
Baronne Hausman	Madame Gabriel Suizet
Baroness Rothschild	Madame Laboulaye
Captain Christy	Marchioness of Exeter
Centifolia rosea	Marguèrite de St. Amand
Charles Baltet	Marquise de Mortemart
Duc de Montpensier	Monsieur Noman
Duc de Rohan	Princess Beatrice
Elie Morel	Sénateur Vaisse
Elizabeth Vigneron	Star of Waltham
Emily Laxton	Thomas Mills

The above are hybrid perpetuals. Caroline Kuster Noisette suits admirably small pots; and amongst Teas the following are singled out as the best:—Anna Olivier, alba rosea, Catherine Mermet, Jean Ducher, Le Mont Blanc, Marie Van Houtte, Niphetos, and Perfection de Monplaisir. *J. Douglas, Loxford Hall, Gardens, Ilford.*

New Garden Plants.

LÆLIA ANCEPS VESTALIS, *n. var.*

Lælia anceps is inexhaustible in her surprises. I have at hand a glorious flower, with an emarginate middle lacinia of the lip and very broad petals, the last feature doing very much to increase the reputation of the species, whose varieties with narrow petals give me a rather unfavourable impression. With very few exceptions the colour is the finest white. The median nerves of the sepals are keeled and greenish outside, the tips of the sepals green. The lip has not the purple apex of Lælia anceps Dawsoni. The callus, disk, and bases of the side laciniæ are of a rather deep sulphur colour, very shining, and the basilar parts of the side laciniæ of the nerves have a rather dark violet-purple tint. Column white, with light green at the base and some very light nearly vanishing mauve lines under the stigmatic hollow. The texture is as firm as possible, far more so than I have ever seen it in any of the purple varieties. This glorious novelty has just flowered (January 15) at Burford Lodge, Box Hill, Dorking, in Sir Trevor Lawrence's celebrated collection. *H. G. Rchb. f.*

CYMBIDIUM MASTERSII, *Lindl.*

There is great pleasure felt in England now about that lovely Cymbidium Mastersii, with purple, or violet, or mauve spots and blotches on the anterior lacinia of the lip. The most enthusiastic lover of this plant compared it to Lælia anceps Dawsoniana. That is a question of taste. I have several correspondents who grumbled (in the bad month of November) that the "variety" had no especial name.

I am sorry I cannot follow that order, as, *candide lector*, very many names are prescribed. A glance at the two oldest representations (Lindley, *Bot. Reg.* 1846, 50, and Lindl., Paxton's *Flower Garden*) gives evidence that those were blotched with purple, or mauve, or violet. Hence the second variety, now regarded the "old one," because the oldest is forgotten, with white flowers, and only yellow on the middle lacinia of lip and keels, might be distinguished as the C. Mastersii album.

Those two representations well show the keels with notches towards their bases. This I regard the characteristic feature of Cymbidium Mastersii. How far Cymbidium affine, Lindl., may be kept as a good distinct species, owing to the want of those notches, the straight upright raceme, &c., we have to learn as yet. I have addressed many of my English correspondents for elucidation, but the question is not settled, and in various cases I have expressed my doubts. At all events, violet anterior spots occur in both.

I have also had a nice flower of Cymbidium Mastersii from Mr. B. S. Williams, sent on November 29, 1879, quite Mastersii, but with a rather narrow middle lacinia. I understand from my excellent correspondent that there was an inclination expressed by several Orchidists to regard it as distinct. We have before to learn whether it is a single distinct break, whether it will be constant and appear in more numerous specimens. There is a certain danger in describing individuals as varieties, and many a variety described in our books and journals may be merely an individual aberration. Just there is the difficult point in garden botany, that one has to decide immediately for practical reasons well known to our readers, especially to those who are in the trade. *H. G. Rchb. f.*

CLASSIFICATION IN GARDENS.

I FIND that a suggestion which I made some time ago in the American (Albany, N.Y.) *Country Gentleman* has called forth some remarks from the Editor of the *Garden*, and as my excellent friend the Editor of the American *Gardeners' Monthly* has previously favoured me with very similar views, I propose to endeavour very briefly to explain exactly what I mean, and for that purpose I enclose a rough sketch (see fig. 25) of a private garden with the collection grouped in classes and alliances, mainly after the system adopted in the *Genera Plantarum* of Bentham and Hooker.

The groups are apportioned, as to size, &c., to the possibilities of the climate of the Northern United States. For instance, Monocotyledons would be almost entirely destitute of arborescent representatives

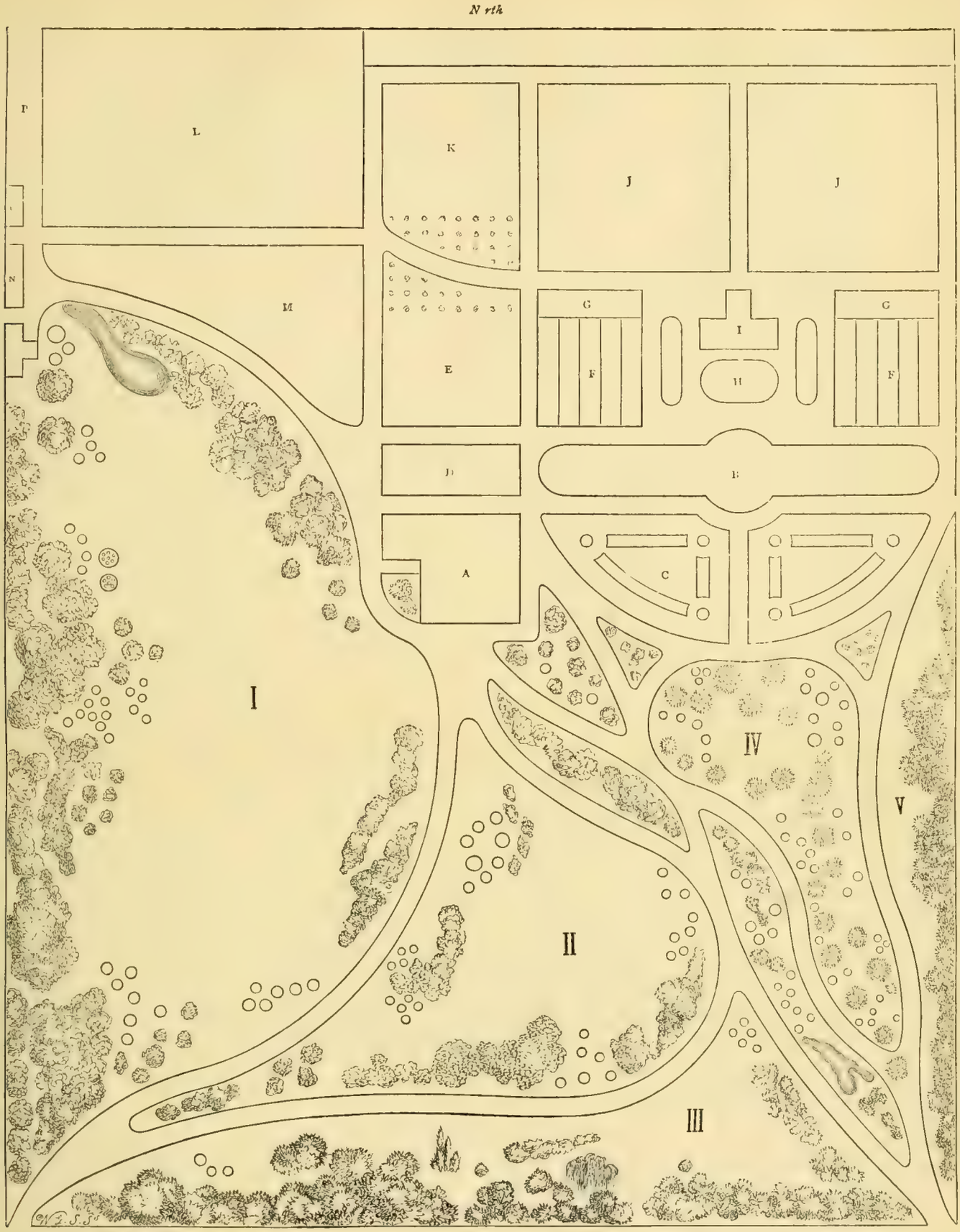


FIG. 25.—PLAN OF A PRIVATE GARDEN DESIGNED TO CONTAIN A SELECT CLASSIFIED COLLECTION OF PLANTS.

The five main plots are intended for (I.) Polypetalous, (II.) Monopetalous, (III.) Apetalous, (IV.) Monocotyledonous, and (V.) Coniferous plants respectively, the separate families having each its special position in the appropriate plot. The other references are—A, Mansion; B, Conservatory; C, Flower garden; D, Offices; E, Winter flowers, planted out during summer; F, Propagating houses; G, Sheds; H, Grass; I, Gardener's house; J, Kitchen garden; K, Small fruits; L, Orchard for dwarf trees; M, Grass drying ground; N, Stables; O, Fowls; P, Compost. Scale, 12 feet to ⅛ of an inch.

n this climate; the plan therefore assumes the grouping of Palms, arborescent Ferns, Aroids, &c., among the Conifers during the summer; so also with Euphorbiales, Rubiales, Ficoidales, Geraniales, &c. These would be supplied either in whole or in part from the glass department for summer embellishment.

I may mention in illustration that Polygalales are supposed to be represented by plants of Pittosporum Tobira, planted out during summer. Caryophylales are represented by a group of Tamarix (Tamariscineæ), and beds of Portulaca (Portulaceæ). In Malvales, the three orders, Malvaeæ, Sterculiaceæ, and Tiliaceæ, afford plenty of material of all kinds, and if a "position" cannot be found to suit a particular plant, why then a plant must be found to suit a particular position; and I would suggest that this latter is the "practical" method in nearly all the climates I have lived in.

I feel sure that it will very readily be seen that there is quite a possibility of finish and taste and "gardenesque" perfection, coupled with quite a good deal of instructive classification, in this idea; and I am sure that the Editor of the *Garden* ought to hail with delight any suggestion of this kind, seeing how he

deplores the yards upon yards of ribbon beds which, in spite of all his efforts, are still the prevailing fashion.

The garden plan is suited to the requirements of a retired American gentleman of horticultural tastes, small family, and ample income. The kitchen garden, &c., is small, the main features being a classified arrangement and abundance of glass for the production of flowers in the winter. *James MacPherson, Rochester, N.Y., U.S.A.*

WATER CRESSES FOR WINTER USE.

THE twelve pans of Water Cresses shown by me at South Kensington on the 13th inst. were regarded by the practical men present as usefully illustrating the value of this culture for the supply of the table during winter. The tremendous frost that broke up at Christmas made an end of Cresses in all the brooks and beds that were not specially protected, and in many that were aided by flooding, for the frost went deep into the water, and when the thaw came it was found that the crop was gone, and there could be no more gathering until returning spring should bring new growth. A very slight touch of frost destroys the crop, and, this accomplished, there is no more production until the spring returns, and a vigorous new growth accompanies the rise of temperature. At Bridge House we never obtained outdoor Cresses even from the brook in the sheltered garden before the middle of April, at which time we used to turn out into the brook the pans of Erfurt Cress that had been grown under glass, so as to naturalise the variety without losing its distinctive qualities. When the Erfurt Cress becomes established its character is pretty well washed out of it in the second season, but by raising a fresh stock every year from seed for pan culture, and turning the pans out when their winter work is done, the Erfurt is maintained in its integrity for use during the summer and autumn; and this is the best way to ensure supplies of this elegant and delicate variety all the year round.

The pan system is the best for the supply of winter Cresses for home use, but is altogether unsuitable for commercial purposes. For the supply of the market larger plans are required, and of many that are possible there are two that demand special attention. One of these consists in arranging the levels of the water-flow, so that in expectation of frost a flush of 2 or 3 inches of water may be run over the bed to bury the crop and keep the frost at a safe distance. Where there is a sufficient head of water the main business is to employ it judiciously, and to be always in good time. Thus a crop may be carried through a severe winter, and when not actually frozen over may be gathered from for the market.

Another effectual plan is to have the winter beds flanked by banks, on which large lights may be laid, and such things as old doors and shutters and hurdles and mats may be employed, for loss of light is of little consequence to plants that have ceased growing, and are but standing still to be ready for gathering. That the two systems may be combined will be evident to the practical man who is in any way interested about the supply of Cresses during the winter. The crop of course should be grown for the purpose by the insertion of cuttings, in August or early in September.

The Cresses shown at South Kensington on January 13 were six weeks old from the cuttings. They were sufficiently grown to be cut from for the table at four weeks from the cuttings; but it is a bad practice to cut until the plant is quite strong and able to bear it, and a small quantity only should be taken from one pan at a time; hence half a dozen pans at least should be grown, and much better a dozen; and better than all pans are large troughs and boxes that afford abundant root-room, for we cannot have too much vigour of growth; as a matter of fact, we always have too little. Mere protection from frost is quite enough in the way of house accommodation, for while the plant is soon killed down by frost, it fares almost as badly under artificial heat. Hence a good brick pit, with a slight service of hot-water piping, answers admirably as a winter Watercress garden. Those exhibited on the 13th were grown in a light airy house occupied with bedding plants. The pans were all placed in "stands" or water pans, to keep the Cresses well fed with water, and they were all as near the glass as we could conveniently place them. In the first instance the pans were filled with strong loam, mixed with a small allowance of Clay's Fertiliser, and the cuttings consisted of the smallest tops of strong Cresses of outdoor growth. As for after-management, it may be said there was none, because none was wanted. They were treated to an occasional shower from the syringe, but would probably have done as well without it, for the truth is Watercress culture is about the easiest business in the world, and when I hear of failures I always conclude that there was a radical mistake in the first start. I have never seen aphis or thrips on the plants even when kept too dry, and although many cruciferous plants are subject to mildew, as witness the Shepherd's Purse and the Kerguelen Cabbage, I have never seen the slightest trace of mildew on Water Cresses.

Although a strong heat is never needed in the ordinary way in the cultivation of this elegant vegetable, it is nevertheless possible to force Water Cresses advantageously, as a case in point will show. There was a sudden demand here for a large lot of home-grown Cresses for a particular purpose, and our stock was by no means up to the mark. This happened when the frost was raging, and Nature was dead against any magic in plant growing. But we were equal to the emergency. We managed to secure a peck or so of cuttings from our neglected pans, and these were inserted in pans newly prepared with good fresh loam and Clay's Fertiliser, and there were a score of pans thus prepared to begin with. As we had but three days for the entire business, you may imagine that if old Death had put his head in at the door we should probably have made a cheap bargain with him to be out of the difficulty. But he did not appear, and we had to go on. The pans were put into a moist heat of 70°, and within three days there was a rich growth of about 4 inches, and we cut a bushel of the loveliest home-grown Cresses ever seen or tasted. After this the plants sprouted weakly, and we made another cut at about eight days from the first, and then threw them away as worn out. The forcing soon ruins the plant, but in the event of an emergency a temperature of 70° will do wonders. *S. H., in the "Gardeners' Magazine."*

LILIUM PARRYI.

HAVING had the honour of introducing, as well as the good fortune of first growing and blooming, this beautiful and rare Lily, both in pots and in the open border, a few brief memoranda, giving the results of my experiments on this subject, may perhaps be of some interest to your readers.

In the fall of 1877 my kind and generous friend, Dr. C. C. Parry, divided the only four bulbs he had between Professor C. S. Sargent, of the Harvard Botanic Gardens, and myself. In this way I became the fortunate recipient of two medium-sized bulbs. As the season was already too far advanced, and the weather wet and cold, I found myself compelled to abandon the idea of outdoor planting, and to limit my experiments for that year to pot culture. The two bulbs were each planted in a 5-inch pot, in a compost of one part leaf-mould, two of good friable turfy loam, one of well rotted cow-manure, and one of sand. After planting the pots were plunged in a well protected cold pit.

One of the bulbs never made its appearance above-ground, and finally rotted away; the other, however, showed signs of growth towards the end of February, 1878. The plant grew very slowly at first. When the stalk was about 5 inches above-ground the plant was carefully shifted into a large 6-inch pot, with most of the fresh soil on the top. Towards the middle of May it was plunged, together with about seventy other Lilies of various kinds, in a warm and well-protected border. Here the plant grew to a most remarkable perfection, having two distinct whorls of leaves at the base of the stalk, which latter stood 3 feet 2 inches above the top of the pot, and produced four perfect buds. When these buds were just beginning to colour up, the top of the plants, and with it all the buds, was broken off by a severe tornado, thus destroying all hopes of blossom for that season.

In the fall of 1878, through the kindness of Mr. F. M. Ring, of Banning Station, Col., I obtained several hundred bulbs of this Lily. They were all distributed among many botanic gardens, correspondents and friends, except one dozen which I retained for experimental purposes. Four of these were planted in pots, the remaining eight in the open border. The four selected for pot culture were planted singly in 4-inch pots. After planting, the pots were plunged into a sand-bed in my cellar, where they were left until they showed the young shoots above-ground. When about 6 inches above-ground all were shifted into 6-inch pots, with most of the fresh soil on the top. They were grown and bloomed in a temperate conservatory facing the east.

The eight bulbs chosen for outdoor culture were planted the latter part of October, 1878, in a bed devoted exclusively to the culture of Lilies. All were planted from 9 inches to 10 inches below the surface. During winter a good covering, 6 inches thick, of dry Oak leaves was brought on to the bed. (Lowest temperature during winter 1878-79 was from 20° to 25° below zero for about a week and a half.)

The following are the results of my observations, all carefully noted down at the respective times of making them:—

I. IN POTS: *Bulb No.* 1.—This was the finest bulb of the twelve. It was planted in a compost of two parts good turfy loam, one of leaf-mould, one of old rotten cow-manure, and one of sand. The stalk stood when in full bloom 2½ feet above the pot, and produced four perfect flowers. The first opened on May 11, 1879, the second on May 18, on which day I had a visit from its distinguished discoverer. The four flowers were all open on May 25, each lasting about ten days. This plant ripened one seed-pod. After the seeds were taken off I examined the bulb, and found it in excellent condition, having increased to three times its original size, being very firm and of good colour.

Bulb No. 2.—Planted in a compost of two parts peat, one of leaf-mould, one of turfy loam, and one of sand. The stalk grew finely to a height of 20 inches, making two perfect flowers. Both were artificially fertilised, but failed to develope pods. After flowering I found the bulbs entirely gone, leaving a nest of four small bulblets behind of the size of a Pea.

Bulb No. 3.—Compost same as No. 2. The stalk grew 2½ feet high, making one very perfect flower. After flowering I found the bulb gone, as No. 2, leaving no trace whatever.

Bulb No. 4.—Planted in a compost of two parts peat, two of turfy loam, and one of sand; the stalk grew 2 feet high, with three flowers. After flowering I examined the bulb, and found it in a very fair condition, having slightly increased in size and improved in structure.

II. IN OPEN BORDER: *Bulb No.* 5.—This bulb was planted in an open space, exposed to the full sun, in a good open turfy loam, which had been the previous year well intermixed with very old rotten cow-manure. A good mulching was placed over the ground around this plant to keep the ground cool. The thermometer stood for several weeks from 95°—100° in the shade. The stalk grew to a height of fully 3 feet, having one perfect whorl of leaves at the base, and produced nine perfect flowers, lasting in all twenty-four days. This bulb I took up shortly after blooming, about the middle of September, and found it had increased to about four times its original size. It was sent to Mr. Max Leichtlin, who afterwards reported its arrival in excellent condition.

Bulbs Nos. 6, 7, and 8.—These were all three bulbs of medium size. They were planted in a peaty soil in an exposure of partial shade during the hottest part of the day. All three produced healthy stalks, from 16 inches to 20 inches high, making respectively one, two, and two flowers. In lifting the bulbs in the fall, I found them to be almost as weak and fragile as when originally planted.

Bulbs No. 9 *and No.* 10.—These were the smallest of the lot; they were planted in a sunny exposure in three parts of turfy loam, one of very old cow-manure, and half of sand. These two bulbs threw up their shoots fully two weeks later than the previous ones. Both, however, made good growth as to size and colour of stalk and leaves, with four and five flowers respectively. In the autumn I examined the bulbs and found both in remarkably good condition, weighty and solid, and increased to at least three times their original weights.

Bulb No. 11.—Planted in a peaty soil in a deep shade, receiving only a few stray rays of the sun. The plant came up late, and opened its two flowers a month later than Nos. 9 and 10. In the fall the bulb could not be found.

Bulb No. 12.—This bulb was planted in close proximity to a L. Brownii in a much sheltered and shady part of the bed, in the common soil (good turfy loam). It

made its appearance above-ground more than a week later than No. 11, and developed its stalk to a height of fully 4 feet, making five perfect flowers. The contrast of this graceful plant, with its delicate pure yellow fragrant bells, and the stately Brownii, in company with two auratum, two Hansoni, and several of the speciosum group, all blooming at the same time, was indescribably beautiful; and the memory of the Sabbath morning, when the last of the comers, the Brownii, opened, the Parryi having then four perfect flowers open, will never be forgotten.

In summing up the above results I have arrived at the following conclusions: — The soil best suited for a healthy growth and perfect development of flowers and bulbs is a good friable turfy loam, with perhaps some well rotted cow-manure and sand sparingly worked in. They will do well in a sunny exposure if the surface of the soil is protected from the sun's rays and kept cool. In an exposure of partial shade the flowers will last from two to four days longer than in the full sun.

The advice given by Dr. Alex. Wallace, recommending deep planting for all Lilies, I have followed in all the above experiments with excellent results. *W. Otto Gronen, C.E., Rock Island Arsenal, Illinois, U.S.A., January*, 1880.

[To this letter, for which we express our thanks to Mr. Gronen, we append the following account of this little-known Lily from Mr. Elwes' monograph. EDS.]

"Parry's Lily was described by Professor Watson from specimens collected by Dr. Parry early in July, 1876, in a marsh in San Gorgonio Pass, San Bernardino County, South California. It appears to belong to the type of L. Washingtonianum more than to any other Lily, though I am not sure whether either of these plants can properly be included with L. longiflorum, &c., in the Eulirion section. The bulbs, as far as I can judge from the excellent drawing [of Mr. Gronen], seem to be of a type intermediate between L. Washingtonianum and L. pardalinum, though the affinity of the plant is certainly with the former species. It may be that its bulbs, from growing in a marshy situation, have become somewhat modified in form. I am not aware that any variety of L. Washingtonianum has been found so far south as the San Bernardino Mountains, which lie in about lat. 34° N., on the borders of the desert country which lies between Arizona and the sea. I am indebted to Mr. Duncan Putnam for the following extract from Dr. Parry's account of the plant :—

"'In one of my last botanical excursions in the vicinity of San Bernardino, in July, 1876, I accepted an oft-repeated invitation to visit the intelligent brothers, J. F. and F. M. Ring, in their retreat near San Gorgonio Pass. Leaving the broad and picturesque basin of the Santa Anna Valley near the emergence of the stream from the rugged mountain wall of the San Bernardino range, our route, after crossing Mill Creek, hugged the foothills bordering the Upper Yucaipa Valley; thence, by a more rapid ascent in a nearly direct easterly course, we reached an elevated bench scattered with Pine and Oak groves, overlooking the broad sweep of the San Gorgonio Pass, now traversed by the eastern extension of the South Pacific Railroad. In one of these mountain nooks, the Messrs. Ring have located a Potato ranch, the elevation of over 4000 feet giving a sufficiently cool moist climate; while the adjoining mountain slopes afford an extensive summer cattle range long after the herbage of the lowlands has dried up.

"'In scattered groves of Pinus Coulteri the ground was strewn with the massive cones of this peculiar species, its dense scales armed with formidable hooked spines. Many of the cones were fully 6 inches in diameter, with a length of 9 inches.

"'The few perennial watercourses here met with are mostly confined within deep and inaccessible ravines, but more frequently scanty springs ooze out from beneath deep layers of porous strata, and spread out into boggy marshes, generally choked up with rank Willow and Alder growths, and occasionally expand into small meadows of coarse grass and sedges. On all the steep gravelly slopes adjoining these was the usual display of Californian evergreen shrubbery, including the heath-like Adenostema, which, under the name of "chamisal," is largely used for fuel; the Holly-leaved Cherry (Prunus ilicifolia), exhaling a strong odour of bitter Almonds; the Heteromeles arbutifolia with glossy varnished leaves, and a prevalent form of California Lilac (Ceanothus crassifolius), with thick leathery foliage. The dull green hue which everywhere characterises the moorish growth, is at this time of year partly relieved by brilliant scarlet festoons of Pentstemon cordifolius trailing over adjoining bushes, or the less showy blossoms of Pentstemon ternatus.

"'But what soon attracted more exclusive attention was a conspicuous yellow Lily growing abundantly on the boggy ground adjoining Messrs. Ring's house, and sharing with the Potato patch the care and attention of the undisputed possessors of the soil. Though not so showy as some other members of the Lily family in this region, there is a grace displayed in its large drooping flowers surmounting a slender stem beset with narrow scattered leaves, which are occasionally crowded at the base into a distinct whorl.'

"The Lily in question has not yet been introduced into Europe, but is in cultivation in the Botanic Garden of Harvard University." *Elwes, Mon. Lil.*, part vi.

ART IN THE CONSERVATORY AND GREENHOUSE.*

(*Concluded from p.* 106).

FORCING-HOUSE.

THE forcing-house is used, as its name implies, for forcing on plants, &c., before they are placed in the conservatory or other plant-houses. It is usually fitted with beds having pipes below them to heat the soil with what is called bottom-heat, and fig. 1, p. 140, gives a section showing how the arrangements may be advantageously carried out. The beds are made with iron pillars supporting slates which form the bottom of the bed, the same material being used for the sides and ends. The air-flues are formed in the wall of the building, and are so arranged in conjunction with the slate trough, so to speak, which carries the bed, that the heated air may pass up in the front as well as the back, fresh air being admitted below in a flue, or air-drain running from end to end, and which can be regulated at will. By this means the house can be supplied with fresh heated air when it is not desirable to open the front ventilators. And here it may be said that the most usual way of ventilating buildings of this kind is by allowing fresh air in at the lower portion of the building, either by an air-drain or by front ventilators, as shown in fig. 1, which, in some cases, are also repeated below the lights in the brickwork in the form of wooden doors or flaps. The heated and vitiated air is then allowed to pass off at the apex of the roof by lifting lights worked from below. Any system which admits fresh cold air over the whole surface of the roof equally does not practically do the work so well, simply because no draught is set up, as is the case in buildings such as I have described; and in very windy weather, much cold air which is not wanted must find its way into the building, when so many small ventilators exist all over the roof, a good number of which must necessarily soon fail to fit exactly as they may do when first fixed. With regard to the pipes being carried on bearers above the ground instead of their being buried in the soil, as is sometimes done, it is worthy of note that by this means they are less subject to moisture, and less liable to corrode. For forcing-houses, about 1 foot of 4-inch pipe to from 15 to 16 cubic feet of air will be found a good proportion.

PROPAGATING-HOUSES are very similar to those last described, but are fitted with striking boxes in addition to the beds; and this class of house is also suitable to Cucumber and Melon growing when provided with wires and frames, as shown by fig. 1, on which the plants may grow.

PEACH-HOUSE.

My diagram, No. 2, p. 140, gives a good section for Peach-houses, which are frequently narrow lean-to structures, from 8 feet to 14 feet wide, devoted to growing this beautiful fruit. A curvedwire trellis (fixed on a pivot to lift up and down, bringing the fruit near or not to the glass) is provided in the front, as will be seen, on which to train the trees, and the back wall may be wired for other fruit. It will be observed in our section that the front is constructed with iron uprights or muntins, let into rough blocks of stone at the foot. Pockets cast on these uprights receive slates about ¾ inch thick and about 6 inches deep. The rafters are secured to a bracket-head at the top, and provision is also made for the plate which carries the gutter. Thus a building is erected without brickwork, except for the back wall, and I am told that there are many competitors for the credit of having introduced slates into the construction of houses of this kind. The trussed rafter is used for the purposes of lightness, and the tension-rods are useful for creepers to grow over, and for fixing other wires, for the same reason.

ORCHARD-HOUSES.

Orchard-houses may be like the last, but are generally span-roof structures of about 30 feet wide, the height being in proportion. The trees are planted out in the soil, as they would be out-of-doors, care being taken to leave openings in the external walls under the surface, as in the Peach-house, fig. 2, p. 140, where blocks of stone are used, or by means of arched bricked walls, so as to allow the natural moisture of the earth from rains to permeate the soil-beds inside the building. Orchard-houses are often unheated, but sufficient pipes to keep out the frost should be provided.

VINERIES.

Vineries are the most usual form of fruit-houses, and are made of various forms. Three houses are necessary if Grapes are wanted all the year round, and if it be intended to grow the fruit in the greatest perfection. One house for the earliest crop, one for the summer crop, and another for the autumn and winter crop. In large establishments this division is still further carried out, various kinds of Grape being grown in different houses, and under varied treatment. The best form for a vinery is the span-roof, provided it be properly ventilated at the apex, to let out the superabundant heat that accumulates there. If early Grapes are intended, then the border must be entirely inside; but for a general crop, in order to give the Vine a large pasture, the walls are built on arches as already described, additional borders being provided outside, or in some cases the Vine may be brought through the wall, its root being planted entirely outside. The best aspect of such a vinery should be east and west. It will then have the benefit of the sunlight from the morning to the evening. Frequently circumstances allow but little choice in the aspect of glass buildings; but for the most part, and especially for lean-to houses, the south-eastern aspect is decidedly preferable to any other, whether they are intended for growing fruits or flowering plants. The sun's rays in the morning are more strengthening and exhilarating to plants than at any other period of the day, and the rays of the evening sun, which may be lost if the building face the south-east, are of very little importance compared with the cheering beams of early morning, and it has been found, generally speaking, that plants are more prostrated by the influence of the afternoon's sun, when it is most powerful and oppressive, than at any other time. Vineries are frequently built against a wall either as lean-to or half-span buildings; they are generally built so for early vineries, as they are warmer than span-roof houses. For early vineries the proper amount of pipes is about 1 foot of 4-inch pipe to 20 cubic feet of air, the proportion for late vineries being 1 foot to from 25 to 30 cubic feet.

PINE PITS.

Pineries are similar to forcing-houses, but the beds are deeper in soil, and the lower part of the roof lights is made to slide so that the plants may be lifted out at pleasure, which is often a great convenience when the house is full. The hot-water pipes are of course in all the foregoing strictly speaking working houses, heated by boilers over furnaces fed with coke or small coal fires, but in ornamental buildings or those connected with the dwelling-house, the heating may be advantageously effected by the use of gas and air, provided, of course, that the furnace be entirely external to the conservatory. Mineral oil stoves are sometimes used for small glasshouses, but not, I think, with much success. Half measures generally are little better than failures.

The sections which I have given in my diagrams, Nos. 1 and 2, p. 140, are simply and entirely devoid of all attempt at anything beyond practical utility; they only present the necessary elements of such buildings. My other pen-and-ink perspective drawings, with plans, show how they may be made more in keeping with a simple artistic idea. Other architects have not failed to grasp the necessity of rendering their designs for similar structures with appropriate architectural treatment; but the instances are by no means numerous, though I should be sorry to ignore anything which has already been done in that way.

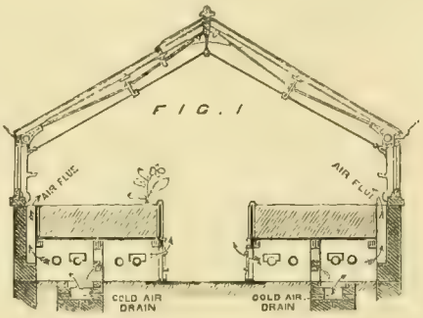
THE PALM STOVE AT KEW.

One of the earliest large buildings which still remains among the most important yet erected in England, is the celebrated and well-known Palm-stove in the Royal Botanic Gardens at Kew. It was built some thirty years ago, from the designs and under

the direction of Mr. Decimus Burton, F.R.S. Mr. Burton, the architect, has most kindly lent me a copy of all the working drawings of this building, and I am thus enabled to show a general plan by fig. 3, p. 141, with a general cross section through the centre of the building by fig. 4, and some details of the construction by figs. 5 and 6. [We are indebted to the courtesy of the *Building News* for permission to use these blocks. EDS.] It will be seen that the entire length of the structure is 362 feet; the centre is 100 feet wide, and 66 feet in height; the wings 50 feet wide and 30 feet high; wrought-iron was used for the ribs of the roof, in lengths of about 12 feet, which were welded together to form the required lengths, and then bent to the proper curve of the rib. Cast-iron sockets receive the ribs; these sockets are sunk into granite blocks, upon a foundation of concrete. The cast-iron columns and the standards over them are hollow, and conduct the water from the gutter cornice of the upper roof into rain-water tanks, under the stone tables all round the entire interior, and these troughs are arranged here so that the water may be warmed by the temperature of the building before it is used for watering the plants—a necessity I have already pointed out. Fig. 5, p. 141, shows a section of the main gutter cornice, and it illustrates the provision intended to carry off the condensed water of the interior, which, owing to the great quantity of iron surface, in cold weather is very considerable. I last visited this building during one of the sharp frosts of the very severe weather which prevailed during the early part of last December, when a perfect rush of water was falling from the continuous gallery which runs round the central area of the house. The Board of Works had, at that time, not completed the intended alteration by which provision was to be made for the carrying off of this condensed water by means of a pipe from the above-mentioned gallery, where it collects in great quantities. An opening had merely been pierced in the gallery floors to receive the pipe, which was not then fixed, and hence, probably, the rush of water to which I refer. The building is heated, it seems to me, in the most perfect manner; no less than 19,510 feet of hot-water 4-inch piping being carried over the entire ground area of the building. This work was designed about three years since by Mr. E. G. Rivers, C.E., and executed by Messrs. Simpson & Co., of Pimlico.* Six large nearly horizontal tubular boilers are arranged in the basement, three at either end; two boilers being simply provided as a reserve in case of repairs in the others being necessary, and each boiler heats 4877 feet of piping. Originally the architect arranged a series of underground flues, communicating with a smoke-tower, which was 96 feet high, at a distance of 500 feet, but these arrangements have now been superseded by the flues from the furnaces being carried up within the wings of the building. The water supply is derived from tanks in Richmond Park, filled by engines near the Temperate-house in the Kew Gardens pleasure-grounds.

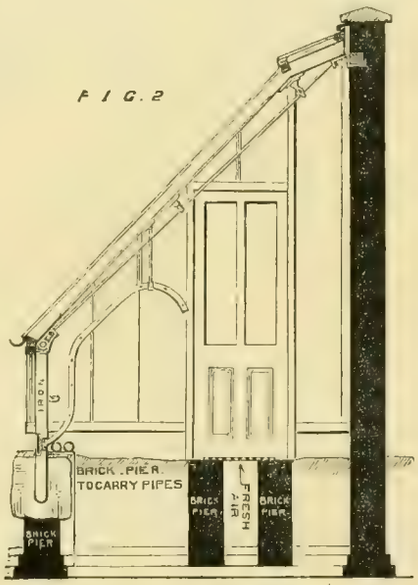
GREEN GLASS.

The glazing of Kew Palm-house is in every way a success, as I am informed by Mr. J. Smith, the able Curator of the gardens, to whom I am indebted for many hints. Plants growing in stove and other houses often, as is well known, suffer from the scorching influence of the solar rays, and great expense is frequently incurred in fixing blinds to cut off this destructive calorific influence. From the great size of a large building such as the Palm-house at Kew, it would be almost impracticable to adopt any system of shades or blinds which would be effective, and it was therefore thought possible that, by the use of tinted glass, which should not itself be objectionable in appearance, the most scorching of the heat rays might be arrested. Mr. R. Hunt made the suggestion, associated with Sir William Hooker and Dr. Lindley. The glass eventually used, after a long series of experiments, is that which we now see employed in the Palm-stove, and several other buildings at Kew. I have brought some specimens to show you. The glass, as you will observe, is of a light green colour, which is obtained by oxide of copper, and the glass is made so transparent that scarcely any light is intercepted. This glass is manufactured entirely free from the oxide of manganese, which is commonly used in making all ordinary sheet glass. The absence of manganese must be insisted on, and for this reason: that glass, into the composition of which manganese enters, will lose its green shade, and be certain to assume a pink tint after long exposure to much sunlight, and any tint of a pink colour would completely destroy the peculiar properties for which this glass is chosen. Messrs. Chance, of Birmingham, are the manufacturers, and I cannot do better than recommend it for more general use for



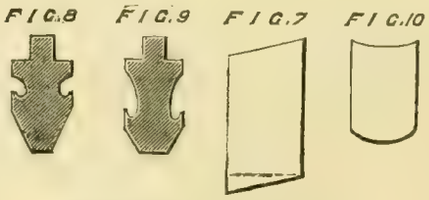
SECTION OF A FORCING-HOUSE.

Fern-houses, Palm stoves, and other similar buildings. It will be seen, however, by a visit to Kew Gardens, that where the glass has not been carefully manufactured, or by other makers, that the green has entirely left the glass, the pink tint which I have described having taken its place. The cost, at present, of this tinted glass is, I believe, about twice as much as



SECTION OF A PEACH-HOUSE.

ordinary 21 oz. British sheet. The appearance of the green glass is very effective, especially when seen from the interior of large buildings. In ordinary conservatories I am inclined to think it might be adopted with much advantage, although some horticulturists object to its use, and especially I would introduce it in the lower panes of vertical lights, say



SASH-BARS AND PANES (SEE GLAZING).

on the south side, or anywhere where the glass is near the roots and pots. Much damage is often done by the burning up of roots by radiation from the side-lights, and, therefore, it may be remarked vertical lights generally should be lessened as much as possible. Stippling is now resorted to to avoid this scorching, but the method is a troublesome and by no means good-looking procedure. The whitewash with which the glass is clouded soon becomes begrimed with dirt and soot. Clouded glass, I believe, is sold, but, like the Kew green glass, it cannot be used entirely in general conservatories with advantage, because in early spring most people want flowering plants, for which as much light as possible is required. I think, however, that a combined use of both plain and Kew glass might, even in ordinary circumstances, be made with increased success, and more extensively than at present, and so avoid stippling.

With regard to the glasshouses of the French, we have little or nothing to learn beyond the fine propagating-house at La Muette. The appearance of most French conservatories is spoiled by the method employed for shading, which is bad, expensive, and awkward. Laths painted dark green and connected together by means of a string and hooks, are adjusted as blinds on the top of the houses, reached by gangways running along the top of the roofs.

GLAZING.

The French, however, have one mode of glazing which seems worthy of adoption, as it presents a neater and rather more satisfactory effect than laps as we use them. The sheets of glass, instead of being allowed to lap, are made with a butt joint, a small quantity of putty being rubbed into the joints when the glass does not exactly meet evenly. Strips of lead-paper, about half an inch wide, are then fastened on to the outside over each joint by the use of a solution of indiarubber or marine glue. A good effect is produced by this silvery strip of lead-paper, and repairs are easily effected, while the glazing is almost hermetical. It has, however, one objection for stoves and other houses where the temperature is a high one, and much moisture is given off, on account of the condensed water having no means of escape, excepting by drips, and at the bottom. By curving the upper and lower edges of each sheet of glass in the top glazing (see fig. 10) the water is brought from the sides of the pane into the centre, and, if properly fixed, much of the condensation water inside will find its way from the under-side of one sheet on to the outside of the next sheet of glass below it; and this is the method I have adopted in my own conservatory with success. In houses where a high temperature is kept up, such as in stoves, forcing-houses, &c., a good method to carry off the condensation water, which in these cases during cold weather is considerable, is to cut the roofing-glass in panes, like this (fig. 7), and provide grooves in the sashbars, thus (figs. 8, 9), the object being to drain the water to the edge of the pane, when it runs off into the groove of the sash-bars to be caught in a gutter below. Several patent systems of glazing have been largely used with much advantage, chiefly Helliwell's and Rendle's; but for houses where architectural considerations are of any importance, the want of contructional lines on the exterior can but be an objection to the use of these methods; that is to say, if the two systems are used as shown by their patentees. There can, however, be no doubt that both modes are practically admirable, more particularly for large iron roofs, such as the Victoria Station shed, or at the Westminster Aquarium, where they have been successfully employed. When ordinary or curved laps, such as I have described, are used, the lap should be as small as possible, say 3-16ths of an inch, just sufficient to keep out the wet, and not allow dirt or water to collect, lest the latter should freeze, and result in cracked or broken glass.

CURVILINEAR HOUSES.

Curvilinear houses have many advantages, and may either be constructed with iron or bent wood, and glazed with either straight or curved glass. For ordinary purposes wood is preferable to my mind, and if used with care a very good effect may be produced by the use of straight glass. Some of the designs exhibited on the walls illustrate the style of thing both in domes and curved roofs which one would recommend. For opening ventilating lights there are several methods. One of the best that I have seen is that used by Messrs. Messenger, the well-known horticultural builders of Loughborough. Their mode of opening the lights, which are all hung on hinge butts, is based on the principle of the old quadrant, and nothing is more simple and effective after all. A sunflower enrichment decorates the enclosing shields of the lever with good effect. Mr.

* An illustration of the new boilers was given in the *Gardeners' Chronicle*, November 17, 1877.

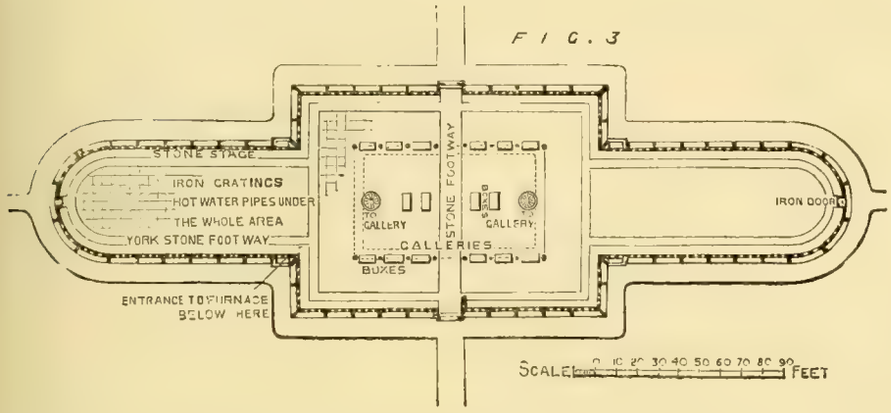
Elsley, of Great Portland Street, has an admirable lever for opening vertical lights, and I speak from experience when I say they are light in construction and work well.

It is to be feared with all these constructional particulars that I have wearied you and laid myself open to the charge of having said but little about the more direct bearing of art upon conservatory building. My aim, however, has been to furnish a few of the leading practical details, and it is only upon such data that a true artistic treatment of any structure can be effected. Pugin once said, with reference to the Crystal Palace, "Let Sir Joseph Paxton build his conservatories, and I will build my churches." Since then, however, if work has not decreased the profession has certainly multiplied, and few architects now could afford to decline work because it is not monumental in its character. Had Pugin lived now, I feel sure he would have been among the first to recommend his professional friends not to neglect so increasingly important a class of building as conservatories and glass-houses. There is this fact also certain, that he would have urged his true principles into the subject, and one has only to look at the small lean-to conservatory at the Grange, at Ramsgate, the residence Pugin built for himself, to see how thoroughly he knew how to bring his art to bear upon anything which he designed.* It is more than thirty years ago since that building was designed, a fact which at once causes the modern critic to look over many points which would be, perhaps, differently treated now. Pugin's was, of course, a florid Gothic style of building; now men's tastes have changed, and a more congenial domestic style has taken the place of the 14th century acutely-pointed arch and angular forms for our dwellings.

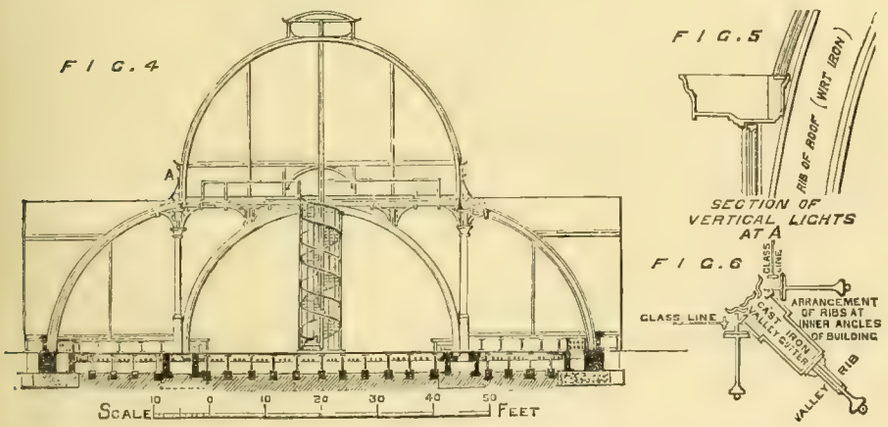
* See *Building News*, November 7, 1879.

THE QUEEN ANNE STYLE.

The "Free Classic," or if you like to call it so, the "Queen Anne" style, cannot claim to be a pure style, neither is it of a high monumental order; but, as I said in starting, it lends itself better than any other style yet chosen for interior domestic finishings. The internal treatment of conservatories, like our houses, will tax the skill of the designer far more than the exteriors. Much may be done with curved ribs in the roof, either of wood or iron; but in glass-houses, treated chiefly as ornamental buildings, in which decorative plants are grown, the foliage of creepers will soon hide any elaborate architectural detail, so that what are primarily wanted are good leading lines, such as elliptical or half oval curves, upon which creeping plants may be trained, thus forming natural bowers which will be satisfactory and complete. The architecture must always have but one purpose, evident at once to all, viz., the setting-off of the plants and flowers; and these should be arranged in borders as much as possible where ornamental suitability is studied, and much may be done with hanging baskets and pots for trailing foliage. Leaded lights in tinted quarries may be used with good effect for the upper vertical lights and in gables, and an almost endless variety of effect may be obtained by introducing birds and fish, as well as fountains, for internal fittings. The colouring of the woodwork of the interiors of glass buildings is a point in which much taste may be displayed. For my own part, I prefer a light colour rather than a dark one for the roof and woodwork generally, always finishing the exterior simply with plain white. It is preferable, to my mind, to leave the red brickwork, both inside and out, neatly pointed with a struck joint of white mortar, and not washed with colour of any kind. Shelves and hanging boxes can also be more easily fixed than when the walls are plastered; besides which, the red brick helps to throw up the green foliage, and it also retains the heat better than a light-surfaced wall. This is an important point when the temperature of the conservatory during the cooler hours of the night is taken into consideration. For the finishing of the woodwork I think nothing looks better than a light pea-green made with white, light Brunswick-green, and a little celestial-blue. In conclusion, I have only to remark that, with this class of building, like most others, a little thought and taste will often enable much to be made out of but very little material. Take, for instance, a lean-to adjoining a dining or drawing-room; it may be small, but small as it is, it will frequently give double value and interest to the room; or a floral porch to the chief or garden entrance will add greatly to the importance and comfort of the house; while in towns and limited areas a first-rate conservatory can often be managed on the top, either of the entrance portico, or over the slip-room flat in the rear. Several of these suggestions I have practically shown in the collection of drawings on the walls, to which I will refer you, if you have not already had more than enough of my text, "Art in the Conservatory and Greenhouse;" and I hope that my paper will tend to bring horticulturists as well as architects to consider glasshouses, of whatever kind, as worthy of more thought from an artistic point of view than that hitherto devoted to the subject. *Maurice B. Adams, A.R.I.B.A.*



GENERAL PLAN OF THE PALM-HOUSE AT KEW. (SEE P. 140.)



CROSS SECTION OF THE PALM-HOUSE AT KEW. (SEE P. 140.)

Florists' Flowers.

AURICULAS.—If the weather should be mild about the first week in February, the plants may be top-dressed. In doing this remove a considerable portion of the old soil which has become exhausted, and replace it with a compost consisting of two parts good loam to one of rotted manure, to which a little sand and a fourth part of leaf-mould may be added. I generally use cow-manure, but some very successful growers prefer to use stable manure. The compost must be pressed down rather firmly, and the pots must not be filled so full that water cannot be applied in sufficient quantity. At present the plants are quite hard frozen; a frosty wind with 16° of frost, which we experienced, had quite as much effect on the plants as 26° on a calm still night. We had a good opportunity when the thaw came, to look over all the plants and thoroughly clean them, removing nearly half the leaves which had decayed, leaving the centres quite sound. Some species of Primula in the same frames as the Auriculas have not wintered quite so well; of these may be named P. sikkimensis, P. purpurea, P. cashmiriana, and P. capitata. The newly introduced P. rosea lost all the old leaves, but the crowns are sound. P. Parryi, a rare species, also lost all the old leaves, but it has a sound centre to start from.

CARNATIONS AND PICOTEES.

Where the plants were established before the first frost set in, they have stood over the winter so far very well. In cases where scarcely any roots were formed the plants had suffered, and were considerably shrunk. The old stools containing many layers that had not formed roots, were placed into a house where there was no artificial heat, and for most of the time since they were placed there the soil in the pots has been frozen, so that roots could not be formed. They will be again looked over early in February, and all the rooted layers will be removed. The layers that were potted off, and are now in cold frames, should have been looked over to remove the withered leaves, but we had not time to do so; now we must wait until there is a general thaw. Should the weather become mild, the frames containing these and Auriculas must be freely aired, and the plants must be potted into their flowering-pots about the end of February.

CHRYSANTHEMUMS.

Still continue to take off cuttings, if the required number were not put in early in January. Some varieties are shy in producing suckers, and it is necessary to wait until March sometimes before they are ready. Slugs have been very troublesome this year, and have eaten over a considerable number, but we must blame ourselves for not being more diligent at night in searching for them with a good lamp. It has been advised to place the pots containing the cuttings over a gentle hotbed. So soon as they are rooted the young plants must be removed to a frame or cool greenhouse, where air can be admitted more freely than it can be to a frame where cuttings have not

formed roots. Some cutttings are so stubborn that it may be necessary to renew the heat for them.

DAHLIAS.

Merely see that damp does not go down the old stems to the crown of the tubers, and thus destroy the incipient buds. Any of the roots that are showing decay should have the part taken off, and the tubers may be started in a gentle heat. At the same time any scarce varieties, of which a good stock is wanted, should also be placed in heat. I find they do well either in boxes or pots. If these are placed over the hot-water pipes in an early vinery or Peach-house, they should be raised from the pipes sufficiently to prevent the roots from becoming over-heated.

GLADIOLUS.

There is no difficulty in keeping the bulbs (corms) over the winter if they are placed in a room from which frost is just excluded. I keep ours in a room that has no fireplace, in which but a small charcoal stove, when the frost is intense, is sufficient to keep the temperature above the freezing point. I have seen them destroyed by too much heat—in that case the bulbs were placed in pots over a boiler; there was a considerable thickness of bricks, and they did not get very hot, but it was enough to quite shrivel up and destroy a whole collection. I like to keep them dark and as cool as possible, and would rather have a degree or two of frost than too much heat. If any bulbs have been potted and placed in a greenhouse, they must be seen to with water when it is required. If any more start into growth, let them be potted and treated as previously advised.

HOLLYHOCKS.

Instructions were given last month for taking off the growths and potting or root-grafting them; these may still be followed out. Should a spell of mild weather set in, the young plants propagated by cuttings in the autumn, and now in small pots, will start into growth; if so, it will be necessary to repot them into pots one or two sizes larger; nothing is more injurious to such plants than allowing them to become root-bound. I like to leave one good growth on the old stool; and it may also be necessary to repot such plants as those a little later in the season. See that all are kept clean, and that red-spider is destroyed by washing the leaves with soapy water.

PANSIES, PINKS, &c.

Those planted out in beds will be all right if the surface of the soil amongst them had been stirred and the plants gently pressed into the ground during the thaw. They do not suffer from such dry clear frosts as we have now. A slight mulching of rotten manure is very beneficial. Pansies in pots will require some attention during mild weather; they will make some growth, and plenty of ventilation must be secured for them. Remove the lights in fine weather, as the plants become drawn and insects crowd upon them when they are not freely exposed to the air. If the small pots are well filled with roots, let the plants be potted into their flowering pots, if this has not been already done.

PHLOXES IN POTS.

Our plants were potted into their flowering pots in the autumn, but those who are growing them in pots and did not repot them should do it at once. If the pots can be placed in a warm greenhouse or any other house from which frost is excluded, the young shoots will start into growth, and cuttings may be obtained by the end of February. These if placed singly in small pots and forced to root quickly in a gentle hot-bed will make excellent flowering plants for next autumn.

POLYANTHUS.

Beds of the old favourite laced varieties out-of-doors have stood through the winter as well as those cultivated in pots under glass. As soon as the frost goes, and the ground is in good condition, we shall surface-dress with a compost similar to that recommended for Auriculas in pots, with less sand and leaf-mould. The Polyanthus likes a stiffer loam than that used for Auriculas. Plants in pots are treated very much in the same way as Auriculas, and as they start into growth earlier should be surface-dressed first.

PLANTS IN COLD FRAMES.

There are many interesting plants besides the above now cultivated in frames to be removed to the greenhouse or other structure when they are in flower. Many of the choicer species of Aquilegia are now in pots, because of their tendency to degenerate or die out in our borders. The different species of Primula amœna now show good healthy crowns, and require water as often as the Auriculas. Anthericum Liliastrum (St. Bruno's Lily) is starting very freely in 6 and 7-inch pots, three crowns in each. Trillium grandiflorum also shows healthy development, and is a charming plant for flowering in April with a little forcing. Ixias and Sparaxis have now made growths 3 or 4 inches in length in the cold frame. Then there is the beautiful Meconopsis nepalensis, interesting at present from its beautiful foliage, greyish-brown, studded with golden hairs. All the above have been hard frozen again and again. The Ixias grow away quite freely whenever mild weather sets in. All such plants are interesting to amateurs who cannot afford the luxury of heated houses, and they are valuable to all who have to supply greenhouses with plants and have but a small reserve of heated pits from which to draw them. *J. Douglas, Loxford Hall.*

Garden Operations.

KITCHEN GARDEN.

POTATOS.—The extent of the area which, as a rule, is set apart at most places for the cultivation of vegetables is not at all in proportion to that which would be required to grow Potatos sufficient to form a supply much longer than the time they are required in a young and unnatural state. Under these circumstances more particular attention should be given to the cultivation within this area of such kinds as occupy least time to bring them to a fit state for use; and these, in my opinion, comprise those sorts which primarily originated in the old Ashleaf Kidney variety, and which have, by a course of careful selection, been wonderfully improved, and now are known under the denomination of Veitch's, Rivers', Myatt's, and other names. These sorts are far superior to all others for the purpose of obtaining early crops of tubers either within or out-of-doors; such excellent sorts are, moreover, specially adapted for cultivation within the limits of such areas because they naturally require soil which is in the highest state of fertility to produce them abundantly and in the best condition. We do not enter largely into the cultivation of round varieties for very early use because the state of the soil is too rich for them in such places, and generally they make so much haulm without a corresponding proportion of tubers to compensate for it and the space they require. Union, Coldstream, and Climax are, however, sorts which will be most suitable for early purposes if it be necessary to plant such within the area described.

Practical experience has clearly demonstrated that Potatos when they have attained a fair size may safely be lifted, and for all culinary purposes the tubers keep quite as well as those which remain in the ground until they are ripe. This fact is worthy of note, as when this operation is done before disease is anywhere apparent, the crop of tubers is invariably saved from the devastation which so frequently now-a-days subsequently ensues if they are allowed to remain. This process will also prove to be advantageous to those having but a limited extent of ground and large demands to satisfy, by liberating it at an earlier date for those important subjects which usually form the subsequent crop, as the different kinds of winter greens, &c. I do not advocate the practice of planting general crops of Potatos very early, particularly in low situations or in cold soils, because of the danger arising from the effects of spring frosts; but in the case of those which are intended for use as early as possible, the planting should be effected as soon as conditions will admit in February.

Early English grown Potatos are greatly esteemed by those possessing gardens in general, and therefore a little extra care bestowed to secure them is often amply repaid. By the aid of turf pits, or others made with wood, to which coverings can be applied, these may be had fit for use a fortnight before those in the open ground, and this is certainly an advantage. The border at the base of a south wall is another suitable spot, which can be utilised for the same purpose, and give a successional supply until those which are planted on open but sheltered south or eastern borders come in. I make a practice of covering the rows of these, just as they begin to emerge from the soil, lightly with long stable litter. This material with a little attention answers the end in view, and comes in for mulching them afterwards, which on dry, inclined southerly borders, is in general beneficial. With a continuation of frost, many operations which might have been proceeded with will necessarily have to be postponed. With the prospect, therefore, of by-and-by being inundated with multifarious matters on all hands, it will be advisable to be prepared for such an emergency by assiduously persevering now in the execution of all such work as will lessen the burden whenever it comes.

FORCING DEPARTMENT.

The prolonged period during which frost prevails this season is anything but favourable for keeping up supplies of such subjects as those which have to be procured from the open ground, and if supplies of some things, such as Asparagus, Seakale, Rhubarb, &c., run somewhat short at times it will not be altogether surprising, as ordinary precautions which are made for this purpose will hardly suffice to meet the case this season. From the same cause considerable difficulties will arise in regard to protection, as ordinary means will scarcely suffice to resist such oft-repeated severe frosts. The linings which surround frames which are heated by such means, will need to be kept well made up about the tops; those in which Potatos are planted and up will want much care, these should be uncovered as long as circumstances will admit every day, but closing up betimes for the sake of the help in warmth which is attained. Other subjects, as Radishes, Carrots, and Asparagus, should also have light every day, but in the case of Cauliflower plants, Lettuce, Parsley, &c., the coverings may be left on under such conditions for a few days together. Continue to make sowings of French Beans and Mustard and Cress as required; at about the commencement of next month sow Tomato and Celery seed for an early crop. Long-pod Beans should also be sown in boxes if they are wanted for any special purpose: this method is advised for exhibition requirements. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

THE CHERRY-HOUSE.—Under the severe pressure from without, in the way of frost, intense in its character, too, it is not advisable to hasten on the growth "which is already animated in these trees" too rapidly, as any delay which may follow from this cause can be compensated for when circumstances are more favourable for the purpose. Let, therefore, the previous directions as recorded for this compartment continue in force. In order to destroy any green or black fly which may have escaped at the time the annual cleaning of the house was made, it will be wise to syringe the trees two or three times over, at intervals of a day or two apart, with quassia water. This should be done at the time the moisture lasts longest on the trees, and before the flowers are fully expanded. As this will shortly be the case with the trees in early started houses, opportunities which are favourable for the purpose of setting the fruit should not be neglected: the fructifying power of the pollen is most efficacious when it is light and dry; at such times, therefore, advantage should be taken of the opportunity to perform the operation. Many different opinions concerning the best way to effect this prevail: we have for many years past simply used a camel's-hair pencil for the process, with every degree of satisfaction, and therefore recommend that this method should be adopted. Bees are most helpful in this matter, but I prefer their spontaneous visits to having them confined within the house. *Geo. T. Miles, Wycombe Abbey.*

FIGS.

During the continuance of bright moonlight nights, with the ground as hard as adamant, and the external temperature ranging below 20°, it is useless to think of increasing our night heats for the present. Fortunately the atmosphere is dry and calm, and we sometimes derive a little benefit from fitful gleams of sunshine, of which it will be necessary to take advantage by closing about 1 o'clock with a rising temperature, and if blinds of any kind can be used for running over the roof of the early house at nightfall the check to radiation will reduce the necessity for hard firing without running the risk of causing a check that might prove fatal to the crop of fruit. As a supplementary step in the same direction, the fermenting material that has been placed about the pots may receive frequent additions of warm Oak leaves on the surface, to be worked in when turning is considered necessary to the maintenance of a bottom-heat of 75° to 80°. It is quite true that a check to the loss of heat and moisture on the one hand and a well-managed bottom-heat on the other, will not give the healthy dark-green colour so much coveted to the foliage, but the two combined will prevent the trees from going back until this severe weather gives way to conditions favourable to the admission of more fresh air, and an increase in the amount of light. It will be necessary to examine the pots frequently, particularly where they are partially exposed to the parching influence of fire-heat, and at the same time to be constantly prepared with a good supply of tepid liquid, quite up to the temperature of the house, for use before the trees become dry. If properly drained and placed upon dry brick pedestals there is little danger of giving a pot Fig that is well furnished with foliage and fruit too much water, but the

want of it, if only for a few hours, may do irreparable mischief. Trees in succession-houses, having their roots established in good borders, are less likely to suffer from the above cause; but in order to keep them fruitful the range of their roots should be limited, the mulching good, and the supplies of water liberal. Where the planting of fresh trees is contemplated, the present time is favourable for making the necessary preparations, and the trees should be got into position with as little delay as possible. If the house has not been used for Figs, a limited space only will be required for the roots, and even then the borders may be made piecemeal. A good outlet for water, a concreted bottom, and an abundance of clean drainage form the first essentials. The compost, if made up of rather strong dry loam, old brick and mortar rubble, burnt refuse, or road scrapings, will sustain the trees for many years. This should rest to the depth of 2 feet on thin inverted turves placed over the drainage for preventing the finer particles from washing downwards. When raised to within 6 inches of the intended level, the trees, if in pots, will require shaking out, in order that the roots may be spread over the face of the new bed that has been made fairly firm and even. This done add 2 or 3 inches of soil, and give a little water to settle it about them, put on the remainder of the soil and defer mulching for the present. The choice of kinds may be left to the taste of the grower. For quantity, quality, and usefulness preference is generally given to Brown Turkey, and I am of opinion that we have nothing that can surpass it. *W. Coleman, Eastnor.*

ORCHARD-HOUSE.

It is not necessary to go into the relative merits of the heated and unheated orchard-houses, although many good growers have stated that a heating apparatus is not an essential adjunct to successful culture. It is quite certain that a row of hot-water pipes round a small house, or two rows round one over 20 feet wide, may sometimes save a crop of fruit, indeed I have had practical demonstration of this. At present we just warm the pipes sufficiently to keep the temperature above the freezing point; the house is well ventilated whenever opportunity offers. See that none of the trees suffer from want of water at the roots, and when they do require water give sufficient to thoroughly wet all the soil in the pots. If the houses are not heated, it is desirable to keep the trees from making any attempt at growth at present, as the later they are in blossoming so much more will be the chances of the blossoms escaping late frosts. If the trees have been started with a little artificial heat the buds will now be swelling and showing their beautiful peach or pink colour. It is always better to err on the side of keeping the temperature too low at night than to have it too high thus early in the year. The slower the buds open so much the better will it be for the safety of the crop. The forcing of fruit trees of any kind in pots must not be trusted in the hands of careless or inexperienced workmen, as inattention to any details of the work may cause the loss of a crop for a whole season. I have noticed a tendency in some persons to water a tree when it did not require it, to save trouble at another time; others again apply it in dribblets. This will not do, especially at the time of blossoming; sufficient water must be applied to wet the whole ball of roots, and it must not be applied until the trees require it. Again, in heating the house, if this should be overdone, admit more air to counteract the effects of it. Indeed when the trees are in blossom artificial heat, and as much ventilation as may be possible, is quite right by day: a warm dry air kept in motion being essential to producing a good set. *J. Douglas, Loxford Hall.*

ORANGE-HOUSE.

It is almost necessary to keep up a high temperature in this house all the year round, as there are always trees in different stages—even now one of our trees contains fruit quite green, and which will not be ripe until the end of March; it will not answer to keep a low temperature while that tree is ripening its fruits. On the other hand the Tangierine Oranges usually ripen between September and the end of the year. The trees that ripened their fruit early would be placed in a cool vinery or other house from which frost is just excluded. It would be a mistake to put these into a house with a temperature of 60° to 65° at night at once. They may be placed at first into any vinery or Peach-house that is just being started, and it would be all the better could the pots be placed over a bed of leaves or any other fermenting material. The temperature will be gradually increased to suit the requirements of the Vines, and by the time the roof is partially overshaded by the Vine leaves the Orange trees may be removed to a house with a temperature of 60° or more as a minimum. If the trees are pushed on in a high temperature through the summer, as they ought to be, the fruit will ripen in September. I cannot too earnestly urge the importance of keeping the leaves and branches of the trees quite free from insect pests. *J. Douglas, Loxford Hall.*

PLANT HOUSES.

ORCHIDS. — That very distinct and handsome Oncidium, O. Lanceanum, will now be starting into growth, and will require watering a little more frequently than it has done for the last eight or ten weeks. This plant must be termed a difficult one to do thoroughly well; for, although numbers of it have been under cultivation for many years, large healthy specimens are very rare. The difficulty is to keep its foliage free from "spot," which not only greatly disfigures, but too often kills; or perhaps it is more correct to say that plants which show this "spot" seldom recover good health. No doubt this "spot" is the effect of growing the plant under unsuitable conditions rather than any leaf-attacking disease. Whatever causes the foliage of this Oncidium to "spot" must be of a very subtle nature, for I have known two plants grown side by side under, to all appearance, exactly the same conditions, and the one has been healthy and the other diseased. We have here a large healthy plant growing in a well-drained pan, with crocks, charcoal, and a little sphagnum and fibry peat to root in. The tips of its leaves almost touch the roof-glass on the west side of the East Indian-house. For several weeks it has had but little water, but will now be more generously treated. The foliage is often sponged over with clear water, which, if it does no good, certainly does no harm. The rare O. hæmatochilum is in its native habitat found growing with the above species, and in cultivation will take the same treatment. The present is a good time to top-dress or repot either.

Oncidium ampliatum and its major variety will also be just starting their flower-spikes, and will take a good heat to bring them along. From now water must be given often enough to keep the roots moist. Woodlice and other pests are very fond of the spikes of this plant, and too often devour them before they are high enough to attract the grower's attention. To avoid this let traps be set, and the spikes, when long enough, be protected by a ring of wool. Any plants of O. Cavendishii that have spikes of bloom now opening should be placed in the East Indian-house to expand, as their growing quarters in the intermediate-house will, during this severe weather, be rather too low in temperature for that purpose. Flowering plants of Cattleya Trianæ would also develope their buds better if treated the same. C. gigas and C. Dowiana will both now be starting into growth, and must no longer be kept so dry at the root. The former should be grown with its foliage almost touching the roof of the Cattleya-house, and the more light it can get, barring actual sunshine, the better chance there will be of flowering it. This also holds good with C. Dowiana, but it requires a few degrees more heat. We have just given our plants of this species more root-room by dropping their baskets into larger ones and filling the space between with crocks and peat. By this plan no roots are injured nor does the plant get in the least checked. Cœlogyne barbata, C. Gardneriana and C. Massangeana may now be safely potted should they require more root-room. All the species just mentioned will grow well in peat and sphagnum; and as they neither of them make a large quantity of roots, small shifts must in their case be the rule. An intermediate temperature will suit them admirably.

The hot-growing Cœlogyne pandurata and C. Lowii may be repotted as they pass out of flower. Both are strong growing plants, very interesting when in flower, but their size is against them where room is not abundant. A thorough soaking with weak liquid manure should be given to Cœlogyne cristata just as it commences to open its flowers, which will assist the plant through its greatest trial. This very useful Orchid will succeed in any house where an intermediate temperature is maintained. It delights in a clear light, and will enjoy at times direct sunshine; when grown too shady the spikes rarely carry more than four or five flowers each, instead of six or seven. C. Lemoniana, a variety of the above, will throw even more flowers to a spike. It is a very desirable plant, which comes into bloom a few weeks later than C. cristata, and thus prolongs the Cœlogyne season. It is distinguished from the typical C. cristata by its lemon-coloured centre. In watering these two plants give a thorough soaking, but not too often. A large specimen in the collection here, growing in well drained peat and sphagnum, never takes water oftener than once a fortnight, although it is growing in a very exposed position.

So long as this severe weather lasts each department must get a thorough damping down every morning, and the floors will require to be sprinkled over every evening. The night temperatures must not be raised above those given in a late Calendar. The day temperatures must also be kept the same so far as fire-heat is concerned; if the sun is good enough to raise them so much the better—at such times give a little air to every department through those ventilators nearest the hot-water pipes. On all cold bright mornings raise the temperatures by small sharp fires, so that by the time the sun makes itself felt in the houses the fires will be so small as to throw a minimum of heat. It is an unfortunate circumstance when the sun pops out with force and finds the stoker with his furnaces full of fire; nothing less than drawing such fires will speedily put matters right. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

Since I last wrote the frost has returned with as great severity as ever; the ground is as hard as flint, and such work as digging, levelling ground, and gravelling walks, is out of the question. Outdoor work is pretty nearly at a standstill, with the exception of pruning shrubs, lopping trees, and turning heaps of leaves and manure, &c. I find that the Myrtles, Euonymus, Aucubas, Bays, Phillyreas, common and Portugal Laurels, have suffered very much from the frost this season, and the bushy Veronicas are quite killed. Some of the trees best adapted for planting in town are the Plane, Lime, Horse Chestnuts, Elm, Poplar, and Ailantus. The Plane perhaps stands first for town planting, and that may be accounted for, to a certain extent, through the bark being smooth, and so able to resist the soot. It also partially sheds its bark, and thus partly cleans itself. The Plane does not require much pruning after it gets 20 or 30 feet high, but when pruned at all the branches ought to be cut off close to the trunk, for if not done so it forms a multitude of miniature shoots round the cut, and, practically speaking, makes the tree thicker than ever. The Lime is a fine tree for town, coming into leaf some time before the Plane; it will stand any amount of pruning, and will grow in almost any soil. The Horse Chestnut, although not of such rapid growth as the two preceding, is nevertheless well adapted for town planting; its bark is of a close nature, and a shield against the soot. The Elm has rougher bark, and therefore retains the soot; and if the trees are allowed to stand too thick, the branches not thinned out, so that the air and light cannot get to dry up the wet from the bark, it causes a red fungus to grow, which if not eradicated will soon make sad havoc with the trees. The Poplar also stands well in towns, as, being of free growth, it is able to cope with the atmosphere. The Ailantus, although not often met with as a large tree, stands well in towns, and ought to be more extensively planted.

Where old subtropical plants have been stored away in the autumn to furnish cuttings in the spring, which is the best plan if practicable, cuttings should be put in of Abutilon brasiliense, A. Boule de Neige, A. Thompsoni, A. vexillarium marmoratum, A. niveum aureum maculatum, &c.; Brugmansia Knightii, Cineraria platanifolia, C. acerifolia, Sonchus pinnatus, S. laciniatus, Uhdea bipinnatifida, Wigandia caracassana, Polymnia grandis, Ferdinanda eminens, Aralia papyrifera, &c.—the latter propagates best by the roots. Musa Ensete and Canna seed in variety should be sown at once and plunged in a bottom-heat of from 80° to 90°. Musa seed should be sown one seed in a 60-size pot. Canna roots may be brought into a heat of 55° to 60° to start. Acacia lophantha, Eucalyptus globulus, Centaurea candidissima, C. Clementei, Cineraria maritima, Artemisia judaica, Chamæpeuce diacantha, C. Cassabonæ, Grevillea robusta, should also be sown in heat without delay, although I find the best month to raise them from seed is August, and grow them on. Alternantheras should now have a heat of from 60° to 70°. *W. Gibson, Royal Hospital Gardens, Chelsea, S. W.*

FREE AND COMBINED PHOSPHORIC ACID.—One of the most important subjects discussed by the German scientists who lately met at Baden-Baden was the agricultural value of the reabsorbed phosphoric acid in phosphorites. The German phosphorites (including Brunswick coprolites) always contain, in addition to the phosphate of lime, small quantities of clay and oxide of iron. Treated with sulphuric acid, in order to render the phosphoric acid soluble in water, these phosphates, of German origin, exhibit the disagreeable property of taking up again the phosphoric acid. After being stored for a time, a portion of the freed sulphuric acid recombines with the clay and oxide of iron, and is no longer soluble in water. But Professor Petermann, of Gembloux, Belgium, Professor Grandeau, of Nancy, and others, have discovered that even the phosphoric acid in the soil soluble in water combines again with lime, clay, and iron, and so becomes insoluble. They also show that combined phosphoric acid is better for loose, open, sandy, or peaty soils than soluble. It appears to be the wish of the owners of coprolite deposits, &c., that the chemists should admit the recombined phosphoric acid in their valuations of the phosphorites, and the meeting was asked to support the request. After a long discussion, it was decided not to oppose the object sought, but it was not considered that the experiments hitherto conducted were sufficient to determine the relative values of recombined and precipitated phosphoric acid. It was also resolved that further experiments should be undertaken to elucidate the matter.

APPOINTMENT FOR THE ENSUING WEEK.

THURSDAY, Feb. 5.—Meeting of the Linnean Society, at 8 P.M.

TOWARDS the close of last year, when FLOWERS FOR THE DINNER-TABLE were necessarily scarce articles, a discussion arose in the columns of the *City Press* as to the propriety of occasionally substituting artificial for real flowers for such purposes. The discussion welled over into the *Gardeners' Magazine*, and while very amusing *per se* involved a principle, the discussion of which may be of some value. The debate was opened by a correspondent of the *City Press*, one "T. H." We do not know who "T. H." may be, but from internal evidence we decide against the notion that it is THOMAS HUXLEY. At any rate "T. H." reminds us that towards the end of a long evening all that's bright must fade, "the delicate blooms of the hot-house begin to droop and sicken." Some people might think that this circumstance might be utilised as a floral clock, to remind the guests that it was time to go home.

From this latter point of view it would be well that hosts, especially those with mercenary views, should not be permitted to employ gummed or wired flowers, else the same effect would result as would be produced by setting back the clock. "T. H.," however, may be one of those who "won't go home till morning," and in order that he may have no reminder of the foot of time (though that falls noiseless when it only treads on flowers, we are told), he proposes that the very best artificial flowers should be used—everlastings—which not the heat, nor the odour, nor the postprandial eloquence of a heavy dinner could cause to droop and sicken. To complete the illusion, "the addition of a few drops of rose-water renders the deception complete." "T. H." has but to take his seat at the first *table d'hôte* he comes to on the other side of the English Channel to see his ideas more or less completely realised. We wonder how "T. H." would like his ideas as carried out in such places. What would his feelings be when he saw the flowers removed after the feast to the mantelpiece on either side of the inevitable clock, backed up by the distorting surface of the mirror, to be again removed to the festive board at the next morning's *déjeûner!* Let us suppose him to pursue his way, seeing the same migrations day after day, till at length he returned to his starting point to find the same epergnes, the same dusty calico abortions, going through their daily performances with as great —probably more—regularity than the clock. How much rose-water would be required to render the deception complete in this case? But probably we are not quite fair to "T. H.," who did not intend his flowers to be twice cooked in this fashion. But this is what it would come to, we suspect.

"T. H.'s" views, however, were not long allowed to pass unchallenged. Mr. SHIRLEY HIBBERD took up his pen—it must have been in good order—ink fluent—paper all it should be. As might have been expected, Mr. HIBBERD was indignant—almost insulted—by the proposal; but, the first sense of injury past, humour and ridicule are poured out on "T. H.," who is told "that the viands and the drinks fade like the flowers in the course of the evening." To obviate this, "let there be provided at every banquet a table for the especial delight of people who believe in artificial flowers sprinkled with rose-water. On this table place the best examples of floral industry in calico, paper, metals, feathers, and bombazine, and on the same table let all the dishes be of papier-mâché, clay, wax, plaster, bunkum, or whatever else may be needed in the production of artificial fried soles, roasted larks, stewed kidneys, and mincemeat pies. These can be sprinkled with aromatic gravy to make them fragrant as the realities of which they are the painted effigies. Let all persons of healthy taste and good judgment dine as usual with real food, real wine, and real flowers; but let the advocates of sham and shoddy have a bellyful of their favourite diet; and in the name of all that's blissful, I do wish they may get fat upon it."

Such an outburst of ridicule does not quite quench "T. H.," who, in reply, requests his antagonist to put his paintings behind the fire, to consign his statuettes to the dustman, and to deprive himself of artificial matters generally and to substitute the real thing. Were it possible or suitable to do so, no doubt Mr. HIBBERD would gladly do so. But when a thing is either not appropriate or not practicable, one is surely not to be blamed for employing the best available substitute—always provided that it is not better to do without altogether. For our own part we should be inclined to think a table decorated with a well cooked roast quite sufficiently decorated without artificial flowers scented with rose-water. We might even prefer a moderately spread board to one all tablecloth and Parsley, but these are matters of opinion. A few well arranged flowers, a graceful foliage plant, no doubt are improvements to any dinner-table, but as to artificial flowers, however good, we demur to having them near at hand, and would sooner have them at a distance.

The question, however, between realism and artificiality is a very wide one. We know of no test whereby to arrive at any definite conclusion but that of appropriateness. Is it appropriate to employ a vaseful of painted calico scented with rose-water? Certainly not, we should say, when any lover of Nature is at hand; but if the diners are so insensible to the charms of Nature as not to know when they have a calico bouquet duly scented before them, why then it would be well not to disturb their blissful ignorance, but trust to the Board Schools to instruct the rising generation in more wholesome tastes. On the other hand, is it appropriate to put pans of Water Cress all alive oh!—growing, that is—on the dinner-table? Is it good taste to put a pot Vine with its hanging clusters on the table? These things are very pretty doubtless, but when touched by the test of appropriateness it seems to us that to convert a dining-room table into the semblance of a kitchen garden or a vinery may, after all, not be in better taste than the employment of floral millinery scented with rose-water, or than with the atrocities cut out of Carrots and Turnips for the decoration, so called, of certain dishes.

Readers of CHARLES DICKENS' recently published letters will remember the monster bouquet measured in yards presented to him by some of his American admirers. Visitors to foreign flower shows will have seen such aggregations, intended to compliment some distinguished person or other, and to grace (?) his dinner-table. Are such monstrosities, with their hundreds of real Rose-buds and thousands of Violets, requiring no added perfume, less objectionable than jugfuls of canvas flowers? We doubt it—but *chacun à son goût.*

We ought not to omit the conclusion of the discussion which has suggested these remarks. It agrees well with the general endings of such paper wars. "T. H." "maintains his own opinion —that amongst these uses (that of artificial flowers) is included the decoration under special conditions of dress dinners," and—"he has nothing else to say."

—— HON. MARSHALL WILDER.—We are glad to learn that this enthusiastic horticulturist has sufficiently recovered from his accident to be able to preside at the annual meeting of the New England Historical Society, and to deliver an address which will vie with others that have issued from the lips o this old man eloquent.

—— MONSTROUS THISTLE.—A curious example of Carduus crispus, in which the flower-heads were abnormally numerous and aggregated in secondary heads, as in Echinops, was lately obtained by the Rev. J. A. PRESTON, in Wiltshire, and exhibited for him by Mr. BAKER, at the Linnean Society's meeting, on the 15th inst.

—— FARMERS AND THE INCOME-TAX.—Messrs. JOHN PARKIN & SON, estate agents, of Idridgehay, near Derby, write under date January 27:—"On the 22d ult. we put the following question to the Board of Inland Revenue in reference to the allowances of Income-tax authorised to be made by Treasury letter of the 13th ult. in cases where temporary abatements of rent have been granted by landowners to their tenants for the current fiscal year 1879 and 1880 on account of the agricultural depression, and have this morning received the answer set opposite thereto:—

"Question.	*"Answer.*
If allowances are made at the rate of, say, 10, 15, or 20 per cent., to be expended in draining, lime, bones, oil or other cakes, will a corresponding deduction in the tax be made?	Nothing but actual reduction in money payment can be recognised."

—— IMPROVED POTATOS. — "Experimentalist writes:—"I have to thank Mr. FENN, our highest living authority on this subject, for his response to my query. I gather from his remarks that the Potato plant, as in the case of the Apple, Pear, Camellia, &c., undergoes a gradual exaltation of properties after, so to speak, its mere physical adolescence, and that after this its individuality is fixed for ever. It was upon this special point that I judged information to be desirable. Selection of seedlings is a very different thing."

—— M. HIPPOLYTE WALFERDIN, who has just died in Paris at the age of eighty-five, was the colleague of DULONG and ARAGO in investigating the central heat of the earth, and the inventor of vertical self-registering thermometers, as also of the *thermomètre a deversoir* for ascertaining the temperature of water at great depths.

—— HEAVY RAIN.—A Press despatch from Normanton, Queensland, states that a tornado burst between that place and Byrnes on November 8, and 6 inches of water fell on the plain in half-an-hour.

—— THE GENUS EUCALYPTUS. — The fourth decade of Baron VON MUELLER'S descriptive *Atlas of the Eucalypts of Australia* has lately been published. It contains lithographed representations of E. alba, botryoides, clavigera, Doratoxylon, Gunnii, Planchoniana, rostrata, siderophloia, Stuartiana, and uncinata. The Baron very properly objects to the term Gum-trees, which should be applied to the Acacias, which do yield gum, the Eucalypts furnishing kino. The value of this monograph, for practical as well as for scientific purposes, can hardly be over-estimated.

—— EPPING FOREST.—At a meeting of the Court of Common Council held on the 22d inst., the appointment of Mr. ALEXANDER M'KENZIE as Superintendent of Epping Forest, at a salary of £500 a-year, was ratified.

—— PTERIS SERRULATA CRISTATA MAJOR.—The fine examples of this now to be seen in the large stove at Chiswick warrant the assertion that it is a very handsome and useful winter Fern, of vigorous growth and handsome proportions. The plants attain great size and symmetrical proportions, the fronds arching over in a particularly graceful manner. A single frond will grow to the height of 4 feet, and the pinnæ attain to a length of 15 inches. It is a variety that is supposed to have originated as a sport with Mr. H. HERBST, of Richmond.

—— CROYDON HORTICULTURAL SOCIETY. — The summer show of this Society is announced to be held on June 30.

—— THE FROST IN LANCASHIRE.—Mr. SAMUEL BARLOW states that last week the most severe frost he can remember in the Middleton district was felt; all the week it ranged from 14° Fahr. to 2° Fahr.—18° to 30° of frost. So severe is it that he has found it advisable to remove his choicest plants of Polyanthus from the cold frame to a house from which the frost is just excluded, as the plants were frozen through and through. The heavy fog which accompanies the frost appears to be pretty general all over the country, and makes the wintry weather hard to be borne.

—— RUBUS BIFLORUS OR LEUCODERMIS.—This is just now a striking feature on the wall opposite the Council-chamber at the Chiswick Gardens. The mealy stems, which have taken on a silvery white-ness, are in harmony with the wintry surroundings, and the powdery secretion is in marked contrast with the sober bark of other wall plants close by. It produces at the end of the summer berries of fair size, and of a deep orange-yellow colour, sweet and pleasant to the palate.

—— LETTS' POPULAR ATLAS.—A good atlas is a desideratum for most people, and young gardeners especially would find the advantage of consulting a trustworthy publication of the kind. A good atlas, however, is usually a very costly affair. We have one before us which promises to be inexpensive and very well worthy the monthly expenditure of 7*d*. The maps are clearly printed, indicate the direction of the polar and equatorial currents, the limits of ice, the main lines of telegraph, that to the Cape only just opened being included. We hope Messrs. LETTS will receive such support that they will extend their programme, and give ultimately some "physical geography" maps, showing the extremes of temperature, and the monthly means, the average rainfall, and other such details, with especial reference to the periods at which vegetation begins, is in full activity, or ceases in various countries. Such information would be valuable to agriculturists, Tea-planters, Cinchona growers, as well as to gardeners at home.

—— ST. PAUL'S WEATHER.—Professor HENRY ATTWELL, of Barnes, writing to the *Times* on the 26th inst., states that "St. Swithin's weather" is still a household word; but some among those who enjoyed last Sunday's sunshine may not know that in Western Europe the state of the weather at the Feast of the Conversion of St. Paul was for centuries regarded as prognosticating the character—prosperous or otherwise—of the whole year. The forecast was couched in the following uncouth verses:—

"Clara dies Pauli bona tempora denotat anni;
Si nix vel pluvia, designat tempora cara;
Si fiant nebulæ, pereunt animalia quæque;
Si fiant venti, designat prælia genti."

—— RETINOSPORA.—In a recent number of the *Revue Horticole* M. CARRIÈRE notes the fact that R. dubia and R. Ellwangeriana are forms of Thuja—R. juniperoides or glauca of a species of Biota. Most of the Retinosporas with linear leaves and cylindrical branches are but juvenile or "larval" forms; R. leptoclada is an exception. R. andelyensis, to which the name leptoclada is often erroneously given, is, according to M. CARRIÈRE, a seedling derived from R. sphæroidea. It produces cones every year, and reproduces itself true from seed.

—— THE SCOTTISH SEED AND NURSERY TRADE ASSOCIATION.—The annual meeting of this Association was held in the Waterloo Hotel, Edinburgh, on the 21st inst., Mr. DAVID SYME, Chairman, presiding. Mr. DAVID HUNTER, S.S.C., Secretary, read the annual report, which stated that the membership numbered forty-four, and that there was a balance due to the Association of £53 10*s*. 9*d*. In accordance with the remit made to them at the last general meeting, the committee and office-bearers had formed themselves into a court of arbitration to which members of the trade throughout Scotland might refer any important disputes arising in the course of their business; and a circular was addressed to the trade stating that the services of the committee would be placed at the disposal of all such disputants on payment of one guinea to the funds of the Association, besides the expenses connected with each case. Several cases had arisen during the year, but none of them had been formally submitted to the committee, though members of it had been consulted in several instances. A prize had been offered for the best essay on "The best means of discovering the various forms of adulteration and admixture in Clover seeds." Only one essay had been received, from Mr. JAMES MACINTOSH, of the Lawson Seed and Nursery Company, and a prize of £3 3*s*. had been awarded to the writer. The committee recommended that the prize should be

FIG. 31.—GUNNERSBURY HOUSE, ACTON, THE RESIDENCE OF THE BARONESS DE ROTHSCHILD. (SEE P. 147.)

re-offered. The report was unanimously adopted. The committee and office-bearers were then appointed, Mr. JOHN DOWNIE being elected Chairman, and Mr. R. T. MACINTOSH, Vice-Chairman. Among the subjects discussed was the system of giving credit to farmers, regarding which it was remitted to the committee, with power to frame such a resolution as would place seedsmen and farmers on a more satisfactory footing in this respect—that would, in fact, make seed accounts preferable claims, seeing that the produce of seeds was always for the advantage of the landlord or other creditors when the farmer went to the wall. This it was proposed to effect by getting factors to become security for the seed accounts contracted by the tenants. The regulation of the usages of the trade was also discussed, especially in regard to Rye-grass seed, and it was remitted to the committee to frame a resolution providing that delivery of Rye-grass seed should be held as a fair delivery if within half a pound of the weight per bushel specified when sold. The annual dinner of the Society took place in the evening, Mr. DOWNIE presiding, and Mr. R. T. MACKINTOSH officiating as croupier.

—— TOWN REFUSE.—The Streets Committee of the City of London Commission of Sewers reported at the last meeting of that body that during the last year the quantity of slop, dust, and refuse removed from the city had been 62,797 loads, being an increase of 9000 loads on the average of the last ten years.

—— ALOES AND YUCCAS.—A synopsis of the Aloe and Yucca tribes is another of the series of communications on the Liliaceæ, which Mr. J. G. BAKER favoured the Linnean Society with at their last meeting (January 15). They are a set of plants well known in gardens, but from their large size and often succulent character are represented very sparingly in herbaria, and have been almost totally passed over by travelling collectors of dried specimens. They fall sharply into the two tribes, which are marked by well-defined botanical characteristics, and they have completely different geographical dispersion. Of the Aloes, characterised by their gamophyllous perianth and thick fleshy leaves, there are nearly 200 species, all confined to the Old World, and some 170 of these are concentrated at the Cape of Good Hope, and the remainder are scattered through the highlands of Africa. The four genera, Aloe, Gasteria, Haworthia, and Apiora vary in habit from plants half a foot high (when in flower) with sessile rosettes of a few fleshy leaves, to copiously branched trees 50 or 60 feet in height. Nearly all the known Cape species are in cultivation in English gardens at the present time. The best known officinal species, Aloe socotrina, which has been attributed to the island of Socotra, has been found lately in a wild state at the Cape of Good Hope. The Yuccoideæ are characterised by a polyphyllous perianth, the leaves of which are never thick and fleshy. In addition to the type genus, Hesperaloe, Dasylirion, Beaucarnea, and Herrerea belong to this group. Of fifty species known, all American, the bulk are concentrated in Mexico and the southern United States. The Yuccas fruit but rarely under cultivation, the large, white, pendulous flowers being (often) fertilised in the wild plant by a moth of the genus Pronuba. Y. baccata and Y. brevifolia are large trees, and the former has an edible fruit resembling the Banana. Dasylirion and Beaucarnea resemble Yucca in habit but differ in flower. Herreria belongs to temperate South America, is a shrubby climber, with the habit of Smilax or Dioscorea.

—— BRILLIANCY OF COLOUR IN THE CHINESE PRIMROSE.—This is finely illustrated just now in one of the plant-houses at Chiswick, in the case of that peculiarly rich coloured variety called by Mr. BARRON, Chiswick Red. There is nothing in the collection which can touch this for its peculiar hue of rich colouring; it is by far the nearest approach to a true red Chinese Primrose we have yet seen. One excellent characteristic is its admirable habit, the leaves being much laciniated, dwarf in growth, and foliage hard and wiry, and quite distinct from others. It causes the old purple types to look quite pale and colourless. The Chinese Primrose has been termed the "Advent Flower," and "the first Primrose of the Christian year," and the designation is a correct one. It seems to throw a gleam of dawn across the darkest gloom of the late autumn months, prophesying of what shall be. The varieties Chiswick Red and rubro-violacea, raised by Mr. BARRON, have passed into the hands of Mr. B. S. WILLIAMS for distribution, but Mr. BARRON has reserved one or two plants of each, in order to maintain the completeness of his collection.

—— DESTRUCTION OF TREES BY THE GALE OF DECEMBER 28. — Mr. WILLIAM THOMSON, of the Tweed Vineyard, writing to the *Scotsman* on the 19th inst., states that the peculiar violence of this gale in certain localities is well illustrated by the havoc it has made amongst the fine timber in Keir Park, near the Bridge of Allan. The grand Araucaria imbricata was blown down, and all the roots torn out of the ground except a few on one side. A staff of men from one of the Edinburgh nurseries set it erect again, but Mr. THOMSON fears their best efforts to make it take root and flourish as in the past will be of no avail. "The destruction of this grand tree," says the writer, "is a sort of national disaster. It was, as far as I know, by far the finest specimen in Scotland; its height, or rather its length as it lay, was 44 feet 4 inches, and round the stem near the soil, 5 feet 4½ inches; 3 feet up it was 4 feet 4½ inches. Many other fine trees were prostrate—one splendid tree of Abies nobilis, which was also to be raised, but I fear with doubtful results. The whole park seems to have come in for the full violence of the gale. 1600 fine large trees were either broken over at from 10 feet to 20 feet from the ground as if they had been saplings, or blown over, raising by the leverage of their heads masses of heavy soil of several tons weight in some instances; and what both myself and Dr. PATTERSON, who accompanied me, were much struck with, was the circumstance that the wind seems to have blown in sort of "bolts" through some of the plantations, and swept all before it. On the grounds of Mr. STIRLING, at Kippenross, on Sheriffmoor, there were thirteen acres of Fir trees nearly all prostrated by the same gale."

—— DOUBLE PITCHER.—Last week we figured a case of two pitchers on one stalk, the two pitchers being quite separate, though with a common support. This week brings us another Nepenthes from Messrs. VEITCH, in which the union has gone still further; not only are the stalks blended, but the pitchers are also combined into one common receptacle, leaving only the two lids free. The resemblance to the double cup of HOMER is even closer than in the specimen before referred to. It is somewhat remarkable that, to the best of our knowledge, there is no record of any erratic pitcher-plant until that we published some time ago. Since attention has been drawn to the matter several specimens have been sent to us. Of course this is in a great measure due to attention not having been previously given to the subject, but partly also to the increased growth of these plants and their enhanced degree of development under cultivation. At present the matter is of no practical importance, but there is no telling what may come of it.

—— AUCUBA SUPERBA.—This is the name of a large-leaved handsomely variegated variety raised by Mr. A. CLAPHAM, of Scarborough, and which is now to be seen in the gardens of the Royal Horticultural Society at Chiswick. The leaves are covered with cream and bright pale green on a dark green ground, the colours clear and distinct, and the stems of the plant are marked in the same way. The leaves are fully 10 inches in length, and broad in proportion.

—— RARE AND NEW MOSSES.—At the monthly meeting of the Manchester Cryptogamic Society, held on January 19, the President (Mr. WHITEHEAD) exhibited a specimen of Coscinodon cribrosus, which the Rev. J. FERGUSSON, in the current number of the *Naturalist*, describes as an immensely interesting addition to the British flora. The moss was collected so long ago as the year 1867, at Coniston, by Professor BARKER, of Owens College, but lay unrecognised until Mr. FERGUSSON quite recently detected it among a collection of British Grimmiæ which the Professor sent him. The President also exhibited a species of Fissidens new to Britain, viz., F. serrulatus, gathered by Mr. CURNOW near Penzance. It was distributed by Mr. CURNOW in 1872, mixed with F. polyphyllus, and appears to have been mistaken for that species, from which, however, it is quite distinct. A specimen of Mnium spinosum, for which Ben Lawers is the only known British station, was exhibited; as were also Plagiothecium annotinum, and the various species of Timmia, British and Continental, of which only four are at present known. One of the species, T. norvegica, was from Ben Lawers, where, as stated in SCHIMPER'S *Synopsis*, it was first collected by M'KINLAY. A collection of fresh-gathered mosses from Malham and the neighbourhood, exhibited by Mr. CUNLIFFE, were a source of much interest. The species included Zygodon Nowellii, Omalia trichomanoides, and Anomodon viticulosus—the two latter with fruit. Mr. W. H. PEARSON exhibited specimens of Diplophyllum obtusifolium (HOOK.), detected amongst other Hepaticæ collected by one of the members, Mr. C. J. WILD, at Alderley Edge, in May, 1878. It had previously been collected near the Manchester district, at Delamere, by the late Mr. W. WILSON and Dr. CARRINGTON. Mr. PEARSON also exhibited specimens of Metzgeria hamata, collected by Mr. E. GEORGE, of London, last July, near Arrochar, Scotland.

—— TREE LABELS DIPPED IN KEROSENE.—A correspondent of the *New York Tribune* states that "tree labels dipped in kerosene will retain the writing nearly as long as those painted with white lead. Hundreds may be immersed at once. The oil enables the label to receive a strong broad mark of the pencil, which is not easily defaced."

—— EPPING FOREST.—Mr. W. PAUL'S paper at the Society of Arts on Wednesday evening last was almost too good. It is in a measure aggravating to have to assent to all that a public speaker has to say. Not that the tendency to pick holes is to be encouraged as high art, but a little self-assertion and independence of judgment are at least desirable, provided they be not offensively obtained. The weak point in Mr. PAUL'S paper, as we heard it read, seemed to be excess of caution—a fault on the right side no doubt, if a fault at all. While agreeing with him in the main, that the let-alone policy—subject to necessary drainage, maintenance of roads, walks, open spaces—is the best, we yet think that with some dozen miles in length and four or five miles in breadth; and with considerable diversity of surface and circumstance, there is room for more ornamental, and especially experimental, planting than Mr. PAUL'S great caution led him to recommend. The caution is, however, the more commendable, seeing how wofully deficient foresters and planters generally are in the knowledge of the resources open to them in the way of hardy trees and shrubs, and, indeed, of any plants beyond the ordinary occupants of the routine planted garden.

—— THE WEATHER.—General remarks on the weather during the week ending January 26, 1880, issued by the Meteorological Office, London:—The weather during this period has been very dry and the sky, on the whole, moderately clear in nearly all parts of our islands; in Ireland, however, it had become dull, squally, and rainy by the 26th; haze or fog prevailed at many of our south-easterly stations. The temperature was 3° below the mean for the time of year in "Scotland, E.," 6° below in "England, N.E." and "Scotland, W.," and as much as from 7° to 10° below in all other districts. Over the inland parts of England the lowest of the minimum readings were registered at most stations on the 20th, but a second very low reading was observed in some places on the 26th. Over Great Britain the highest of the maxima occurred on the 22d, but in Ireland the mildest days were at the close of the week. The wind during the greater part of this period has been generally light from east in the south; light to moderate, or fresh, from the south-east, and south in the west; and light from west to north-west in the north-west and east. By the 24th, however, south-easterly to easterly winds had appeared over all parts of the country, and though light in most places, blew with the force of a strong breeze or moderate to fresh gale at some of the more exposed stations in the west and north. The rainfall, except in "Ireland, S.," was scarcely appreciable.

—— GARDENING APPOINTMENTS.—We hear that Mr. J. VEOT, late principal Foreman to Mr. GILBERT at Burghley, has been appointed Head Gardener to Lord BRAYBROKE, Audley End, Saffron Walden.

GUNNERSBURY PARK.

The manor of Gunnersbury, called in the old records Gonyldesberry or Gunyldesbury, held under the Bishop of London, is stated in the *History and Records of Ealing*, to be of ancient date, and "it is not improbable that it was the residence of Gunyld or Gunilda, niece to King Canute, who was banished from England in the year 1044." In the year 1378, a survey of the manor was taken by order of the Crown, when it was described as "the manor of Gonyldesbury, with the appurtenances, in the parish of Yellyne, in the county of Middlesex." It would appear from the foregoing records that it was from time to time the residence of eminent persons, one of them being the celebrated Serjeant Maynard, who conducted the evidence against the Earl of Strafford and Archbishop Laud, and was called to the degree of Serjeant during the Protectorate of Oliver Cromwell.

The present mansion (see p. 145) was built by Alex. Copeland, Esq., and at his death it was purchased by the then Baron de Rothschild, and is now the residence of the Baroness de Rothschild, widow of the late Baron Lionel, who in his lifetime considerably augmented the estate, and made great improvements in the mansion and grounds. The mansion is a handsome specimen of the Tuscan order, the south front, which is seen in the accompanying engraving, is 126 feet long, and consists of a centre and wings. The terrace at the front of the house is bordered by a dwarf wall and stone coping, and ornamented with vases. At the east end of this terrace is an alcove, in which is placed the statue of Apollo. The west side is bordered by an architectural archway leading to the gardens. On the west, at a little distance from the house, is a handsome temple of the Tuscan order, supported by two pilasters and two columns. On the tympanum of the pediment is a shield with foliage. The interior is chastely arranged and beautifully furnished with Chinese vases, antique chairs, &c., and the walls are ornamented with bas-reliefs, representing the most striking scenes in the history of Greece. From the south front of this temple is obtained an extensive view of the surrounding country, including Kew Gardens, and the Surrey hills in the distance. This spot is the most elevated part of the grounds, as well as the most beautiful, and is further ornamented with a circular piece of water, consisting of about 2 acres. This part of the gardens is thought to show evident marks of the hands of Kent, who was employed by a former proprietor, Henry Turner, Esq., between 1740 and 1756 for the purpose of embellishing the grounds and improving the landscape. Groups and lines of Cedar of Lebanon, trees of magnificent proportions, but bearing marks of the war of the elements, here and there raise their majestic heads—planted, it is thought, during the time the grounds were in the possession of Serjeant Maynard.

The Italian garden at the back of the temple was formerly embellished with eight figures in sandstone of Burns' "Jolly Beggars," admirably executed by Thoms: they were brought from Scotland to London for the purpose of exhibition, but the speculation proving a failure—they were put u pfor sale, and purchased for £200 by the father of the late Baron. They are of the size of life, but having become injured by time they now occupy a less exalted position in the grounds.

The view of the front of the mansion and the grounds, given on p. 145, is taken from a point below what is known as the Horseshoe Pond, from its peculiar shape. On the right are some fine examples of the Horse Chestnut, and nearer to the mansion, but occupying a somewhat foremost place, is a fine specimen of Amelanchier vulgaris, which is an object of considerable beauty in spring. Just across the water on the left hand are some handsome Beeches, and beyond and near the residence a group of three splendid Elms, supposed to have been planted about the same time as the Cedars of Lebanon. Ivy does well under the spreading and dense foliage of the Beeches, and it is largely used at Gunnersbury for furnishing spots under large trees. From the terrace a delicious piece of greensward falls down to the water, which in summer is well furnished with fine clumps of white Water Lilies, a good form of it obtained from Holland House.

A conspicuous feature on the terrace in summer is made by some specimen plants of the old Fuchsia corallina; it has reddish tube and sepals, and a paler coloured corolla, and though a fine old-fashioned sort is yet prized by Mr. Roberts, because of its excellent drooping habit and great freedom of bloom. In summer also the fine specimen Orange trees found in the orangery are placed on the terrace. On either side of the glade are specimen Portugal Laurels advanced a little beyond the front line of the trees, and these occupy the centre of beds that are filled with subtropical plants in summer. Round the edge of the water are fine clumps of Pampas-grass.

From this point a winding path leading westward takes the visitor by what years ago must have been a group of six magnificent Cedars; some yet stand in all their majestic proportion, two or so have succumbed to the assaults of time, but, like the brave old English Oak the others stand in their pride and glory yet. Under these there is a dense carpet of the large-leaved Irish Ivy.

Close by is the orangery, which is on the south-west of the mansion, a commodious and imposing building 60 feet long, with a projecting circular front and nine big windows, embellished with large Chinese vases. The collection of Orange trees is mainly made up of the Mandarin, of which there are several fine specimens in tubs, with large and well furnished heads of elegant foliage; the fruit is found very useful for dessert purposes, the perfume they give forth being of a very decided character. Here, too, growing in large tubs that are sunk below the level of the floor, are the two huge Tree Ferns (Dicksonia antarctica), sent to the late Baron a few years since, the stems about 22 feet in height, and towering up to the roof. They were figured in the *Gardeners' Chronicle* in 1873, p. 545. The orangery forms in winter a very useful house for storing Palms, large Myrtles in tubs, Bays, &c., that stand out-of-doors in summer. There are also a number of succulents and other useful plants. Behind the orangery and attached to it, but of greater length, is another large house, which also serves as an orangery, being unheated, while the old flat roof destitute of glass has given place to a span-roof of glass. In this may now be seen four very large and fine specimens of large-leaved Oranges of great dimensions and excellent health, and six very large specimens of Myrtles, also in tubs. This house is 84 feet in length by 15 feet in width, has a brick floor, and is lighted from the west front by means of a wall of glass sashes which admits an abundance of light, while it is shaded and rendered cool in summer by the trees growing near it. Against the back wall, which is duly wired for the purpose, it is Mr. Roberts' intention to plant out a number of specimens of Lapagerias, red and white, and for this purpose a raised bed well constructed, 4 feet or so in height, in which the Lapagerias will be planted, and where they can scarcely fail to do well. It is also intended, as the wires stand out about 3 inches off the wall, to cover it with Ficus repens.

Leaving the orangery, a broad walk leads up towards the circular water; on the right is the mansion flanked with dense belts of shrubbery, which, while they protect the dwelling, and break the force of the westerly winds, give a finished appearance all the winter through, seeing they are largely composed of evergreens. Indeed, the presence of finely proportioned evergreens is one of the glories of Gunnersbury; giving an aspect of warmth, protection, and repose in winter, and coolness and shade in summer. On the left hand is a broad stretch of greensward, with a double line of flower-beds in the grass, each representing a locket when furnished with Roses trained across broad wire arched trellises as handles. Standing about on the lawn are fine examples of Taxodium sempervirens—this is especially well-proportioned; Picea Pinsapo, Araucaria imbricata, Pinus excelsa; some very fine Hollies, green and variegated, conspicuous among them being Waterer's Golden Queen and marginata aurea. There are also two plants of Cupressus macrocarpa of good size, but not in very good condition just now, having been injured by frost this winter and last. Pinus insignis is one of the grandest of coniferous plants for winter, as it takes on a fine colouring at this season of the year, but is liable to have its points cut down in winter, and in consequence does not grow into a handsome tree. There are also handsome examples of Box and other evergreens, and a fine bush of the variegated Yew, well coloured. Abies Douglasii does not do well at Gunnersbury; it is thought to be too near the effects of the smoke of London.

Round the ornamental water are numerous very fine clumps of Pampas-grass; Eulalia japonica variegata has been tried two years, but the past winters have proved too much for it, consequently it can scarcely become a rival to the Gynerium. Round this water are fine trees, Cedars being conspicuous, also grand Elms; and with its huge spreading branches thrown across the water, is a Tulip-tree of great size, the leaves of which take on a great wealth of colour in autumn.

In order to hide an unsightly brick wall immediately in the rear of a belt of trees, Mr. Roberts has recently planted a bank of evergreen shrubs, which is wider at some places than in others: the subjects, he anticipates, will do well under trees. They comprise Yew, Box, Holly, Aucuba, Portugal Laurels, Rhododendrons, &c. As a rule the variegated Hollies do not keep their colour well under trees, or stand drip. A good deal of light and air will break in upon these shrubs on the wall side. Between the shrubbery border and the walk there is an irregular line of grass plots, on which specimens of Yucca gloriosa have been planted: eventually the grass will be replaced with Ivy.

The Rose-house is a very pleasing feature at Gunnersbury. The plants on the roof have so covered its interior that those in the centre bed made a great growth but produced few blooms. The Rose trees have all been taken out from the bed with the exception of those trained to the pillars which support the roof, and a hedge-like plant of Gloire de Dijon, trained along the middle of the bed its full length; and it is now planted with Ferns and Lycopods, Dracænas, Yuccas, &c., amid blocks of artificial rockwork. When this bed becomes furnished it will be charmingly effective and very useful for cutting from. This house will now be pruned twice a year, and warmth maintained all the year round. There is a raised border round the house, and against the walls Mr. Roberts has planted Rogiera gratissima, Psychotria jasminiflora, Habrothamnus elegans, Luculia gratissima, Plumbago capensis, and Veronica Hulkei. The whole line of the borders is to be edged with Trachelospermum jasminoides.

It is not now necessary to go further into details. Suffice it to say that during the spring of 1879 the spacious vineries were thoroughly cleansed and replanted, and important improvements added. The Orchid-houses are filled with plants in fine condition, and in the East Indian-house there is a collection of from sixty to seventy specimens of Phalænopsis coming into flower, and shortly there will be a grand and unusual display of their splendid blooms. Cypripedium Hookeri is also flowering; it is not a showy species, but yet very pretty, and the great freedom with which it blooms—quite small plants throwing up a considerable number of flowers—makes it very acceptable indeed as a winter-flowering plant. In the forcing and furnishing houses, as also in the forcing department, everything shows the evidences of an intelligent oversight. Many improvements are in contemplation that will give to Gunnersbury a higher reputation than it has yet enjoyed. At the south-west extremity of the park a very large space of ornamental grounds has been laid out with considerable taste and judgment. The bothies have just been re-arranged, in the interest of the comfort and convenience of the young men, and a bath-room, library, &c., added. Mr. Roberts deserves great credit for the valuable improvements he has carried out during the brief period he has had charge of the gardens—improvements that we believe are but the forerunners of others of a like valuable character. *R. D.*

ORCHID CULTIVATION.

At a meeting of the Manchester Botanical and Horticultural Society, held on the 21st inst., under the presidency of Mr. Bruce Findlay, Mr. W. Swan, gardener to W. Leech, Esq., Oakley, Fallowfield, read a paper on "The Native Habitats and Culture of Orchids," of which the following is a summary, taken from the *Manchester City News*:—

Mr. Swan said he thought they were all more or less familiar with the characteristics and strong recommendations of the Orchid, for if there was any city in the United Kingdom where a knowledge of and acquaintance with this class of plants could be obtained, even if only of a cursory and imperfect kind, it was Manchester; and the public body who had materially assisted in thus increasing the knowledge and intensifying the pleasure of the great number who now delight to gaze upon such floral gems surely was the society under whose auspices

they were met, and to whom they looked for still further displays of Nature's productions—such productions being assisted and in some measure developed by the art of those by whom he was surrounded. Such was the wealth and prodigality of plants exhibited at Old Trafford from time to time, that it was possible now for visitors whose labours are in no way devoted to horticultural pursuits to become better acquainted with this class of plants than was possible twenty years ago to those whose whole time and attention were spent in gardening. A knowledge of the native homes and surroundings of plants which come under their notice might enable them to so arrange their method of treatment here as to meet their natural requirements as far as practicable. Orchids were found in numerous localities, including the slopes of the Himalaya, the damp jungles of Nepaul and Bhotan, in the valley of Assam; in almost all the islands of the Indian Archipelago, in North America and the Western States, in New Granada, Brazil, Peru, Mexico, whilst our own country is the home of over thirty distinct species.

After describing at great length the circumstances under which Orchids flourish in localities of widely different temperature, he threw out a few suggestions as to the principles which should guide horticulturists in the cultivation of this plant. In the first place, the houses should be of a size and shape most suitable to the sections intended to be cultivated, the object in each case being to get the plants as near the light as possible without the danger of being scorched when the sun may suddenly burst upon them. The side stages of the houses should be so constructed that a layer of sand may be spread upon it, or, what he considered far better, small coke, which well holds the moisture poured on the stages, and at the same time allows any excess of water to pass quickly from the plants. The centre of the houses may be of a similar character, or a bed filled with tan with latticework over it will be found of great service to such things as Denbrobes and East Indian plants. Ventilators should be provided both at the top and bottom, those at the bottom being covered on the inside with perforated zinc, to prevent the entrance of birds and bees, and to make it the more difficult for snails to crawl in and commit the havoc they sometimes do. Good shading should also be used, and where movable rollers can be applied they should be provided, the shading to be run up when the sun's rays are diminishing in force and power, and the temperature in the houses allowed to run up 5° to 10° by the aid of the sunlight now at command. Whilst growing, all enjoy warmth and moisture, and according to the locality whence the plant has come will the amount of heat be that must be given.

When growth is finished a less amount of heat and moisture is requisite, and here again, according to the native habitat so will be the length of time that they will require for rest and the formation of flower-buds. Dendrobes especially will be benefited by a good season of rest, though even in this genus it will be found that many will be resting whil t some are in full growth, and others in full bloom. The utmost care and attention must be taken to keep the plants clean. Doubtless they suffer from the attacks of insects at home, but in our houses they appear to increase with such rapidity and persistence that unless great watchfulness and care be exercised the plants speedily become disfigured, and ultimately die away. In potting the plants care and cleanliness should be observed at every point. The pots should be either new or thoroughly clean; the crocks also should not be used twice without being washed. The sphagnum moss should be freed from all litter and grassy roots, whilst the peat, which should be of a very fibrous nature, should have all the sand and earthy matter shaken out of it as it is pulled to pieces. The greater part of the plants should be kept well up in the centre, so that the water may the more readily pass away from the rhizomes and young breaks. A point should be made of keeping the plants in pots as small as can consistently be managed, ever bearing in mind, of course, the health of the plant and the condition of the roots.

He discouraged the habit of cutting through the plants to induce a greater number of growths, for though the practice may succeed with a few sorts, great danger is often incurred, and instead of increasing the plant, a loss of bulbs and growths is often the result. All imported plants should be watered sparingly at the first, then, whether on blocks, in baskets, or fixed in pots, with crocks and charcoal, as soon as the new roots push out and the breaks slit away a greater amount of water must be given, and every effort made to encourage quick and active growth. Attention to these principles, guided by the circumstances and situations that may surround those taking charge of a collection of these plants, will, if carefully carried out, result in rich displays of choice forms of beauty, and give much pleasure and happiness to those who may be privileged to gaze upon them.

A vote of thanks was awarded Mr. Swan for his paper.

HOTHOUSES FOR INDIA.

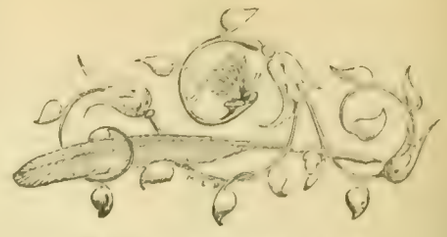
DR. KING, the able and energetic Curator of the Royal Botanic Gardens at Calcutta, having determined to erect suitable glass structures in the various branch establishments in India, has instructed Messrs. Fletcher, Lowndes & Co. (Limited), 13A, Great George Street, Westminster, to design and construct a metal house to meet certain requirements which he submitted for their guidance. The first of these buildings, which is to be re-erected at Darjeeling, is now complete, and will shortly be sent out. The special features of the conservatory are stated as follows by the builders:—Dimensions: Nave, 80 feet long by 35 wide, by 18 feet high; transept, 45 feet long by 17 feet wide by 18 feet high. A dwarf wall, 2 feet 6 inches high, of brick or stone, 9 inches thick, extends all round the building, with iron gutter and coping and 14-inch piers every 10 feet 2 inches. Iron flap ventilators (for bottom ventilation), each 2 feet 6 inches long by 12 inches high, thirty-two in all, form panels between the piers, from which latter spring the main tubular ribs or girders carrying the curvilinear nave roof of one span.

These ribs have been placed outside the glass. This arrangement gives a bearing every 10 feet for placing scaffold boards upon in case of any external repairs being required, and at the same time removes all internal obstructions except the wind ties which lie close up under the glass. The wind ties are made extra strong, to withstand the exceptionally heavy storms which are experienced in the hills. The astragals, or glazing bars, are of lead, thus obviating the necessity of using either paint or putty; two zinc clips at the top and bottom of every pane hold the glass, part of which, extending to a height of 8 feet 6 inches, is 26 oz. British sheet, and from that height to the roof ridge is Hartley's ½-inch rolled; the latter has been adopted to form a screen from the intense rays of the sun, and as being better adapted to stand without fracture the heavy hailstorms to which it is likely to be subjected.

Top ventilation is provided for by twelve sashes, each 4 feet long by 3 feet 6 inches wide, hinged on to the ridge, the whole or half of which can be simultaneously opened by one man in two minutes by means of a hydraulic apparatus specially designed for this house. and the registered adaptation of which is claimed by Messrs. Fletcher, Lowndes & Co. The transept consists of upright framed sides and front, 8 feet 6 inches high from the ground, glazed with 26 oz. British sheet glass, with a handsome moulded gutter forming a cornice round the top, from which spring the tubular ribs or girders carrying a single-span curvilinear roof, glazed with Hartley's rolled glass, and dying into nave roof. The doors are the only woodwork in the structure, and consist of four pairs, each pair being 4 feet wide by 8 feet 6 inches high, placed at each end of the nave and transept.

The nave ends are flat, with four wrought-iron columns supporting a cast-iron facia, and with perpendicular T iron astragals, backed by trussed stays, to withstand the pressure of the wind. The transept ends are flat, with four plain wrought-iron columns faced with ornamental twisted columns to support the cornice gutter, the ends of the curvilinear roof being formed of T iron astragals radiating to cast-iron facia, and supported internally by means of struts and bracket, to withstand the pressure of wind. Cresting finials of ornamental cast-iron extend the entire length of both roofs, and five handsome cast-iron finials surmount the centre and four entrances.

THE ALEXANDRA PALACE.—The Directors of the London Financial Association advertise the Alexandra Palace and Park as "to be let on lease" from and after May 5 next.



Home Correspondence.

Primula farinosa.—This pretty little native plant, the Bird's-eye Primrose, called also the Mealy Primrose, because the crown and the under sides of the leaves have the appearance of having been sprinkled with meal, is not often seen in cultivation, perhaps because it is not well understood. It may be useful to know how it grows at home. It is abundant in some spots in the neighbourhood of Grange, in North Lancashire, and is a true bog plant in its habit. Water not far beneath its roots at all seasons seems to be an indispensable condition in the selection of its native habitat. It is not found in the peat mosses which abound near here, but it prefers that black spongy bog soil, such as is found where streams pass through long stretches of level ground, where it is often submerged in winter. It is not a mountain, but a lowland plant. It grows in great profusion round a certain small mere, not 50 feet above the sea level, either on the top of those round hillocks so common in boggy spots, or in the greatest luxuriance on the edges of the trenches dug to drain the surface, which are always full of water to within a foot of the ground level. Large tufts grow just overhanging the brink of these, having often seven or eight crowns and bearing flower-stalks more than a foot long. In these exposed places it is alternately soaked and frozen through the winter. The roots are short and spread superficially, seldom extending an inch below the surface. It grows often almost amongst reeds and sedge, and close to such plants as Parnassia palustris, which abounds in the same spot. It seems, however, to thrive in the rich retentive loam of the gardens here without any special care; but I feel sure it would appreciate a thick sod of bog soil and a saucer of water plunged a few inches beneath its roots. A few years ago a large mass of this plant attracted notice when in flower, colouring the London and North-Western Railway cutting close to Carnforth station. The cutting had recently been faced with sods from a bog between Carnforth and Lancaster. I believe the plant has now disappeared from the railway bank. *C. W. Dod, Grange-over-Sands, Jan. 23.*

Soot on Boilers.—One would hardly have expected that a practical man like Mr. Challis, having to do with boilers in use for heating horticultural buildings, could have thought necessary to put such a question as the one he does in regard to the above, as any one who has done such stoking knows how difficult it is to drive caloric through the sides of a boiler encrusted with soot. If flues and tubes could only be kept clear of this deposit the coal bill in most places might be lighter than it is, for, instead of the waste that now takes place through the fire not being able to impinge directly on the metal, it would lick around and about it with its many tongues, instead of threading its way through partly choked passages in its course to the shaft, and on into the outer air. If it were possible I would have the iron kept quite bare, as it is a well-known fact that newly-set boilers heat much more quickly with less fuel than others which have been in use for some time, especially when smoky coal is burned—a clear proof that soot in a great measure prevents the heat getting through to the water. This is why it is that coke answers so much the best in tubular boilers, and I have always found that a large percentage of this is the most economical fuel to use, simply because it is cleaner, and leaves less deposit after being consumed. *J. S.*

Odontoglossum vexillarium.—There has been a great deal of discussion of late about the distinct varieties of this Orchid, and I think that the easiest way to define them is to name them after the collectors who discovered them. Baumann found O. vexillarium first, and near Frontino; since he sent his batch home many collectors have forwarded them to England. The one which grows near Frontino varies much, and grand varieties have been sent from there; light and dark coloured grow together: these could be called O. vexillarium, Baumann's variety. A very short time after him Wallis found the grand variety which he sent as coccinea to the Continent; he

collected it near Souson in Antioquia, and there it is still to be found, but it is so rare that it does not pay importers to send for it. The Souson variety is dark only, and varies little; it is totally distinct from the Frontino variety, and might be called Wallis' O. vexillarium. A few years passed, and the late Franz Klaboch discovered the splendid variety which flowered with Sir W. Marriott first, and which is totally distinct from either of the above; its eye is very white and peculiarly well defined, and although not so dark as the one which Wallis sent home first, it is of an extraordinarily pleasing colour, and altogether different from any other. He found it on the Cauca River, and where it is to be met with very sparingly indeed; there is never a light coloured one among these, and the variety very distinct: this might be called Klaboch's O. vexillarium. Localities yields us the different varieties of Orchids in O. vexillarium, the localities keep them very distinct indeed, and the matter is easily defined! Baumann's or Frontino variety, light, and the grand dark coloured large flowering varieties mixed; Wallis' or Souson variety always very dark; Klaboch's or Cauca variety dark and rather small flower, but very beautiful. *F. Sander.*

Sternbergia lutea.—The correspondent who signs himself "A." cannot have read attentively what I wrote respecting the above, for instead of speaking of it as a spring flower, I remarked on its naturally early blooming qualities, and cited in proof of the same, that no sooner had the snow disappeared from off the surface of the earth than its blossoms were to be seen peeping out amongst the foliage, and that it appeared a race between the Sternbergia and Christmas Rose as to which should be first. The plants I alluded to, as being harbingers of spring, were the Aconites and their immediate followers, most of which are only now waiting for the warming influence of a little sun to cheer us with their presence. *J. S.*

Globe Artichokes.—After such a severe winter as the one we are now passing through, the death-rate of this valuable esculent is certain to be very high; in fact, it is more than probable that in those places where the thermometer has been below zero, they will be totally destroyed. There is, however, a remedy; and to those of your readers who don't like the idea of being asked for what they are not able to supply, I would say, sow seed at once in heat, pot off when large enough, shift into larger pots when necessary, and plant out towards the end of April. The result will be a nice crop of medium-sized heads fit to cut in the autumn; and as "half a loaf is better than none" so it is with the above. *J. H., Heytesbury.*

Grape Vine.—I some months ago asked a question through the medium of this journal respecting the Grape Vine and its bearing two crops of fruit in the same year. Yesterday I received a most kind letter and a magazine entitled *The Australian*, from Sydney, sent by Mr. Robert Whibley, the Editor, stating that, having devoted many years to the culture of the Grape Vine both in this country and in Australia, and that he will always be pleased to answer any questions regarding it. Mr. Whibley also says that the Vines in New South Wales give, as a rule, two crops yearly, and that in Queensland the second crop is but very little inferior to the first. When Mr. Whibley resided in the North of England he occasionally found the laterals showing a second bunch of fruit upon the Lady Downe's Grape Vine, and he thinks high cultivation, together with a warm climate, will cause any Vine to give two crops a year. [Doubtless.] Mr. Whibley is still a cultivator on a large scale, growing a quantity of Grapes for wine-making as well as for table. *Helen E. Watney.* [The Royal Ascot was what the late Mr. Standish called a perpetual bearer, the laterals three or four series in succession producing fruit; but of course the "perpetual" idea, that is a continuous crop, was only an over-sanguine picture of the imagination. EDS.]

Imported Lily of the Valley.— I was much surprised to see the great difference in the earliness of German roots of these as compared with others imported from Holland, the latter being quite a week behind the former, although potted the same day and treated together precisely alike in every way. Not only were the German kinds earlier, but the crowns were considerably larger, they being so plump and strong as to have more the appearance of those of Solomon's Seal, which in colour, too, they greatly resembled. Comparisons of an unfavourable kind have sometimes been drawn between pots of English grown Lily of the Valley and those above-named, but it should be borne in mind how superior are the varieties they grow, to such as we generally see in gardens, where in many cases the stock at first starting has been obtained from the woods. It will be found that the flowers of these are always much smaller, with the edges of the bells serrated, whereas those of imported plants are regular and plain. That Lily roots can be grown here just as well as abroad there can be no question, but to do this we must start with the right kind; and I would recommend all who have spurious sorts to root them out and force them, that fresh beds may be made of those to be had from Germany, which as yet are the best I have seen. Some years ago Mr. Wills, of Onslow Crescent, was having large numbers from the South of France, which in the massiveness of the spikes and size of the individual blossoms appeared almost equal to what the Germans produce, and any one, therefore, who may get these will probably possess the same kinds, which may be distinguished by the crowns being of a purplish red instead of green like the Dutch. To grow Lily of the Valley really well it must have ground specially prepared, and not be planted, as is often the case, in out-of-the-way places under or near trees, the roots of which soon find their way into the beds and rob them of their richness and moisture. Being a native of woods it is naturally fond of partial shade, although if plenty of water can be given this is not essential; but what is of importance is that the soil should contain plenty of vegetable matter, such as decomposed leaves or refuse peat, a mixture in which Lily of the Valley greatly delights, as in it the stolons can run freely and the fibres find the food they desire. A good place to form the beds is under a wall facing away from the sun, or down between rows of Apple trees, the roots of which, by being some distance off and going down deep, do not interfere with the Lilies. These latter feed very much nearer the surface, and therefore in making the beds all that is necessary is to prepare the top foot or so, which should be thoroughly broken up and have the leaf-mould and peat or stuff from the rubbish-heap thoroughly incorporated with it, and if at the same time any mild rotten manure can be added all the better, but if not this latter can be used to great advantage as a mulching later on after planting, when it will be of benefit not only to enrich the soil but to assist in retaining the moisture, of which, if the drainage is good, Lily of the Valley cannot well have too much. By preserving the leaves and taking care of the plants forced they come in admirably for forming any beds it may be desirable to make, but when intended for this purpose they should be kept under cover in frames and properly hardened off previous to being exposed. Although good crowns cannot be expected the first year from these they may with confidence be looked for the second, when there will be quantities fit for lifting and potting. In turning any out that have been forced the best way is to plant the ball entire, without any disturbance, as once the roots get their liberty they soon spread and ramify through the whole of the ground, provided they are not put in too far apart. A foot or 15 inches is quite space enough, but if single crowns are made use of half that distance is better, the rate of increase of these being much slower, on account of the way they are denuded of side growth. To get beds quickly and have flowers to pick the same season the imported tufts should be grown, as most of these contain six or eight crowns that are large and strong enough to bloom, and many others that will do so the year following. In order to increase the size and strength of these, liquid-manure should be given twice or thrice during the growing season, and every autumn after the decay of the leaves a top-dressing of rich stuff scattered over the beds, which will encourage surface roots and prevent sharp weather from having any injurious effect on the plants. To have a good stock of these in readiness for forcing, in case of a long continuance of frost, it is always advisable to dig up as many as are likely to be wanted before winter sets in, and to put them in the boxes or pots, which can then be stood in cold frames, where they come gradually on and produce foliage with the flowers, a thing they rarely do when hurried on out of their ordinary course. Instead of pulling them to pieces to pick out the strongest and best crowns, except for special purposes, I like the clumps just as dug up, the leaves being always acceptable, as they are particularly choice and beautiful with their delicate green tinge, and impart a more dressed appearance to a vase than any other foliage that can be used, except that of Ferns, which associates well with most flowers. *J. S.*

Bees as Fertilising Agents.—On visiting Combe Abbey recently, I witnessed a novel and somewhat peculiar method of setting Peaches adopted in the gardens there. In an early house, a hive of bees, apparently in the best possible spirits, were busily engaged among the flowers, and to the uninitiated in the habits of that industrious and interesting insect, in unpleasant proximity to a visitor. My guide, however, assured me that they were too much occupied with the work in hand to resent intrusion; I, therefore, watched their movements with some degree of interest. The blossoms were fairly developed, and the bees flying here and there, from flower to flower—the hum and buzz forcibly reminding one of the pleasant days of June. I did not observe any of them, in any way, attempting to escape from the house, but all seemed perfectly at home and contented with their quarters. On inquiry, I ascertained that the hive similarly employed the last and for the two previous years, was the first to swarm, and moreover produced the largest amount of honey. From this, I should think, any practical reasoner may deduce that such treatment is not in any way deleterious to their health or productiveness. Without questioning the utility of the various modes of setting early Peaches, or the necessity for so doing, I would venture to remark that the plan adopted at Combe is a safe and practical method: safe, because the bees moving among the flowers can do no more harm under artificial conditions than in a natural state—and practical, because they take advantage of the least gleam of sunshine, and even in the absence of that, when the flowers are at all tempting, they will greatly aid the process. Reflecting on this ingenious mode of fertilisation, the question presents itself for one's consideration—is it necessary? Will Peaches set well, unaided, during the dull sunless weather of an average January? And further, supposing they are surrounded with all the necessary conditions for that important function, namely, a fairly dry and genial temperature, is there sufficient vitality in those delicate organs of fructification, in the absence of sunlight, to effectually distribute those minute particles of pollen so vitally necessary for a perfect fruit? If there is not, how best can the want be supplied? This at Combe has been put to the test, and if enormous crops of well-formed fruit in the early houses, compared with average crops where bees have not been placed, is any proof—*verbum sat.* No doubt, many of your readers have their own peculiar methods of setting their Peaches. Some advocate the orthodox camel's-hair brush, while others again are of opinion that a little tapping on the branches of the Peach trees, when the pollen is ripe and the sun is out, is the better method. The former is a tedious, and too frequently a questionable proceeding, because if the operator injudiciously attempts the removal of the pollen, instead of aiding the process, he will probably injure those vital and delicate organs. The latter method certainly has simplicity and expedition to recommend it, but unless the operator is unusually observant I do not see how he is to know when the pollen is exactly fit for the operation. Bees, on the contrary, are safe, and will not approach the flowers until they are fully developed, as may be seen by their always being smothered with dusty pollen. In describing what I have seen I by no means wish to infer that this plan is the best for the purpose; but certainly until I hear of a better I shall think so; and it would no doubt be interesting to many, and especially to those who, like myself, are comparatively young in the profession, to hear the experience of others on this very important subject, founded on practice, if the matter could be discussed in a spirit of fairness, and not simply from the love of contradiction—a practice which too often culminates in the use of terms more forcible than euphonious, and designed rather to promote personal irritation than to discover the best methods of practice. The introduction of personalities cannot be too severely condemned by those who read for instruction. Any one who visits Combe may see the bees at work, and, like myself, will no doubt be treated with the greatest courtesy, and perhaps they too will have a word to say about the system of using bees as fertilising agents a Combe Abbey. *T. A. A. Brenchley.*

Brussels Sprouts not Sprouting.—I am sorry to say that our Brussels Sprouts are in a similar condition to those of Mr. Fish. Half of our plants were raised in a cool orchard-house, and pricked off into a carefully prepared bed, previous to their being planted out, and the other half sown in beds in an open border in March and transplanted from them, and in both cases they have failed to sprout, or nearly so, and seem inclined rather to form heads after the manner of small Cabbages. The only way I can account for them refusing to sprout or button is owing to last season being so cold, short, and wet, coupled with the want of heat and sunshine, all of which tended to "arrest development." The varieties are imported and Scrymgeour's Giant, and both have failed alike. *W. Jamieson, Elchies, N.B.*

Selected Potatos.—One reads with pleasure the testimony of such an experienced experimentalist as is Mr. R. Fenn, as to the nature or value of "Improved Potatos." As that gentleman has devoted almost a lifetime to the consideration of all that relates to the Potato, no doubt his testimony will secure more consideration than will be accorded to any one who has some pecuniary interest in setting up a theory that experience proves to be utterly fallacious and valueless. As long as a stock of Potatos is kept true—that is, free from all mixture with other kinds—no form of improvement can be produced in its intrinsic character. If planted in good soil the produce will or may be, large; if in poor ground it will probably be small, but relatively seed tubers of the same size from both stocks will show little difference in reproductive powers, if any no doubt in favour of those

grown on poor soil, as these will be found to contain more starch. One well-known grower I know holds to the belief that seed-tubers for the production of a fine stock should be selected only from the strongest roots. This is, however, but another way of putting what is a well understood axiom in Potato culture, that the produce of a plant is relative to the size of the seed-tuber. To show how little there is in such a belief, it is enough to say that if a dozen good seed-tubers are selected from one prominent root growing amongst a dozen others, and these be planted the next year, the very same feature—one or two extra strong roots—will again be found; so that it becomes evident the imagined improvement is more accidental, or the product of extra manuring, than due to any other cause. Whatever may be done with a dozen roots, however, it is absurd to suppose that any such selection could or would be carried out with the produce of acres. Rogues may and should be eliminated, but all plants that are true to stock will so remain. Some persons have from time to time assumed that the Potato sports to an improved form, but this is utterly incorrect. The Potato does not sport, and only those who have found some rogues amongst their stocks that were apparently better than the stock kind have jumped to the conclusion. This assumed sportive element is responsible for not a few of the *aliases* that prevail amongst Potatos. New and distinct kinds can only be originated from seed, and then only really distinctive kinds come where cross-fertilisation has taken place. In the multitude of Regents, Lapstones, Ashleafs, &c., that have been from time to time pushed to the front—if seedlings at all—we have had but mere natural seedlings that have shown the same features as the seed parent only and nothing more. Even these have shown little or no improvement, and there does not exist at present any better Lapstone than the old original cobbler's, or Ashleaf than one of the oldest of all the early season. Few plants are more amenable to intercrossing, few more easily operated upon than the Potato, and it is only when genuine efforts in that direction are carried out that "improved" varieties follow. The Magnum Bonum—now so deservedly popular—is a product of the American Rose crossed as believed by Victoria. That it must have been crossed there can be no doubt, as, with the exception of Superior, I have never known any one single American sort to produce seed-pods unless crossed with some English kind. No kind of cultivation, however, will induce Magnum Bonum to change its character; it will be that, grown where it will and how it will, until it some day passes into oblivion. The same may be said of all other assumed improved kinds, and anything asserted to the contrary is calculated only to throw dust. No doubt all these terms and phrases are strictly moral and business-like, but they cannot but deceive some persons. Probably most people, however, have ere now learned to estimate them at their proper value. *A. D.*

American Arbor-vitæ.—A carrier in this district used to come to our nursery for pieces of this to give his horses who were troubled with worms, and he stated that an overdose had once caused a mare of his to slip her foal. The inference would be that, if not absolutely poisonous, it would be better to keep cattle away from such plants. Yew, if eaten green sometimes, produces no harm, and yet at other times cattle die from browsing upon it. *George Bunyard, Maidstone.*

Number of Men Required in a Garden.—Similar inquiries to that made by "W. A. C." at p. 122 have been made before, and like those of "W. A. C." much too vaguely to be satisfactorily answered. The labour question is very frequently a vexing one, and, generally speaking, the amount provided is not equal to the requirements of the garden. Under such circumstances the mind of the managing gardener is continually harassed in arranging what must be first done and what can be best deferred until it can be overtaken, and then perhaps not unfrequently has to endure the heartrending, if not scornful inquiry, why such and such a little matter has not been attended to before? In determining the number of men required for a garden about the extent mentioned by "W. A. C.," much depends upon the nature of the soil, the requirements of the family, and the manner in which the grounds have to be kept. Given an ordinary garden, with no demands beyond that of a good family and a fairly-kept place, twelve men might be sufficient, with a couple of women in the summer for weeding purposes; but if the grounds are well laid out and planted with choice shrubs, Rhododendrons, Roses, &c., which require more attention than Laurels and other common shrubs, with a fair proportion of flower-beds, and the whole to be in first-class keeping, extra help may sometimes be needed. No mention is made by "W. A. C." of plant or fruit-houses, which in a garden of this extent may be numerous, and will require men in proportion to their number, the nature and condition of their contents. The demand for fruit, flowers, plants for furnishing, flower garden, &c.—these I have not provided for in the estimate I have made after many years' extensive practice. *An Old Subscriber.*

The Orchard House (see Enquiry at p. 90).—A correspondent makes certain enquiries about the orchard-house, which are placed in the following order:—1. The best position. A site must be chosen unshaded by trees or high buildings if possible, and it ought to be placed so that a maximum of the glass surface is exposed to the sun. 2. The best form and size. I certainly prefer the span-roofed form, but the size would be immaterial. Our orchard-house at Loxford Hall is 54 feet long, 24 feet wide, and about 12 feet from the floor line to the apex of the roof, and no house need be wider or higher than this. The internal arrangements are very simple, and comprise a row of shelves all round the house, and also a narrow shelf over the paths for Strawberries; we can winter about 800 6-inch pots with Strawberry plants in them, but there is only sufficient space to fruit half as many as that. The fruit trees are arranged on a bed in the centre; there are also borders round the sides and the ends, except where the doors are placed at each end under the apex of the roof. The borders are wide enough for one row of trees only all round, and in the centre bed we place three rows. The paths are of gravel edged with tiles, the borders being covered with clean cocoa-nut fibre refuse, and bricks are placed under the pots to prevent the roots getting out into the borders. The house runs east and west, and the trees are well exposed to the sun. The late Mr. Rivers, of Sawbridgeworth, describes a small span-roofed orchard-house as being 14 feet wide and 9 feet high. In a house of that size the path should be in the centre, and two rows of trees arranged on each side. The next best form to this is the half-span, with a path under the ridge; 14 feet would be a suitable width for a house of this kind, and it should be 10 feet high. One row of trees would be placed on the border at the back of the house, and three rows on the front border; the aspect of it should be as near south as possible, and I would prefer south-west to south-east. *J. Douglas, Loxford Hall.*

Art in the Conservatory and Greenhouse.—In the admirable paper by Mr. Adams on "Art in the Conservatory," it seems to me that he accords but scant justice to architects, gardeners, and horticultural builders, who have with very considerable success laboured in this direction, as witness the many beautiful conservatories and greenhouses to be found in almost every part of the country. I observe also that he quotes Mr. Hood's rule for obtaining the proper quantity of piping to keep up a given temperature. (See *Hood on Warming and Ventilation*, 5th ed., pp. 116, 117.) There are elements of incorrectness in this rule which should be guarded against, as any one may see if they apply it in a test case. The discrepancy between the rule and the short method given by Mr. Adams, both for stoves and for early vineries, may be tested in this way. Take an early vinery 30 feet long, 20 feet wide, 1 foot of wall above floor level, and 3 feet of upright glass, allow an angle to give, say 14 feet of rafter, giving a superficial measurement of 1340 feet; allow 140 feet for woodwork, and we have 1200 feet of glass. Proceeding by the above rule, we multiply by 14 to find the number of cubic feet of air to be warmed per minute = 1500. Now, say, for an early vinery to be started on December 1, and to be kept up to 70°—while, as we had, last year and this year, the outside temperature below zero, we must count upon 70° of difference between the external and internal temperature—then $125 \times 70 = 8750 \div 130 = 67 \times 1500 = 100{,}500 \div 222 = 452$ feet of 4-inch piping (I drop the fractions) to heat a vinery 30×20. Now, taking the other method of the cubic content, $30 \times 20 = 600 \times 9$ (average height) $= 5400 \div 20$ (number of cubic feet to 1 foot pipe) $= 270$, little more than one-half the quantity. There must be something radically wrong here, when by one rule we get 452 feet as the proper quantity of piping, and by another rule 270 feet. The other point I want to direct attention to is where Mr. Adams says that the best aspect of a span vinery is east and west. We have always looked upon it as a kind of axiom that a span vinery should be placed north and south, in order that both sides might get the sunlight in nearly equal degrees, and that if placed east and west the Vines on the north side must suffer from being shaded by those on the south side. In all my experience I have found almost no difference of opinion on this point; is it possible that practical gardeners and greenhouse builders have been labouring under a mistake here? *A. D. Mackenzie, 2, Grove Terrace, Edinburgh.*

—— At the conclusion of Mr. Adams' paper there is a rule for finding the quantity of 4-inch pipe necessary for heating so many cubic feet of air to any requisite temperature. I venture to state that there is an error in the wording of the rule. We find "Multiply 125 by the difference between the extreme external and internal temperature, and divide their product . . . . betwixt the temperature of the building and the pipes, &c." I think that where I have left a dotted space the words "by the difference" have been omitted; and this statement is supported by the example:—"$125 \times 55 = 6875$; $6875 \div 125$ (the difference between temperatures of pipes and house)." *T. H. Larkin, Eastbourne.*

Clockwork Subservient to the Ripening of Fruits.—One of the great desiderata in the bringing of fruits to perfection in this country is in ordinary seasons more sunshine, and especially is this the case with regard to those kinds which have been introduced from warmer climate. As we cannot obtain this, however, it behoves us to make the best use of what we do get, and by the method I am about to describe this can be done without the aid of glass very effectually, and at the same time comparatively inexpensively. I will describe it first in its most simple form, but many improvements can be added, some of which I will mention further on. 1. A semicircular receptacle for the soil, in which to plant the tree, large or small, according to the wish of the proprietor or the requirements of the tree; must turn easily on a pivot. 2. At the back of the receptacle must be a wall made of some light material, such as wood or something even lighter—painted canvas would do if stretched on a strong frame—to train the tree to. 3, A clock. This may be a very simple affair—a few cog-wheels, and a sufficiently heavy weight to give the motive power, and a pendulum to regulate the speed. 4. The clock and walled receptacle must be connected, so that the former causes the latter to revolve once in twenty-four hours. It is said of an old gentleman in Norwich, who flourished two or three generations back, and who was not famous for the possession of a large quantity of brains, that having heard a wall facing south was the best to ripen fruits against, at once ordered his builder to put up a south wall all round his garden. Now by the method outlined above the necessity for a south wall is entirely superseded, for by it the trees may be made to face the sun at whatever hour it happens to shine. Of course any number of receptacles with walls may be erected in a row and in any number of rows, all worked by the same clock; only the more the clock has to do the stronger must its works and the heavier its weights be. Among a large quantity of trees grown in this way it is possible some of them would not in a hot summer require the full amount of sunshine, and these could be so arranged as only to be partially presented to its force; or any tree, if necessary, might be turned away from the sun altogether by turning it round towards a cold quarter, and putting the machinery connecting it with the clock temporarily out of gear. Another advantage of this system is that trees can be retarded in their growth in spring till danger of spring frosts is over, by keeping them turned towards a sunless quarter, but at any time, according to the will of the cultivator, they may be subjected to all the sun that shines, and pushed on rapidly. To guard against spring frosts, however, should it be desired to start the trees early, or should these occur at a period when the trees were in a condition to suffer from them, a coping may be placed at the top of the walls, to be let down in the evening, and raised in the morning at any time that may seem good to the cultivator, by an arrangement in the clock somewhat similar to that usually adopted for letting alarums run down at whatever time they may be set to do so. Each walled receptacle may be made, if desired, complete in itself, and worked by its own clock attached to itself, to which the motive-power may be given by a mainspring. The great thing in this system is, that it enables the fruit grower to avoid any waste of sunshine when it is wanted, and to escape it when it is not wanted. In thinking this matter over, one becomes astonished that some such simple arrangement has not been in general use ever since clocks were invented and fruit trees grown on walls. *J. E. Ewing, Norwich, Jan. 26.*

Foreign Correspondence.

CAPE TOWN, SOUTH AFRICA: *Dec. 31, 1879.*—*The Phylloxera.*—It is only recently that Vine growers at the Cape have awakened to the necessity of adopting precautionary measures with a view to prevent the introduction of the Phylloxera into this colony. For this purpose meetings have been held in some of the principal wine-growing districts, and I have much pleasure in stating that this most important but much neglected subject has received very liberal support. For a full report of the proceedings I beg to refer you to the accompanying copy of *The Cape Times*, which paper, through its repeated warnings, has, in my opinion, been instrumental in preventing the introduction of a pest, which, in all probability, may attain the proportion of a national calamity. *R. Johnson, Botanic Gardens.*

[The paper obligingly sent by our correspondent

contains a lengthy report of a meeting held under the joint auspices of the Wine Growers' Association, the Cape of Good Hope Agricultural Society, and the Farmers' Protection Society, at which the principal speakers were Mr. S. V. Cloete, Mr. Goodliffe, Mr. S. Van Renen, and Mr. R. Hare, who all agreed in the main that if the Phylloxera got into the colony it would be a very dire calamity. We have not room for even a condensed report of the long speeches made, but may add that the meeting decided upon petitioning the Government in the following terms, to issue a commission of enquiry :—

"We, the undersigned, wine growers and others interested in the wine trade of the colony, desire respectfully to lay before you this their earnest petition, on matters which, although primarily affecting their special industry, have a most important bearing on general trade and prosperity.

"The rapid spread of Phylloxera in nearly all wine-growing countries, especially in the South of Europe, fills us with the deepest alarm, lest the plague should by any means be introduced here, where, from the smaller acreage under Vine culture and the concentration of wine farms, the spread of the disease would be even more rapid and more destructive ; indeed, we fear that the now important industry of wine growing would in a very few years be totally destroyed, and a large body of people doomed to ruin.

"We fully appreciate the action taken by your Government in calling attention to the Proclamation No. 88, 1876, forbidding the introduction of Vine cuttings : but this has already been flagrantly violated in the case of a keg of Grapes from Europe, exhibited at the Commercial Exchange ; it would be in the last degree puerile and frivolous to say these are not Vine cuttings, they were certainly cut or picked from Vines, and manifestly as likely to harbour the insect as merely saplings or branches. further cases have come to our knowledge of the importations of the various plants together with Vine cuttings : the latter have been destroyed, but the former passed. We feel that this is so momentous a subject, that nothing but the most rigid exclusion of all things which can possibly or probably convey the infection is essentially necessary. We, therefore, pray that the prohibition of imports may extend 'to all plants, cuttings, tubers, roots, or bulbs,' and that all such be seized and instantly thoroughly destroyed ; beyond which we would urge that all importers of every kind of goods which could hardly be subject to rigorous search, should be required to make a declaration, under the penalty set forth in the proclamation, that no things as heretofore enumerated are contained in any packages when making the Customs' clearance.

"We are aware that this specification would embrace the Potato, and although the Phylloxera has not, so far as we are informed, been detected in the Potato itself, yet, as in very many places Potatos are planted between the rows of Vines, the danger of even one or two insects being adherent is imminent, and one case would be fatal.

"We are aware that it has been stated that the disease is already amongst us, but this opinion is rejected by those familiar with its appearance, although there can be no doubt that there are diseases which for some time have affected our vineyards. We, therefore, pray you to issue a Commission thoroughly to investigate these diseases throughout the wine-growing districts, and to submit the results to you for the purpose of being transmitted to England to get further directions and information from European experts.

"We are informed that a case of Vines, said to be affected, has already been prepared for transmission to the Crown Agents, and we trust you will urge these gentlemen to have the specimens carefully scrutinised by the most eminent men in Europe, to ascertain the exact character of the disease, and, if possible, to prescribe a remedy."

Mr. S. Van Renen submitted some Vine roots to Mr. R. Trimen, of the South African Museum, a competent entomologist, but he did not find any trace of the Phylloxera or its eggs. We may also add that the case of Vines alluded to in the last paragraph of the petition has arrived in this country, and we understand that the appearances presented on a first inspection are not consistent with the presence of Phylloxera.]

Forestry.

THINNING SCOTS FIR PLANTATIONS.—Mr. W. Baxter Smith, in last week's *Gardeners' Chronicle*, pp. 109, 110, in reply to my previous paper, describes the examples of plantations therein given as partial failures, and infers that there has been mismanagement attending them. I neither take credit nor blame for the success or failure of any of the subjects described. I give the facts as they stand, and allow Mr. Smith and others to draw their own conclusions. Mr. Smith designates the articles in the *Transactions* of the Scottish Arboricultural Society as "reports," while I would term them essays, on the theories of forestry. Lest, however, I depart from the rule of non-discussion of books or men, I shall leave them as they are. It is a much easier matter to put a splendid plantation upon paper than it is to put it upon land. I have had in different parts of the country about 20,000 acres of woods and plantations directly under my charge, and have also either closely observed or inspected an area of nearly similar extent, and from carefully collected statistics from such a field during a period of over thirty years I hope to fall upon some records showing the high attainable value of Scots Fir plantations of various ages ; but I very much fear none will be forthcoming showing the true value so high as Mr. Smith and some others believe attainable on poor moorland at fifty years' growth. Having in my last given a statement of some plantations (1, 2, and 3), I shall, for the sake of reference and identity, continue the same, thus :—

No. 4 is a mixed plantation of Larch and Scots Fir, being a crop succeeding one of Scots Fir. It was planted in 1858, and comprehends 36¼ acres. It was thinned for the first time in 1869, and all inferior growths cut down. No money was derived from the thinnings, as the clearing of them out of the plantation was considered sufficient offset against their value, and was done by tenant-farmers in the district. The work of thinning was done by men at day wages, and cost an average of 5*s.* per acre, which, though a small item, instead of being put to the credit of the plantation, was on the contrary charged against it. On valuing the plantation shortly after being thinned the following were the results :—Larch trees upon the ground, 317 per acre ; Scots Fir, 270 per acre ; Beech and Birch, equal to 589 trees per acre in all ; top-growth, 500 lineal feet per acre, value 20*s.*; value of the whole plantation, £326 5*s.*; transferable value, £5 per acre ; prospective value at sixty gears' growth, £35 per acre. Whins prevailed in some parts, but not seriously, and roadways intersected the plantation for convenience of clearing, &c., and this to some extent reduced the average number of trees per acre, but increased the value of the general crop. On looking at the plantation at this stage of growth it appeared rather thick than otherwise, owing to the trees being well branched, and yet, as is seen, there are fewer than 600 trees per acre upon the ground, while Mr. Smith's paper, which gave rise to the discussion, gives, after the first thinnings were effected, 1550 trees as the crop per acre.

No. 5 is a subject of considerable importance, and presents some features of interest to foresters. It is situated in Morayshire, comprehends 1600 acres, and was planted in 1803-5. I have no record of the formation or planting of it, and only know its early history from hearsay and subsequent appearances. The whole crop, with isolated exceptions of Larch and Birch, consists, or rather consisted, of Scots Pine, and had evidently been planted at the rate of 4000 to 5000 trees per acre, judging from the stools, &c. The plantation fence, which was a turf dyke, was kept in repair till the plantation was about fifteen years old, when it was let down and sheep admitted to graze at pleasure, without, as far as is known, doing any damage. The plantation was never regularly thinned, but here and there a few "cabers" cut as required for fencing, there being no other demand at that time for thinnings in the district.

In 1851, when the plantation was between forty-six and forty-eight years old, a contract for thinning was entered into with a wood merchant, who purchased 138,000 trees, as follows :—

36,000 trees, to stand 4 inches diameter at 12 feet from the ground, at ¾*d.* each	£112	10	0
72,000 trees, to stand 6 inches diameter at 12 feet from the ground, at 1¾*d.* each	525	0	0
24,000 trees, to stand 8 inches diameter at 12 feet from the ground, at 2½*d.* each	250	0	0
6,000 trees, to stand 10 inches diameter at 12 feet from the ground, at 6*d.* each	150	0	0
138,000 total number. Total amount ..	£1037	10	0

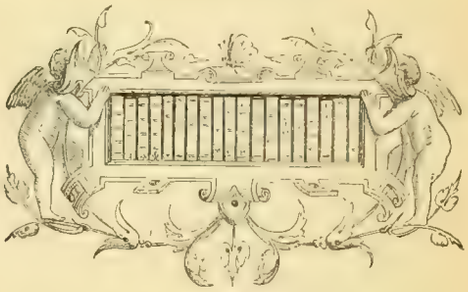
138,000 trees ÷ 1600 acres = 86 trees average per acre thinned out, or 12*s.* 11½*d.* per acre derived from the thinnings.

From 1856 to 1866 thinning was carried on extensively, and about 300 trees per acre (including the first contract) were taken out, which, when added to the remaining crop (250 trees), gives an account of 550 trees per acre out of the 4000 to 5000 originally planted and grown up, but not to profitable or useful size.

The following is the average valuation of the whole remaining crop at about sixty years old (some portions having by this time been cut and cleared entirely) :—

128 timber trees, 7 feet cube each = 896 feet, at 6*d* per foot	£22	8	0
80 spars, 5 to 8 inches diameter at 12 feet, at 1*s.* 6*d.* each	6	0	0
56 pit props, 3 to 5 inches diameter at 12 feet, at 6*d.* each	1	8	0
	£29	16	0
Add value of former thinnings, 550 trees, say	2	0	0
Total revenue per acre	£31	16	0

The value of the ground as pasturage previous to planting was about 1*s.* 6*d.* per acre, and it let at about 1*s.* per acre as plantation grazing. Had the plantation either been thinned at the proper time or not thinned at all, since at first neglected, but cut and cleared entirely at sixty years' growth, £40 per acre would probably have been derived from it. *C. Y. Michie, Cullen House, Banffshire, Jan. 26.*



Notices of Books.

The Art of Perfumery, *and the Methods of Obtaining the Odours of Plants, &c.* By G. W. Septimus Piesse, Ph.D., F.C.S., &c. London : Longmans, Green & Co., 1879.

This, though a fourth edition of a work published some twenty-four years since, is to a large extent a new book, for a great deal of it is entirely new matter. So much indeed has been added that it now appears in an enlarged form, and extends to 506 pages against 287 pages in the old edition. The space devoted to the history of perfumes—a very interesting section—has been increased nearly five-fold. As an illustration of the importance of perfumes in a commercial point of view, Dr. Piesse says that in consequence of the taste for perfumes and cosmetics being carried to a very high pitch, "immense factories have been established and store-houses built, and London and Paris supply perfumes to all parts of the world. Its annual products exceed in value 50,000,000 fr. (£2,000,000 sterling)."

In the section treating of the sources of perfumes the plants mentioned are arranged alphabetically, according to their popular names. We are compelled to say that this section falls far short of the accuracy that might have been attained. Under the head of Citronella, which is described as an oil procured by distilling the leaves of Andropogon Nardus, obtained chiefly from Ceylon, we find the following paragraph : —"This essence must not be confounded with those produced by other plants very different, although bearing the same name. There are, indeed, numerous plants, the odour of which more or less resembles that of citron. Among these may be mentioned the male Southernwood (artemisia abrolanum, synantheræ) ; the melissa (melissa officinalis, labiatæ) ; the Sweet verbena (verbena tryphylla) ; the lipia citriodora, and aloysia citriodora." In other places we read Lychinis for Lychnis, Convulvulus for Convolvulus, Meleuca for Melaleuca. Morren is also referred to as Marren three times over in close contiguity. These mistakes are the more to be regretted because the information on the cultivation and commerce of the various plants is accurate. Citronella-oil, for instance, which has been before referred to, is stated to be exported from Colombo to the extent of 40,000 lb. annually. The export price at Colombo is 4*s.* 1*d.* per pound, and being cheap it is largely used for perfuming soap. "What is now so generally sold as 'honey' soap is fine yellow soap slightly perfumed with this oil." The trade in this one article in Ceylon is estimated at £8000 annually, and at Gaylang, Singapore, about 1000 acres are under Citronella, Lemon-grass, and Patchouly cultivation.

On the subject of Peppermint cultivation, the author tells us that "the finest Peppermint is that cultivated at Mitcham, in Surrey ; the sight of the

numerous acres of this plant at that place is alone sufficient to show the public taste for this odour; strictly speaking, however, Peppermint is consumed more through the mouth than the nose. Large as is our own consumption, England exports a considerable amount of the otto of Peppermint, which is readily obtained from it by distillation. . . . The Peppermints find at Mitcham all the conditions they require to arrive at perfection—a temperate climate, a sandy soil, an abundance of moisture. The Croydon drainage works have, however, reduced the last item, and the Mints have suffered accordingly. There are two varieties of Peppermint grown at Mitcham, which are there technically termed 'white' and 'black.'" As seen in cultivation these two plants have a totally different appearance; the black has a much stronger habit of growth than the white, the leaves also are darker, and the stems and ribs of the leaves are of a purple instead of a green colour. Though Dr. Piesse refers the white variety to Mentha piperita, and says that not only he, "but several good and well-known authorities who have been invited to see the black variety growing can properly define it, it is, we believe, referable to M. piperita var. vulgaris, while the white form has been called M. piperita var. officinalis. Commercially there is as much as 10*s.* per pound difference in the market value of the otto produced from these two forms, the black being inferior." In answer to the question that might arise as to the advisability of cultivating the white to the exclusion of the black, since its otto is the most valuable, the author points out that the black is far more hardy than the white, it bears spring frosts better, longer drought and climatic influence generally. "Again, the black Mint will yield by one-fifth to one-sixth more otto per acre than the white, all conditions being equal."

From what we have said it will be gathered that the book is not only an extension of, but a great improvement on the old edition, notwithstanding the shortcomings we have felt ourselves compelled to draw attention to. The illustrations are much more numerous, and there is a fairly good index—a useful addition that was entirely wanting in the old book.

Reports of Societies.

Society of Arts: *Jan.* 28.—At a meeting held on Wednesday evening last, in the rooms of this Society, Mr William Paul, of Waltham Cross, read a paper on "The Future of Epping Forest," from which we ake the following extracts. The chair was taken by John T. Bedford, Esq., Chairman of the Epping Forest Commitee :—

The Future of Epping Forest.

The subject I have the privilege of bringing before you this evening is "How shall Epping Forest be dealt wlth?" It is consigned to the Corporation of the City of London, "for the recreation and enjoyment of the public," the details of arrangement being left largely in the hands of the Conservators, who have accepted a trust of no mean magnitude and importance, the fulfilment of which is sure to be narrowly watched and freely criticised. I must, at the outset, beg of you to consider the remarks I am about to make as suggestive rather than exhaustive—as dealing with the general rather than the particular. No precise or definite rules can be given, as regards the execution of details, which might not be advantageouly broken through or ignored under varying circumstances. There is here an unrestricted field for the exercise of taste and genius, and those great qualities of the human mind must not be "cribbed, cabined, or confined" by rules.

Although thoroughly acquainted with every part of the forest, I yet approach the subject with diffidence, so many features of interest and importance, *in esse* and *in posse*, presenting themselves which it would be well to develope, create, embody and maintain. It will, however, clear away a host of difficulties if we keep in view the fact that the Act of Parliament declares that Epping Forest must remain a forest. On this ground, therefore, let us consider the subject from a forestal point of view. But in taking up this position, it must not be inferred that I am about to advocate the view that the forest should remain as it is; on the contrary, while holding that here "the great materials of the scene are provided by Nature herself," I am of opinion that a certain amount of overhauling, sorting, rejection, importation, and re-arrangement is necessary. The forest should be studied piece by piece, looked at and dwelt upon with the eye of a painter and the soul of a poet, the whole being kept constantly in view, that the outcome in the end may be utility, grandeur, picturesqueness, variety, and harmony.

Scenery.

The scenery of Epping Forest, as a whole, is hardly of a character that can be correctly spoken of as sublime, or beautiful, although beautiful spots may occasionally be met with, and it possesses the elements of both picturesqueness and grandeur. But there are no mountains or torrents, no frowning precipices, no furious eddies, no flowing cascades. It would, perhaps, be correctly described as a tract of woodland and pasture, the surface broken into hill and dale, interspersed with a few fine trees and groves; the old trees possessing a rare and glorious beauty, but not being numerous or prominent enough to impart dignity to a forest of 6000 acres. It is picturesque from its natural ruggedness; it is grand from its extent. These two forms, or expressions of beauty, picturesqueness and grandeur, which are inherent, should never be lost sight of or suffer diminution at the hands of the improver. The former is capable of a pleasing and almost indefinite expansion—variety, the chief present want, may, from the great extent of the forest, be introduced without compromising its grandeur; the latter may be heightened by opening up more distinct views of the largest trees, the handsomest of these being left standing, as individuals or in groups, by clearing away the brushwood which surrounds them. Extreme caution should, however, be observed in moving from these to other forms or species of beauty, and I should scarcely think it safe to introduce any that are not already visible and pronounced, or for which there are not special natural advantages.

The Ground.

From my knowledge of the ground, I feel little hesitation in submitting the opinion that no improvement adequate to the outlay could be effected by extensive alterations of the surface. Here and there, doubtless, there may be holes to fill in, and ugly knolls to reduce or modify, but the general surface of knoll and glade, of dingle and dell, should, in my opinion, remain undisturbed. The scenery of Epping Forest was that of a quiet English pastoral character, and such it should remain. I would not, therefore, attempt to alter the surface of the ground. Draining, however, is a very important matter, and this should be sedulously attended to. At present it is impossible in winter, or even after rain in summer, to walk any distance without encountering bogs or wet places, and one of the first efforts of active labour should be to lay these wet places in the forest dry. If bogs must be preserved, for the sake of the aquatic or semi-aquatic plants which grow in and around them, they should be few in number, and in positions where they will not interfere with the enjoyment of the public.

Roads, Rides, Avenues, and Paths.

It may seem scarcely necessary to dwell on the importance of wide, dry, solid roads through a track of land, which, from north to south, is some 12 miles in extent. There are, however, some of the most beautiful parts of the forest situated at some distance from the present carriage roads, which it might be well to open to view. Rides (for saddle-horses only) would also be a most useful and enjoyable feature in any scheme, and could be worked out at no great expense. Whether of grass or sand, they should be sheltered and shady, and these conditions may be secured by the formation of vistas and avenues. I should recommend the introduction of avenues—sparingly, it is true, and they must have a reason for their existence, a purpose to serve, or there must be objects to be reached through them. Avenues afford a fine opportunity for the introduction of rides, but they should not be in too prominent a position, and should be upheld or supported by being placed in immediate contact with large breadths of forest woodland. Walks or paths innumerable already exist, many of them, probably, rights of way; others, which are but little used, seem to be merely short-cuts from point to point. These are, for the most part, in a state which admits of great improvement, by clearing, mending, and draining. Not that I would advocate the clipping and levelling met with in garden hedges and walks, but there should be no hindrance to the free passage of pedestrians; this accomplished, the more intricate, the wilder, and more varied the surroundings, the greater the enjoyment. Although recommending the opening of parts of the forest by roads, &c., a jealous watchfulness should be exercised over their multiplication; there should be good and strong reasons for every new road, ride, or path, as a needless or useless repetition of these would deform or impair the grandeur of the forest.

Turf.

Green, soft, springy turf is so agreeable to the eye, and so pleasant to the feet in summer, that it is well worth the utmost consideration. To have it here in a perfect state throughout the whole year need not be a tedious or costly matter, for it might be had beautiful to the eye in a single summer by sowing properply selected seeds in the spring, and it would become closer and more solid year by year. There are already many such green spots, which require little more than drainage to make them enjoyable, and they should be increased in number in suitable positions as opportunities occur.

Water.

The life and importance which water gives to forest scenery is so great that it ought to abound everywhere. There are springs, and ponds, and brooks in the forest, and I should suppose that by the aid of reservoirs much might be accomplished in this way without any extravagant outlay. It would be a great achievement if only some of the valleys and hollows could be filled with water. A river or running stream, with cascades, fountains, and waterfalls, may be impracticable; but surely lakes, or other natural devices as regards the management of water, might be wrought out satisfactorily, and such, with water-plants and water-fowl, are always a telling feature in rural scenery.

Whatever may be the forms of the lakes, they should be natural, irregular in outline, and of considerable size, however few in number, to be in accord with the character and extent of the ground with which they are associated.

Clearing and Planting.

I am of opinion that, while we do not want to change the forest into a landscape garden, or a garden of any kind, we yet want the experience and skill of the landscape gardener to clear away the superabundant rubbish now painfully prominent, while scrupulously preserving every visible or hidden rudiment or germ of beauty in which his practised eye and mind may discern a capacity of extension and development. I would, in the first instance, preserve every tree or shrub that is worth preserving, merely clearing away what is unmeaning, unsightly, or ill-placed, reducing confusion to order without destroying variety or intricacy, in doing which there is room for the exercise of the most correct taste and the most mature judgment. This much accomplished, the horticulturist should step in, to make the most of the existing trees, and to add such, native and exotic, as may seem desirable. Many of the former are present but poorly developed, and others have been injured, beyond recovery, by reckless lopping. With regard to the pollard trees—the result of lopping—they are, I think, for the most part, formal and uninteresting. But judicious pruning and thinning would, in a few years, add many feet to the stature of the unpruned trees, and do much to convert the present vast tract of monotonous wood and waste into veritable and beautiful forest.

We now come to a very important part of the work in hand—planting—with regard to which there is likely to be a great diversity of opinion. The ground I take up is, that trees—wood and lawn—single trees, groups of trees, groves, avenues, thickets, interspersed and relieved with open glades and wide stretches of pasture, are to be grand distinguishing features of Epping Forest in the future. Epping Forest differs from most English forests, inasmuch as its soil is generally highly favourable to the growth of trees. There is, in fact, every description of soil—sand, gravel, peat, loam (light, medium, and heavy), and clay—so that the requirements of almost every tree and shrub may be met and satisfied. A certain amount of planting is doubtless necessary, and it is highly important here that the right trees should be put in the right places, and in the right soil. They should not be planted in formal clumps or groups, but thrown together, in suitable positions, in large irregular masses, the outlines, so to speak, being broken into bays and promontories.

What Shall we Plant?

But, if we clear away, we must in some instances replace—the forest must be clothed—and with what shall we replace? The answer to this question is—Any or all the British forest trees, and such exotic trees only as are known to endure the rigours of an English climate. Another very important point to work out in the process of planting is variety. The colours of the trees now existing in the forest are, for the most part, of a uniform green; and, however correct it may be to use such as the groundwork of our operations, it is desirable to secure every shade of colour, from grass-green and silvery-grey to inky black, as well as the varied tints of the unfolding leaves in spring and the glow of the autumnal foliage in autumn. By this means the forest would present an entirely different aspect at each season of the year—spring, summer, autumn, and winter; and no mean end would be accomplished if, in planting, the pleasing natural characteristics of each section could be brought out in all the fulness of their individuality and beauty. It is desirable that we should have here more variety in the young leaves in spring; greater exuberance of foliage, securing coolness and shade in summer; a richer glow of red, yellow, and russet-brown in autumn; and the shelter and furnished appearance of evergreens in winter. The introduction of trees remarkable for the colours of their leaves in spring and autumn brings out a new feature, which may be said to stand midway between the permanent and incidental beauties of forest scenery. It differs from the permanent, inasmuch as the colours are striking for a short period only, and the leaves fall in winter; it differs from the incidental, because, unlike clouds, storms, mists, sunshine, and shadow, it recurs

regularly at fixed intervals. Now, I would not ignore the fact that, in introducing trees with strongly-coloured leaves—as is also the case with flowering trees—there is a danger of producing, by strong contrast, what landscape gardeners call "spottiness." But this is not a necessary consequence of their use; variety is not incompatible with harmony; and their union may be secured under the direction of any one possessing taste and judgment. It may be further remarked that, in attending to the colours of the leaves at various seasons, we by no means exhaust the resources at our disposal to break the monotony which undoubtedly exists at present in many parts of Epping Forest. With the exception of a few Hollies, most of the trees and shrubs there are what we call "deciduous," that is, they lose their leaves on the approach of winter. And even the varying forms of leaves afford still further opportunities, if it be thought desirable—as it may in some few instances—to work out any nicely elaborated pictures of tree scenery. It is unfortunate that nearly all the trees in Epping Forest have small leaves, with outlines but slightly diversified.

Under the head of planting it would seem well to consider that the pic-nic or gipsy party is a favourite outing with the English people, and ample provision should be made for the customary spread in a forest devoted to their recreation and enjoyment. This I would propose to accomplish by planting a series of groves, in suitable spots, keeping the stems of the trees clear of branches 8 feet or more from the ground, thus combining opportunity for freedom of movement with perfect shade. Beech groves and Oak groves might be formed from trees already existing, and there might be added Chestnut groves, Birch groves, Lime groves, Cypress groves, Cedar groves, Wellingtonia groves, and others, almost without limit. These trees should be planted in masses, and in such manner that they also vary and improve the character of the forest scenery.

TREES AND SHRUBS.

I shall now offer a brief list of trees and shrubs which stand foremost, in my opinion, as likely to contribute most to the improvement of the existing landscape:—

Deciduous Trees Remarkable for the Beauty of their Unfolding Leaves in Spring.—Purple Beech, foliage purple; Purple Birch, foliage purple; Purple Horse Chestnut, foliage purple; Corstorphine Plane, leaves yellow; Colchian Maple, leaves red; Larch, leaves light fresh green; Pyrus Aria, White Beam (in varieties), leaves white.

Deciduous Trees for Summer Leaves.—Birch, Plane, Poplars of sorts, Lime, Horse Chestnut, Spanish Chestnut, Gleditschia triacanthos, Mountain Ash, Turkey Oak, Magnolia of sorts, deciduous Cypress, Acacia, Ailantus glandulosus, Sycamore.

Deciduous Trees Remarkable for the Beauty of the Decaying Leaves in Autumn.—Scarlet Oak, Liquidambar, leaves red, purple, and yellow; Norway Maple, leaves yellow; Scarlet Maple, leaves red; Tulip-tree, leaves yellow; Parrotta persica, finely-coloured leaves; Stag's-horn Sumach, leaves red and yellow; Black Walnut, leaves yellow; Kolreuteria paniculata, leaves yellow; Gingko Tree (Salisburia), leaves yellow.

Evergreen Trees, for Shelter and Effect in Winter.—Araucaria imbricata, Deodar, on hills or slopes; Mount Atlas Cedar, Cedar of Lebanon, Douglas Fir, Spruce Fir, Austrian Pine, Corsican Pine, Pyrenean Pine, Scotch Pine, Lawson Cypress, Lambert Cypress, Wellingtonia gigantea, Arbutus, Evergreen Oak, Holly, Black Spruce, Piceas, various; Hemlock Spruce, Pinus insignis, less hardy than others, but desirable for its colour—should be planted on hills and slopes; Pinus excelsa, Sequoia sempervirens, Cryptomeria japonica, Thujopsis borealis, Thuja Lobbii, Chinese Juniper, Red Cedar.

Flowering Trees.—Crab and its varieties, Cherry of various sorts, Hawthorn and its varieties, double Sloe, flowers purple; Almond, Plum of various kinds.

It may be said that this is a rather limited list of trees, and I admit that it is so. But then it must be remembered that we are looking at the question from the forest scenery rather than from the scientific or gardenesque point of view, and for the realisation of our object we prefer to plant a few really effective trees on a large scale to the introduction of a multiplicity of non-effective species and varieties.

SHRUBS AND PLANTS.

Of shrubs of moderate and lowly growth, the Rhododendron (R. ponticum) should specially abound. There are many spots in which it would thrive as well as in its native habitats, and the richness of its foliage in winter, and the gorgeousness of its blossoms in May and June, commend it to every observer. The Azalea pontica is also a fine-flowering shrub; Garrya elliptica, too, which is evergreen, producing catkins like the Hazel in winter; the Leycesteria formosa, and the Mahonia Aquifolium are all desirable shrubs. The Hazel is also desirable on account of the carkins and nuts it produces, and the Scarlet and Golden Willows, and the red-barked Dog-wood for the colours of their bark in winter. The Furze should be sown largely in dry, stony places; the splendour of its golden blossoms in early summer is well known, and its rich strong scent is generally agreeable. The Broom is also a beautiful plant. However desirable it may be to preserve the species of British plants growing at present in the forest, it is probable that some will be unintentionally diminished in number or, perhaps, destroyed by the work of draining and other improvements. It might, however, be possible to have stations at which the rarer kinds—as the Sundews (Droseras)—could be preserved, and the natural flora might be largely increased by sowing seeds of others broadcast over large tracts of prepared ground in spring. Primroses and Bluebells exist already in great abundance, and there are perhaps no prettier wild flowers than these in spring; but there are many others of rare interest which are absent, or are met with only occasionally. Such might be introduced, or increased in number, at a small cost, and, under this head, odoriferous flowers should be largely cultivated. Thus the unavoidable diminution on the one hand might be compensated for by an increase on the other, and no wild flowers, however insignificant in appearance, should be heedlessly destroyed. I would here put in a special word in favour of the Bramble (Rubus fruticosus); this should be encouraged on all sides, for this plant is beautiful when in flower, and attractive when in fruit. The Pampas-grass (Gynerium argenteum) should prove a suitable and effective plant, and wild Roses, wild Honeysuckles, wild Clematis, the Hop, Ivy, Virginian Creeper, St. John's Wort, Lily of the Valley, Periwinkles, and Violets should specially abound. Heath and Fern are already plentiful, and both are valuable—the former for its beautiful flowers, the latter for its leaves and autumn tint.

ANIMALS AND BIRDS.

We have hitherto been dealing with inanimate Nature, the still scene of pastoral beauty. But we must not stop here. We want the variety and excitement of life and motion. In addition to the cattle, which will presumably continue to pasture here, deer and other harmless *feræ naturæ* should abound in a forest of this size, and should be increased, or even imported, while noxious reptiles, like the adder, should, if possible, be extirpated. Birds should be encouraged, by strictly preserving those that are indigenous to the forest, and bringing others from various parts of England, keeping up a stock of the plants on which they feed, by planting or sowing fresh seeds in spring. It will hardly be questioned that a herd of deer crossing one's path in a forest ramble is a pleasant *rencontre*, while the flitting and song of birds is a constant source of interest and delight.

RECREATION GROUNDS.

It may seem an anomaly to speak of enclosed recreation grounds in an unenclosed forest, but I presume that special recreation grounds must exist, and, if so, that they must be enclosed for the convenience and comfort of the public. There should be open spaces for cricket and other English games. There should also be water of uniform and safe depth here for bathing, boating, fishing, and skating. In these grounds there would be a fair opportunity, should it be deemed expedient, for more elaborate ornamentation, by the introduction of various trees and shrubs which might not be in correct taste in the open forest as we have foreshadowed it, or which could not safely be trusted there. But I would not go further in this direction than the planting of trees and shrubs; I do not want a flower garden even here; the ornamentation, if more elaborate, should be but slightly so.

LODGES.

It would be too much to expect that every entrance to the forest should be adorned with a lodge, or lodges; but some, at least, of the entrances would seem to be proper and convenient places for them. A forest of between 5000 and 6000 acres will require a staff of men to perform the multifarious duties attendant on its preservation, and to maintain order. For comfort and economy, their dwellings should be near their work, and this would, in many cases, require them to be in the forest. These lodges and their surroundings should, I think, vary in design, that the one may not be mistaken for the other, but the whole might be of one style of architecture, and I should give the preference to the Gothic. In their construction, ostentation or parade should be scrupulously avoided.

In conclusion, permit me to remark that, while dwelling on this subject, I have been deeply impressed with the fact that never before in the history of England has such an opportunity been afforded of making a grand national recreation ground. Ostensibly for the use of the inhabitants of London, it may become in the future, and that without any vast expenditure of money, "a thing of beauty," which shall be a joy to every Englishman, and one of the bright spots of our island which shall be sought out by visitors from the most distant shores.

The meeting was subsequently addressed by Sir Fowell Buxton, Mr. Alfred Russell Wallace, Dr. Murie, Mr. English, and the Chairman, who stated that while every point touched upon in Mr. Paul's paper would be carefully considered by the Epping Forest Committee, it was the intention of that committee, as far as possible, to keep the forest as it is.

The Weather.

LONDON: *Barometer.*—During the week ending Saturday, January 24, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.01 inches at the beginning of the week to 30 inches by the morning of the 18th; increased to 30.65 inches by the morning of the 21st, decreased to 30.33 inches by the afternoon of the 22d, increased to 30.50 inches by the evening of the 23d, and decreased to 30.33 inches by the end of the week. The mean reading for the week at sea level was 30.43 inches, being 0.10 inch above that of the preceding week, and 0.51 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 37¼° on the 22d to 27¾° on the 20th; the mean value for the week was 34°. The lowest temperatures of the air observed by night varied from 17¼° on the 20th, and 18° on the 21st, to 30½° on the 23d; the mean value for the week was 23½°. The mean daily range of temperature in the week was 10½°; the greatest range in the day was 14¾°, on the 21st, and the least 5°, on the 24th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Jan. 18, 30°.6, — 6°.3; 19th, 26°.4, — 10°.6; 20th, 22°.8,—14°.4; 21st, 26°.2,—11°.1; 22d, 30°.8, — 6°.6; 23d, 34°,— 3°.5; 24th, 32°.5, — 5°.2. The mean temperature of the air for the week was 29°, being 8°.2 below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 96½° on the 19th, 58° on the 18th, and 57° on the 22d; on the other days of the week the readings did not rise above 40°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 15° on the 19th and 20th, and 16° on the 21st. The mean of the seven lowest readings was 21°.

Wind.—The direction of the wind was variable, and its strength almost calm, except on the 19th and 22d, when it was moderately strong.

The weather during the week was generally dull, and the sky cloudy, except on the 19th, when it was very fine and bright. The air was very dry and cold, especially on the 19th, 20th, and 21st. Fog and hoar-frost were prevalent.

A few flakes of *snow* fell at about 1 P.M. on the 22d.

ENGLAND: *Temperature.*—During the week ending Saturday, January 24, the highest temperatures of the air observed by day were above 42° at Plymouth, Truro, Leeds, and Sunderland, and below 37½° at Blackheath (London), Bristol, and Wolverhampton; the mean value from all stations was 40¼°. The lowest temperatures of the air observed by night were below 18° at Blackheath, Bristol, Cambridge, Wolverhampton, and Nottingham, and above 28° at Plymouth and Sunderland; the general mean from all places was 21¼°. The extreme range of temperature in the week was above 23° at both Cambridge and Nottingham, and below 15° at both Plymouth and Sunderland; the mean range of temperature from all stations was 19°.

The mean of the seven high day temperatures was above 38° at Truro, Plymouth, and Sunderland, and below 35° at Blackheath, Bristol, and Wolverhampton; the mean value from all places was 36¼°. The mean of the seven low night temperatures was below 26° at Blackheath, Brighton, Bristol, Cambridge, Wolverhampton, and Nottingham, and above 30° at Truro, Plymouth, and Sunderland; the mean from all stations was 27°. The mean daily range of temperature in the week was above 11° at Bristol, Cambridge, and Nottingham, and below 8° at Plymouth, Norwich, Liverpool, Leeds, and Sunderland; the mean daily range from all places was 9¼°.

The mean temperature of the air for the week from all stations was 31½°, being 1½° higher than the value for the corresponding week in 1879. The mean temperature was above 34° at Truro, Plymouth, and Sunderland, and below 30° at Blackheath, Bristol, Wolverhampton, and Nottingham.

Rain or *Snow.*—A little rain or snow fell at some places. The amounts varied from 0.09 inch at Plymouth and Sunderland to 0.01 inch at Liverpool. At Truro, Brighton, Blackheath, Bristol, Norwich, Wolverhampton, and Sheffield no rain or snow was recorded; the average fall over the country was 0.03 inch.

The weather during the week was dull, very cold, and dry, though fine at times.

A little *snow* fell at some places. On the 20th and 21st the minimum temperatures were generally very low.

SCOTLAND: *Temperature.* — During the week ending Saturday, January 24, the highest temperatures of the air observed by day varied from 44° at Paisley, to 39° at Edinburgh; the mean value from all stations was 41°. The lowest temperatures of the air observed by night varied from 19° at Perth to 26½° at Glasgow; the mean from all places was 23½°. The mean range of temperature in the week from all places was 17½°.

The mean temperature of the air for the week from all stations was 32¼°, being 3¾° higher than the value for the corresponding week in 1879. The mean temperature was the highest at Aberdeen, 35°, and the lowest at Perth, 30°.

Rain.—The amount of rain or melted snow measured at Aberdeen was 0.12 inch, at Glasgow was 0.03 inch, and at Paisley was 0.02 inch. At Edinburgh, Dundee, Greenock, Leith, and Perth no rain or snow was recorded; the average fall over the country was 0.02 inch.

DUBLIN. — The highest temperature of the air was 41¾°, the lowest 13½°, the extreme range 28¼°, the mean 30°; and the amount of rain or melted snow was 0.06 inch.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JANUARY 28, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
Jan.	In.	In.	°	°	°	°	°	°	°		In.
22	30.18	+0.43	37.3	23.5	13.8	30.8	— 6.6	26.3	82	WSW: N.N.E.	0.00
23	30.30	+0.55	37.0	30.4	6.6	34.0	— 3.5	30.7	87	E.N.E.: N.E.	0.00
24	30.20	+0.45	35.0	30.0	5.0	32.5	— 5.2	26.6	78	N.E.: E.	0.00
25	30.04	+0.29	34.5	23.3	11.2	28.8	— 9.0	26.1	91	E.	0.00
26	30.15	+0.39	33.7	17.5	16.2	25.8	—12.1	19.7	76	E.N.E.: E.S.E.	0.00
27	30.17	+0.41	33.9	17.9	16.0	25.6	—12.5	21.9	86	N.E.: E.S.E.	0.00
28	30.10	+0.34	28.0	18.4	9.6	22.8	—15.4	21.2	93	E.S.E.: WNW	0.00
Mean	30.16	+0.41	34.2	23.0	11.2	28.6	— 9.2	24.6	85	E.: N.E.	sum 0.00

Jan. 22.—Fine at times, but generally dull and cloudy. Few flakes of snow at 0 30 P.M.; a little sleet occasionally in the evening.
— 23.—A dull, overcast day. A cold thaw.
— 24.—A very dull cloudy day. Cold and dry.
— 25.—A very fine day. Bright. Very cold and cloudless at night. The minimum temperature, 23°.3, occurred at midnight.
— 26.—Brilliantly fine and clear. Bitterly cold. Hoar frost.
— 27.—Dull, cold, and foggy in morning. Much hoar frost. Fine and clear till evening. Fog at night. Bitterly cold.
— 28.—A dull, gloomy, foggy day. Little sunshine in morning. Very dark and dense fog in evening. Painfully cold all day. The coldest day since December 24, 1878, except Tuesday, January 20, 1880, when the mean temperature was the same as that of this day, viz., 22°.8.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

WATERLOO PLUM.—We have lately had some enquiries for this variety, which we cannot find in Dr. Hogg's *Manual*, or any Trade Lists. Is it a local name for an old kind? *Geo. Bunyard, Nursery, Maidstone.*

Answers to Correspondents.

COMPASS PLANT: *T. Williams.* The Compass-plant, Silphium laciniatum, is a hardy (North American) herbaceous plant. Any ordinary garden soil will suit it.

FUNGUS ON PALM: *T. J. D., Sydenham.* The name of the fungus infesting your Palm is Graphiola phœnicis. We are unable to suggest a cure.

GRASS: *Poa.* Poa annua is the name of the commonest Grass grown, which you can easily identify by looking at the base of the leaf, which is always crumpled.

HOLLY BRANCH: *J. H.* Please send another specimen.

IMPERIAL FERTILISER: *W. W. C.* In all cases of its use that we have any knowledge of, the result has been satisfactory.

IVY: *J. W.* Natural grafting is such a common occurrence in the Ivy that an illustration of any particular instance does not appear necessary. However, if you could send us a photograph of the specimen shown you, we will consider the matter on its merits.

NAMES OF PLANTS: *F. Silvester.* Lælia anceps.—*J. H. B.* Oncidium Cavendishianum.—*Inquirer, Haydock.* Your Orchid arrived in too bad a state for identification. Send another specimen.—*A. W., Esher.* The flower is an Echites, but we cannot name the species without better material.—*W. A. B.* Both are the common Euonymus japonicus.—*W. K.* Six specimens at one time is our limit—as we have to repeat week after week. You send us twelve, as though we had nothing else to do! 1, Acalypha limbata; 2, Philodendron daguense; 3, Echites? 4, not found; 5, Adiantum setulosum; 6, Lomaria L'Herminieri. The others next week.—*P. E.* Zygophyllum simplex.—*K.* Chrysanthemum segetum.—*J. P.* Daphne pontica.—*D. C. P.* Eucalyptus coccifera, certainly.

PEACH TREES CASTING THEIR BLOSSOM-BUDS: *Foreman.* The most common cause is an insufficient supply of water to the inside borders during the time the trees are at rest. It also frequently occurs where, owing to want of light and warmth through the preceding autumn, the wood has been imperfectly ripened. In this particular case the pale green colour of the underside of the young wood leads to the inference that it is unripe. The past season having been unprecedentedly cold and sunless, and the winter unusually dry, it is possible that the trees in question may have suffered from the two causes combined. Examine your inside and outside borders, and if you can satisfy yourself that they have not been dry since the leaves fell, rest assured that last year's wood is what it appears to be—badly ripened. The buds left on the trees will open, and most likely set well, if carefully impregnated. Do you thin out all unnecessary wood as soon as the crop is gathered? Never was this advice, so repeatedly given in the Calendar, of more importance than during the two past ungenial years. *W. C.*

ROSE-TRADER: *W., Brentwood.* So far as we know, the Rose-grower you enquire about is still in existence; but in all probability "frozen out" of his nursery. Write to him again, enclosing a stamped envelope or post-card for a reply.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

CATALOGUES RECEIVED:—W. Thompson (Tavern Street, Ipswich), Supplement to Descriptive Catalogue of Seeds.—Messrs. Cranston & Co. (Broad Street, Hereford), Spring Catalogue of Vegetable and Flower Seeds.—Messrs. Hooper & Co. (Centre Avenue, Covent Garden, London, W.C.), Illustrated Descriptive Spring Catalogue.—Messrs. Dick Radclyffe & Co. (129, High Holborn, W.C.), Catalogue of Kitchen Garden and Flower Seeds.—V. Lemoine (Rue de l'Etang, Nancy), List of New Plants.—Mr. W. Bull (King's Road, Chelsea, London, S.W.), Catalogue of Seeds, Lilies, Gladioli, &c.—George Farnsworth (Matlock Nurseries, Derby), Catalogue of Forest and Ornamental Trees and Shrubs.—Messrs. W. H. Quick & Co. (Barnstaple), Select List of Farm, Garden, and Flower Seeds.—Messrs. E. G. Henderson & Son (Pine-apple Nursery, Maida Vale, London, W.), Illustrated Descriptive Catalogue of Flower, Vegetable, and Agricultural Seeds.—R. H. Vertegans (134, Market Hall, Birmingham), Seed List for 1880.—Messrs. W. and W. T. Samson & Co. (8, Portland Street, Kilmarnock), Catalogue of Seeds and Plants.—Messrs. S. Dixon & Co. (34, Moorgate Street, London, E.C.), Catalogue of Vegetable and Flower Seeds.—Thos. Warner (69, Market Place, Leicester), Catalogue of Kitchen Garden, Agricultural, and Flower Seeds.—John Cattell (Westerham, Kent), Catalogue of Kitchen Garden, Floricultural, and Agricultural Seeds.

COMMUNICATIONS RECEIVED.—J. C. M.—Veritas.—C. R.—T. H—D. C. P.—W. H. D.—A. F.—R. F.—C. M. Hovey.—J. C. M.—J. S.—J. C.—A. D.—F. W. B.—P. N. F.—E. Ayling.—W. H. D.—R. G.—W. H.—Visitor.—T. C.—W. S.—T. S.—J. H. K.—J. P.—R. Bullen.—A. G. B.—J. G.—T. B.—G. T. M.—E. W. B.—S. P. O.—A. G. B.—J. M.

Markets.

COVENT GARDEN, January 29.

We are quite at a standstill owing to the sharp weather, and fancy prices are again being made of all kinds of vegetables. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Lemons, per 100	3 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– ..	Pears, per dozen	3 6– 6 0
Grapes, per lb.	1 6– 6 0	Pine-apples, per lb.	2 0– 3 0
— Muscat, per lb.	3 6– 8 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0– 7 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz.	1 6– ..
— English, p. 100	15 0– ..	Mint, green, bunch	2 0– ..
— French, per bun.	7 0– ..	Onions, per bushel	8 0– ..
Beet, per doz.	1 0– 2 0	— Spring, per bun.	0 6– ..
Brussels Sprouts, lb.	0 6– ..	Parsley, per bunch	0 6– ..
Cabbages, per doz.	1 0– 2 0	Peas, per lb.	1 0– ..
Carrots, per bunch	0 8– ..	Potatos (new), per lb.	0 3– 0 9
— French, per lb.	0 6– ..	Rhubarb (Leeds), per bundle	0 9– ..
Cauliflowers, per doz.	2 0– 5 0	Seakale, per punnet	3 0– ..
Celery, per bundle	1 6– 4 0	Shallots, per lb.	0 6– ..
Chilis, per 100	3 0– ..	Spinach, per bushel	5 0–15 0
Cucumbers, each	1 6– 5 0	Tomatos, per dozen	3 0– ..
Endive, per score	4 6– ..	Turnips, new, bunch	0 6– ..
Garlic, per lb.	0 6– ..		
Herbs, per bunch	0 2– 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 150*s.*; and Champions, 130*s.* to 150*s.* per ton. German produce is making from 4*s.* to 7*s.* per bag. The supply is stopped now in consequence of the frost.

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	12 0–24 0	Ficus elastica, each	2 6–15 0
Azaleas, per dozen	30 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–18 0	Fuchsias, per dozen	12 0–18 0
Bouvardias, per doz.	12 0–24 0	Hyacinths, per doz.	9 0–18 0
Cinerarias, per doz.	12 0–18 0	Myrtles, per doz.	6 0–12 0
Cyclamen, per dozen	12 0–30 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	9 0–18 0
Dracæna terminalis	30 0–60 0	Poinsettia, per dozen	12 0–24 0
— viridis, per doz.	18 0–24 0	Primula, single, per dozen	6 0–12 0
Erica gracilis, per dozen	9 0–18 0	Solanum, per dozen	9 0–24 0
— hyemalis, p. doz.	12 0–30 0	Tulips, 12 pots	8 0–12 0
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 0	Lily of Val., 12 spr.	1 0– 4 0
Arum Lilies, per dozen	9 0–18 0	Mignonette, 12 bun.	6 0– 9 0
Azalea, 12 sprays	1 0– 3 0	Narcissus, Paper-white, 12 spikes	2 6– 6 0
Bouvardias, per bun.	1 0– 4 0	Pelargoniums, 12 spr.	1 6– 3 0
Camellias, per doz.	3 0–12 0	— zonal, 12 sprays	0 9– 2 0
Carnations, per dozen	1 0– 3 0	Poinsettia, 12 blms.	3 0– 9 0
Chrysanthem., large flowers, per doz.	3 0– 9 0	Primula, double, per bunch	1 6– 3 0
Cyclamen, 12 blms.	0 4– 1 0	— single, per bunch	0 9– 1 6
Epiphyllum, 12 blms.	0 9– 2 0	Roses (indoor), doz.	4 0–12 0
Eucharis, per doz.	6 0–12 0	— Roses, Fr., doz.	2 6– 6 0
Euphorbia, 12 sprays	3 0– 6 0	Spiræa, 12 sprays	3 0– 6 0
Gardenias, 12 blms.	12 0–24 0	Tropæolum, 12 bun.	1 0– 3 0
Heliotropes, 12 sp.	0 6– 1 0	Tuberoses, per dozen	4 0– 6 0
Hyacinths, 12 spikes	6 0–12 0	Tulips, 12 blooms	1 0– 3 0
— small	3 0– 6 0	Violets, Fr., per bun.	5 0– 7 6
— Roman, 12 spikes	2 0– 4 0	White Lilac, Fr., per bundle	8 0–12 0

SEEDS.

LONDON: *Jan.* 28.—A very quiet feeling continues to characterise the trade for farm seeds. As regards red Clover choice samples keep firm, but secondary qualities are easier. Rather more attention has lately been given to white Clover. In neither Alsike nor Trefoil is there just now much doing. Italian Rye-grass is steady, Mustard and Rape seed are without quotable variation. For Tares there is a brisk demand, and the tendency of prices is adverse to the buyer. Owing to some heavy arrivals, the Canary market is very flat. For blue Peas the trade shows signs of improvement. Haricots and Lentils are in slow request. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade was dull at Mark Lane on Monday, but the severity of the weather helped to keep up prices. As regards Wheat the demand was especially quiet, and holders were rather more anxious to sell. No reduction was quoted; but both English and foreign Wheat was cheaper to sell. Barley was slow of sale, but prices were steadier in respect to grinding sorts. Malt was quiet and unaltered. Oats were in better request, and prices were 3*d.* to 6*d.* per quarter higher on the week. Beans and Peas moved off quietly on former terms. Flour was in good request, and quotations ruled in buyers' favour.—On Wednesday trade was particularly quiet, and for Wheat the tendency was distinctly unfavourable to the seller. Barley was slow of sale, but prices were upheld. Malt was quiet and unaltered. Oats were steady, sound corn moving off on former terms. Maize was dull, as also were Beans, Peas, and flour.—Average prices of corn for the week ending Jan. 24:—Wheat, 45*s.* 7*d.*; Barley, 37*s.* 3*d.*; Oats, 20*s.* 10*d.* For the corresponding period last year:—Wheat, 39*s.* 1*d.*; Barley 37*s.* 5*d.*; Oats, 20*s.* 1*d.*

CATTLE.

At the Metropolitan Market on Monday trade in beasts was very slow, and on the average prices were lower, although choicest qualities were not much cheaper. There were not quite so many sheep as at last market, yet more than sufficient for the demand. A large proportion are still of inferior quality; choicest met with purchasers, but at low rates, and many lots of inferior descriptions remained unsold. Good calves were in demand at rather higher rates. Quotations:—Beasts, 4*s.* 2*d.* to 4*s.* 10*d.*, and 5*s.* 4*d.* to 6*s.*; calves, 5*s.* to 6*s.* 4*d.*; sheep, 4*s.* 8*d.* to 5*s.* 4*d.*, and 5*s.* 8*d.* to 6*s.* 6*d.*; pigs, 3*s.* 8*d.* to 4*s.* 6*d.*—Trade on Thursday was very dull. Supplies were not large, but amply sufficient for the demand. Both beasts and sheep met a dragging sale, and could only be disposed of on lower terms. Calves also were dull and weak.

HAY.

At the Whitechapel Market on Tuesday trade was quiet, and prices without material change. Prime Clover, 100*s.* to 128*s.*; inferior, 70*s.* to 95*s.*; prime meadow hay, 80*s.* to 95*s.*; inferior, 30*s.* to 70*s.*; and straw, 31*s.* to 37*s.* per load.—At Thursday's market a large supply of fodder was on sale. The trade remained very dull, and prices were as follows:—Prime Clover, 100*s.* to 126*s.*; inferior, 70*s.* to 95*s.*; prime meadow hay, 80*s.* to 95*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 37*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 92*s.* to 100*s.*; inferior, 40*s.* to 72*s.*; superior Clover, 110*s.* to 126*s.*; inferior, 80*s.* to 95*s.*; and straw, 34*s.* to 40*s.* per load of 36 trusses.

POTATOS.

The Borough and Spitalfields Markets reports state that the demand continues fair, and prices for all sound descriptions are firm. Scotch Regents, 140*s.* to 160*s.*; do. Champions, 140*s.* to 150*s.*; Lincoln Regents, 140*s.* to 150*s.*; Victorias, 160*s.* to 190*s.* per ton; German reds, 6*s.* to 7*s.* 6*d.*; Belgian kidneys, 6*s.* to 6*s.* 8*d.*; French whites, 4*s.* 9*d.* to 5*s.* per bag.—The imports into London last week comprised 26,734 bags from Hamburg, 800 from Bremen, 205 Danzig, 618 Ghent, and 2260 barrels and 7272 bushels from Cornwallis, Nova Scotia.

COALS.

The following are the prices current at market during the week:—Bebside West Hartley, 14*s.* 6*d.*; Walls End—Hetton, 16*s.*; Hetton Lyons, 15*s.*; Hawthorns, 15*s.* and 15*s.* 3*d.*; Lambton, 16*s.*; Original Hartlepool, 16*s.* 6*d.*; Wear, 15*s.*; Chilton Tees, 15*s.* 3*d.* and 15*s.* 6*d.*; South Hartlepool, 15*s.* 6*d.*; Tees, 15*s.* 6*d.*; South Hetton, 16*s.*; Tunstall, 15*s.*

The Manufacturers of this valuable Manure have thought it best, up to the present time, not to publish any Testimonials, knowing well that the greater number that have been published are, if not quite untrue, certainly greatly exaggerated. They think, however, the opinion of a gentleman with such a reputation and large experience as Mr. F. A. Barron, will be considered especially valuable :—

"Royal Horticultural Society's Gardens, Chiswick.

"Jan. 21, 1880.

"Gentlemen—I am using your Fertiliser, and think very highly of it.

"F. A. BARRON.

"Messrs. Clay & Levesley."

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¼ Cwt.	½ Cwt.	1 Cwt.
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Price 1s. 6d. each. To be had from Seedsmen, and from JOHN E. GAWITH, Sole Manufacturer, Lowther Street Tobacco Manufactory, Kendal.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
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THOMAS MILLINGTON AND CO.,
IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses :—

	Inches.	Inches.		
15-oz.,	6 × 4 to	8 × 6,	10s., 11s., 12s., 13s. 6d.	Per 100 ft. Box.
	9 × 7 to	12 × 9,	11s., 12s., 13s., 14s. 6d.	
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	Inches.	Inches.		
21-oz., Orchard House,	20 × 12,	20 × 13,	14s. 6d., 15s. 9d., 17s., 18s.	
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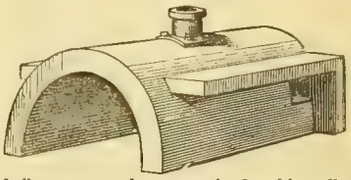

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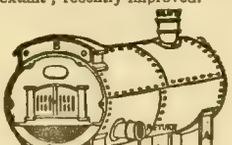

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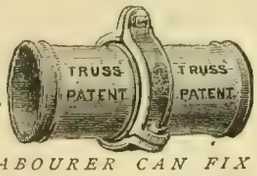

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STAR ANTHRACITE SMOKELESS STEAM COAL

is now being extensively used by many of the principal Growers, and is found to be preferable to any other kind of fuel in respect to cheapness and durability, and particularly on account of its being perfectly free from sulphur, and that it does not clinker the fire-bars.

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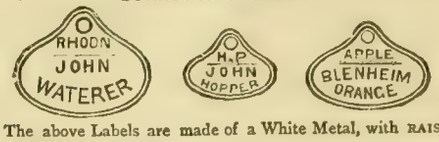

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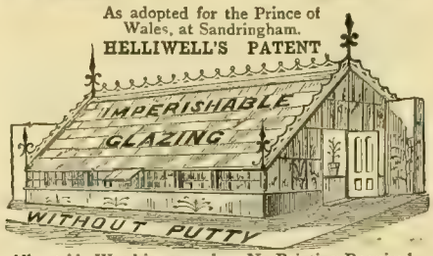

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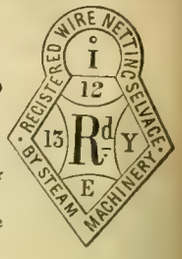
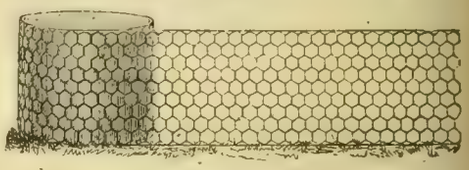
WITH **IMPROVED REGISTERED SELVAGE,** making the Netting stronger more rigid, and much more durable.





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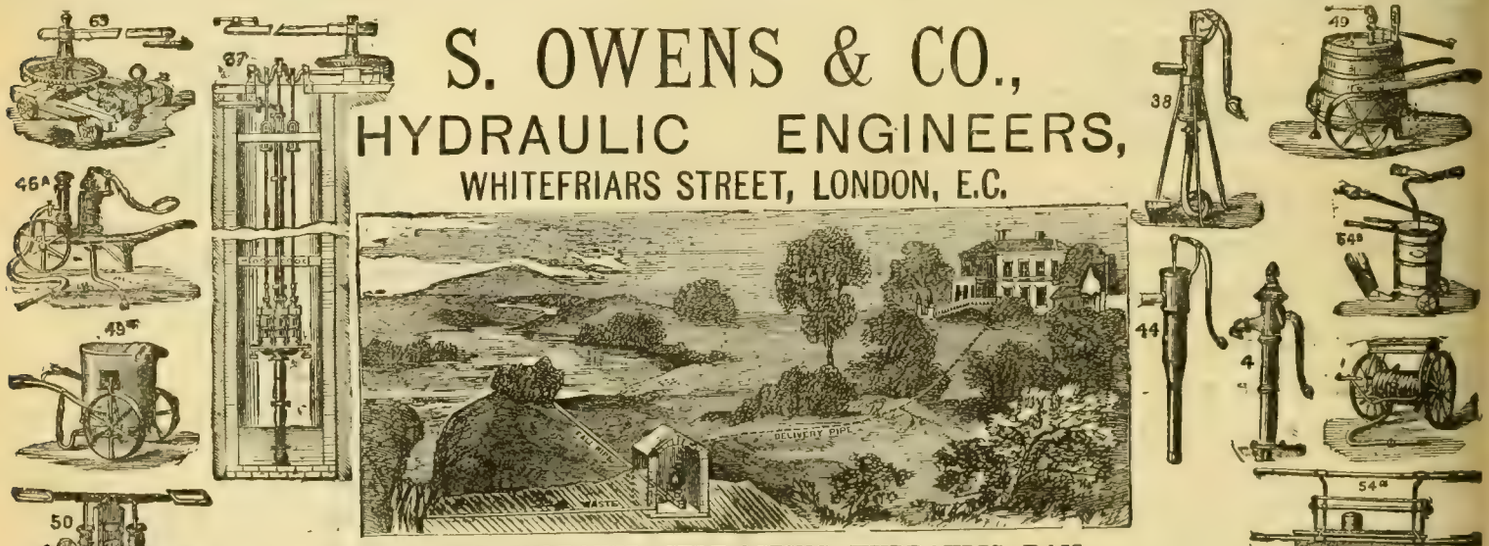

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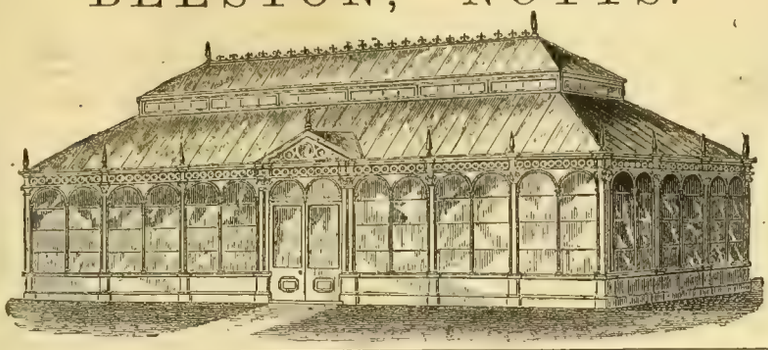

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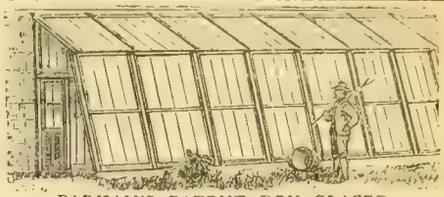

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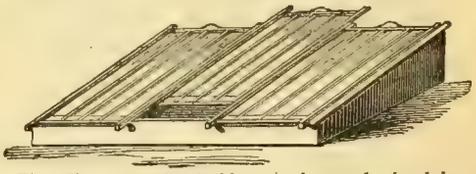

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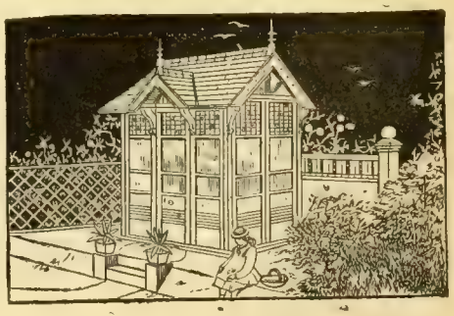

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WILLIAM J. VIAN, Secretary.

THE FLORIST and POMOLOGIST and SUBURBAN GARDENER for FEBRUARY will contain COLOURED PORTRAITS of the NEW RHODODENDRON PRINCE OF WALES, and of two NEW LACED ALPINE AURICULAS. The articles comprise :—

PLATE 507.—RHODODENDRON PRINCE OF WALES.
On Judging Show Pelargoniums, by the Rev. A. Matthews.
New Ivy-leaved Pelargonium, Mrs. Cannell (Illustrated).
The Colouring and Preserving of Grapes, by M. T.
Vines and Vine-culture: Chap. xviii.—The Varieties of Grapes, by Mr. A. F. Barron (Illustrated).
Weigela hortensis nivea, by Mr. H. Knight.
Poinsettia pulcherrima plenissima, by Mr. G. Westland.
Flowers—and Flowers, by Z.
Notes on Books, by the Editor.
Early Peas.
PLATE 508.—NEW LACED ALPINE AURICULAS.
Some Novelties of 1879, by the Editor.
Tigridia pavonia (Illustrated).
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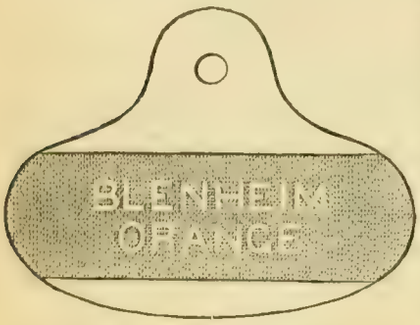

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SUMMER.

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414 Fastolf or Filby
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602 Pear-shaped Quince
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418a Keens' Seedling
432a Dr. Hogg
438a Elton
437a Eleanor
435a President
429a Sir Joseph Paxton
434a Vicomtesse H. de Thury
433a Seedling Eliza (Rivers)
436a Sir Charles Napier
430a British Queen

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THE

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Established 1841.

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Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral at 11 A.M., Scientific at 1 o'Clock—Annual General Meeting at 3 P.M.—on TUESDAY NEXT, February 10. Admission, 1s.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

The ANNUAL GENERAL MEETING of the ROYAL HORTICULTURAL SOCIETY will be held in the Council Room at South Kensington, on TUESDAY NEXT, February 10, to receive the Report of the Council and for the Election of Members of Council, Officers, Expenses Committeemen, and Auditors. Chair to be taken at 3 o'Clock P.M.

GRAND FLORAL FÊTE (22d year) June 16, 17 and 18. PRIZES nearly £600. Schedules on application to Mr. JOHN WILSON, Secretary. 13, New Street, York.

BARNARD CASTLE HORTICULTURAL SOCIETY'S SHOW, AUGUST 20.

SPECIAL PRIZES—£10 for Six Stove and Greenhouse Plants in Flower, and £8 10s. for Six Distinct Varieties of Fruits. Schedules on application.

Pansies—Pansies.

PANSY SEED, saved from the finest Named Collections in Europe, 2s. 6d. and 5s. per packet. HENRY HOOPER, Nurseryman, Widcombe Hill, Bath.

Seeds—Seeds—Seeds.

WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application. Highgate, London, N.; and Barnet, Herts.

Bedding Roses.

CRANSTON'S CRIMSON BEDDER.—No Garden should be without a bed of this brilliant crimson and perpetual flowering bedding Rose. (Hundreds of testimonials.) Strong ground plants 10s. per dozen, 75s. per 100. Other choice select Roses for bedding, 60s. to 75s. per 100. CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

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THE ABOVE SPECIAL LIST of a large number of varieties of FERNS and SELAGINELLAS, offered at very low prices, will be forwarded on application. Ferns being our Speciality, and having an immense stock, we are able to supply them at the most reasonable prices. W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

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BEECH, 5, 6, 7 and 8 feet, 25s. per 1000. SPRUCE, twice transplanted, 1½ to 2½ feet, 25s.; 2 to 3 feet, 35s. per 1000. Terms cash. G. FROST, Nurseries, Bampton, Devon.

Garden Seeds.

CHARLES TURNER'S Descriptive CATALOGUE of the above is now ready, containing selections of the best kinds only, as well as several interesting and valuable novelties. The Royal Nurseries, Slough.

FOR SALE, about half a ton of COVENT GARDEN PERFECTION POTATO (Hooper's, True). For price apply, J. G. WILKINSON, Marker Gardener and Seedsman, Skirbeck, near Boston, Lincolnshire.

SEED POTATOS.—DOWNIE & LAIRD, 17, Frederick Street, Edinburgh, can offer Regent and other Potatos. Prices per ton or cwt. on application.

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To the Trade.

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H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested. Seed Growing Establishment, Wisbech.

SEED POTATOS.—20,000 bushels of the choicest varieties of Seed Potatos to offer, amongst which are Sutton's Magnum Bonum (true), Fidler's Surprise Ashleaf Kidney, Snowflake, Early Hammersmith, Gloucestershire Kidney, Schoolmaster, Covent Garden Perfection, Paterson's Victorias, Scotch Champions, &c. Send for Catalogue and testimonials, post-free on application, to C. FIDLER, Grower and Importer, Friar Street, Reading.

MYATT'S KIDNEY POTATOS, also VICTORIAS, CHAMPIONS, &c.—pure and fine stocks. Price on application to AUSTIN AND McASLAN, 16, Buchanan Street, Glasgow.

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WANTED, ROSES, EUCHARIS, CUT FLOWERS, of all kinds, and MAIDENHAIR FERN. Cash by return of post. W. F. BOFF, 203, Upper Street, Islington, N.

Cut Flowers.

WANTED, ARUMS, BOUVARDIAS, EUCHARIS, CARNATIONS, VIOLETS, ROSES, STEPHANOTIS, and other choice Flowers. Consignments and letters to W. CALE, Floral Commission Agent, 13, James Street, Covent Garden, W.C.

WANTED, DAHLIAS, pot or ground roots, true to name, White, Yellow, Crimson; also Pompons and Bedding Varieties. R. H. VERTEGANS, Chad Valley Nurseries, Birmingham.

WANTED, AZALEA PONTICA. Must be well set for bloom. Large or small plants. W. F. BOFF, 203, Upper Street, Islington, N.

To Nurserymen.

WANTED, 1100 transplanted COMMON YEWS, to be delivered free at Ascot Station, Berks. State size and lowest price per 100. Somerset House, Ascot, Berks.

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WANTED, from 3000 to 10,000 strong, healthy Plants.—Price and height to G. M. A., Post Office, Falkirk, N B.

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WANTED, PEAS.—Kentish Invicta, Sutton's Ringleader, Harrison's Glory, Princess Royal, and Veitch's Perfection.—State prices nett to T. GELL, Seedsman, &c., St. Lawrence, Ventnor, Isle of Wight.

WANTED, JERUSALEM ARTICHOKES.—State lowest price per ton, and per sack of 3 bushels, for prompt cash, to D. M. D., *Gardeners' Chronicle* Office, W.C.

WANTED, Strong SEAKALE for Forcing. Also JERUSALEM ARTICHOKES. State price. FOR SALE, Extra Strong ASPARAGUS, for Forcing, very fine. Price on application. JAMES BACKHOUSE AND SON, York Nurseries.

WANTED, OAK PARK or OPEN LARCH PALINGS, all ready to fix. Pales 5 feet 6 inches high. State price free on rail. J. GARNHAM, 28, High Street, Ipswich.

FRANCIS & ARTHUR DICKSON & SONS can offer very fine LARCH, from 4 to 5 feet high, and extra transplanted. Price on application. Sample if desired. The Upton Nurseries, Chester.

LARCH and SPRUCE FIR, splendid, 2 to 3 feet; strong BEECH, LIMES, SYCAMORE, OAK, POPLAR and ELM; also very strong FRUIT TREES, good and cheap. For prices, &c., apply to W. JACKSON AND CO., Nurseries, Bedale, Yorkshire.

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SPRUCE FIRS.—Many thousands, 2, 3, 4 and 5 feet. Stout, well furnished, and good rooted. ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

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GLADIOLUS LEMOINEI and MARIE LEMOINE.

Price for strong bulbs, 12 francs; do., middle-sized, 7 francs. Received First-class Certificate from The Royal Horticultural Society on August 12, 1879, and noticed in the *Garden*, No. 404. VICTOR LEMOINE, Horticulturist, Nancy, France.

Montbretia Pottsii.

See Illustration in the *Garden* of January 24.

THE LAWSON SEED and NURSERY CO. (Limited), Edinburgh and London, are now Booking Orders for Flowering Bulbs of the above named Hardy Cape Bulb, having secured the stock from Mr. Potts, the introducer of it. Price 2s. 6d. each, or 24s. per dozen; the usual discount to the Trade.

Aponogeton distachyon.

THE CAPE POND LILY.—A splendid lot of Native Roots, in fine condition, price 1s. 6d. and 2s. 6d. each, 15s. and 25s. per dozen. Plenty for the Trade, at liberal prices. HOOPER AND CO., Covent Garden, London, W.C.

Gold Medal Begonias.

LAING'S CHOICE HYBRIDISED SEED, superior to all others, harvested from their unequalled collection, was again awarded the Royal Horticultural Society's Medal in August. Sealed packets, free by post, 1s. and 2s. 6d. each. The Trade supplied. Now is the time to sow. JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

LODDINGTON SEEDLING, or STONE APPLE.—Grafts of the above may be had at 5s. per 100. Remittance to accompany all orders. SAMUEL SKINNER, Leeds, near Maidstone, Kent.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each. RICHARD SMITH AND CO., Nurserymen, Worcester.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale. THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

GRAPE VINES.—Fruiting and Planting Canes of leading sorts. FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

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STRONG FRUITING VINES, thoroughly ripened without bottom-heat; leading kinds 7s. 6d. and 10s. 6d. each; planting Canes 3s. 6d. to 5s. each. CATALOGUE on application. JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

Established in 1815.

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EDWIN HOLLAMBY'S Descriptive Priced CATALOGUE of Roses, Evergreens, and Flowering Shrubs, Conifers, Fruit and Forest Trees, &c., will be forwarded free on application. N.B.—Through trucks to all parts: a great saving in packing.

Vegetable and Flower Seeds.

W. P. LAIRD AND SINCLAIR'S descriptive CATALOGUE, with Cultural Directions, now ready, post-free to all applicants. The *Dundee Advertiser* says of the above: "It contains much information interesting to gardeners and amateur florists, and some new and noticeable features." Seed and Nursery Warehouse, Dundee, January, 1880.

ASPARAGUS PLANTS.—Must be cleared. Good 2-yr. and strong 3-yr. old Plants. For prices apply, FREEMAN AND FREEMAN, Seed Merchants, Upper Market, Norwich.

SALES BY AUCTION.

5000 Lilium auratum, and a great variety of other
RARE LILIES, PLANTS AND BULBS.

MR. J. C. STEVENS will sell by AUCTION, at his great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 9, at half-past 12 o'Clock precisely, 5000 splendid bulbs of LILIUM AURATUM, just arrived from Japan in fine condition; 4000 good roots of TIGRIDIA GRANDIFLORA and T. CONCHIFLORA, from New Jersey; 2000 magnificent American TUBEROSES, just arrived from Pennsylvania; an importation of BULBS from the Cape; a consignment of Rare Indian LILIES, SARRACENIAS, from America; fine imported roots of LILIUM LANCIFOLIUM RUBRUM and ALBUM, from Japan; a consignment of rare BULBS from Florida; twenty cases of various LILIES, just arrived, comprising many hundred bulbs in each case; various ENGLISH-GROWN LILIES, SPIRÆAS, LILY of the VALLEY, GLADIOLI, &c.
On view the morning of Sale, and Catalogues had.

Lælia anceps alba.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 12, at half-past 12 o'Clock precisely, a most magnificent importation of LÆLIA ANCEPS ALBA, collected in flower by Mr. F. Pehaceck, just to hand in splendid condition, among them grand masses, one having 200 bulbs. This is undoubtedly the finest introduction of late years, and extremely rare in its native habitat. Also a large lot of ODONTOGLOSSOM VEXILLARIUM, collected by Mr. C. Falkenberg, and in splendid condition, among them large masses. A large importation of CATTLEYA MENDELII, several other importations of value, and among others ODONTOGLOSSUM RAMOSISSIMUM, CATTLEYA MAXIMA, NANODES MEDUSÆ, CHYSIS AUREA, very rare MASDEVALLIAS, ODONTOGLOSSUM ROSSI MAJUS, MORMODES PARDINUM, UROPEDIUM LINDENI, ONCIDIUM UNICORNE. The whole of the importations are in the finest condition.
On view the morning of Sale, and Catalogues had.

Imported Orchids from the New Plant and Bulb Co.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 16, at half-past 12 o'Clock precisely, a fine consignment of Orchids, consisting of Cattleya Mendelii, Odontoglossums Pescatorei, triumphans, Phalænopsis, and some splendid established plants of ODONTOGLOSSUM ALEXANDRÆ, &c.
Further particulars next week.
On view the morning of Sale, and Catalogues had.

On Monday Next.

4500 LILIUM KRAMERI, just arrived from Japan in unusually fine condition; also a quantity of LILIUM AURATUM, several hundreds of the lovely MONTBRETIA POTTSII and ROSEA, also DISA GRANDIFLORA and other BULBS, from the Cape; imported Roots from California and South America; a splendid assortment of English-grown LILIES, including very large L. Brownii, giganteum, pardalinum, and Humboldtii; TIGRIDIAS, GLADIOLUS, CARNATIONS, PICOTEES, CLOVES, PINKS, PÆONIES, &c.; together with 80 lots of choice established ORCHIDS, from private collections, for unreserved sale; and 3000 very fine Bulbs of AMERICAN TUBEROSES.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the Mart, Tokenhouse Yard, near the Bank, E.C., on MONDAY NEXT, at half-past 12 o'Clock precisely.
Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Exeter.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Lucombe, Pince & Co., who are giving up their branch Nursery at Exminster, near Exeter, to SELL by AUCTION, on the Premises, on TUESDAY and WEDNESDAY, February 17 and 18, the whole of the valuable NURSERY STOCK, in excellent condition and fit for immediate planting, lotted to suit all purchasers; also an unrivalled Collection of choice named FRUIT TREES, in the usual varied forms of training, at the Home Nurseries.
May now be viewed. Catalogues had at the Exeter Nursery, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, Essex.

Cheltenham.

PRELIMINARY NOTICE of a most important SALE of SPECIMEN EXHIBITION STOVE and GREENHOUSE PLANTS, PALMS, FERNS, &c.

MESSRS. PROTHEROE AND MORRIS are favoured with instructions from Edward Pilgrim, Esq., who is giving up exhibiting, to offer for unreserved SALE by AUCTION at Cheltenham, early in the Spring, the whole of his unrivalled COLLECTION of SPECIMEN PLANTS, which have won the highest honours at the chief Metropolitan and Provincial Shows.

Extensive Nursery Clearance Sale at Dalkeith.

MR. DAVID MITCHELL, HORTICULTURAL AUCTIONEER, VALUATOR, and ESTATE AGENT, has received instructions from Messrs. Ballantyne & Son (who are retiring from the nursery business) to DISPOSE OF, by PUBLIC AUCTION, at their Nurseries, Dalkeith, on THURSDAY and FRIDAY, February 19 and 20, at 11 o'Clock in the Forenoon of each day prompt, the whole of the valuable NURSERY STOCK, consisting of choice Ornamental, Deciduous, Coniferous, and Evergreen Trees, Shrubs, and Plants, many of them of rare excellence and even unique in character; also a fine lot of Specimen, Hybrid, named, and other Rhododendrons of leading kinds; Hardy Ericas, Herbaceous and other Plants; a most extensive stock of well-grown and well-rooted Forest Trees; together with a splendid lot of Laurels, comprising Colchic, Caucasian, Common, and Portugal; and other things too numerous to mention in an Advertisement.
N.B. The Auctioneer would beg to draw the attention of those intending to plant to this most important Sale. The Messrs. Ballantyne & Son's Nurseries have always been famous for well-grown and well-rooted Shrubs and Trees.
Catalogues in preparation.
6, Comely Bank, Edinburgh, February 4, 1880.

WANTED TO RENT, with immediate possession, till the end of March next, one large SPAN-ROOFED GREENHOUSE, not less than 50 feet in length, 12 to 16 feet wide; also a SMALLER HOUSE, with good bottom-heat; within a radius of 15 miles from London. Address, J. B., 13, Belton Road, Abbey Road, N.W.

Goodwill of Seed Business for Sale.

TO be SOLD, by Private Contract, the GOODWILL of an Old-Established SEED WAREHOUSE, in Belfast, together with the Stock and Fixtures, as the Owner is retiring from business.
The purchaser can go into possession IMMEDIATELY, without any interruption to the business. An extensive and profitable trade has hitherto been carried on.
For particulars apply to G. P., *Gardeners' Chronicle* Office, W.C.—January, 31, 1880.

Southend, Essex.

To NURSERYMEN and MARKET GARDENERS.

TO BE SOLD, by Private Contract, in consequence of the death of the late occupier, all that VALUABLE LEASEHOLD PROPERTY, about 22 years' unexpired, containing about 7 acres, with the two Eight-roomed Houses and Cottage adjoining, also the Barn, Stable and other Outbuildings, and the several large Greenhouses erected thereon, all in good repair, together with the Contents of the said Greenhouses and of the Garden, which is well stocked with Fruit Trees in full profit and in an excellent state of cultivation; the soil is also admirably adapted for the cultivation of Roses, which are a source of great profit: the whole forming a choice and lucrative investment, and, on account of its direct and easy access to Town, one seldom met with. The property is known as The Beach Nurseries, and lies on the eastern side of the town, with a frontage to the sea.
For further particulars apply to Messrs. MONTAGU, SCOTT AND BAKER, Solicitors, 10, Gray's Inn Square, London, W.C., and Hatfield, Herts.

The Green Lane Nurseries, Heaton Norris, near STOCKPORT.

TO BE SOLD, as a going concern, the above NURSERIES, consisting of about 8 acres of a large and choice stock of Forest, Fruit, and Ornamental Trees, Flowering Shrubs, &c., also the choice collection of Stove and Greenhouse Plants at the Wellington Nurseries, Heaton Chapel, near Stockport.
For further particulars apply to Mr. N. CALVERT, Accountant, 24, St. Peter's Gate, Stockport, or to Mr. B. WHITHAM, The Nurseries, Reddish, near Stockport.

Wandsworth and Wimbledon.

TO LET, by Tender, FARM and ACCOMMODATION LANDS, with immediate possession—230 Acres—together, or in separate lettings, to suit Tenants.
Particulars of Mr. ALFRED W. OBORNE, Resident Agent, Wimbledon Park, to whom Tenders should be sent before February 20, next.

TO LET, ROSEHILL GARDENS, NORTON, and may be entered upon at the November Term—the above Gardens comprising about 7 acres of first-class Garden ground, with the Dwelling-house, Vineries, &c. Now in the occupation of Mr. T. Oliver as Tenant.
For particulars apply to J. J. FENNY, Stockton-on-Tees.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS, HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained gratis at 98, Gracechurch Street, E.C.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

Floral Commission Agent.

W. CALE is open to receive communications from the Trade and others, for a regular supply of choice CUT FLOWERS; best quality only.
13, James Street, Covent Garden, W.C.

FOR SALE, Four Specimen AZALEA PLANTS, about 3 feet high; two Red, one Purple, one White. For price and further particulars address
G. W. SHILLINGFORD, Eynsham, Oxon.

PRIMULA NIVALIS TURKESTANICA —By far the handsomest Primrose of Central Asia. This will be hailed with delight as a long-desired addition to our hardy alpine plants. Flowers an inch in diameter, finely shaped, and of a bright violet colour. *1s. 7d.* per packet, with directions. Cash with order.—W. J. MARSH, Woodbridge, Suffolk.

CHARLES WILSON begs to offer, at low prices, NIPHETOS ROSES and SPIRÆA JAPONICA, in 6-inch pots, coming into bloom.
The Nurseries, Summerhow, Kendal.

QUICKS, fine, 4-yr. transplanted, 16*s.* per 1000. Scotch FIR, 2 feet, good, 16*s.* per 1000.
FRUIT TREE STOCKS, strong, all kinds, 30*s.* per 1000. Strong Maiden Lord Suffield APPLES, 40*s.* per 100.
W. JACKSON, Blakedown, Kidderminster.

To the Trade.

ASPARAGUS, GIANT, 1, 2, 3, and 4-yr. Price on application.
JAMES BIRD, Nurseryman, Downham.

SPECIAL OFFERS of Ornamental SHRUBS, FOREST TREES, AMERICAN PLANTS, &c.; BROOM and GORSE for Game Cover; double-flowering GORSE, transplanted last spring, &c. Apply to
JOSEPH SMITH, Moor Edge Nurseries, Tansley, near Matlock, Derbyshire.

SPANISH CHESTNUT, ASH, BIRCH, HAZEL and ALDER, stout, well-rooted, transplanted. Also a large quantity of 1 and 2-yr. Seedling SPANISH CHESTNUT, at 6*s.* and 8*s.* per 1000.
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To the Trade.

MALDEN AND SON can offer a few hundredweights of their fine selected stock of WHITE GLOBE ONION SEED, nett crop 1878. First-class sample and quality.
Further particulars as to price, &c., can be had on application to MALDEN AND SON, Seed Growers, Biggleswade, Beds.

KENTISH FRUIT TREES.—One of the largest and best Stocks in the country, consisting of Standard and Pyramid Apples, Pears, Plums, and Cherries, from 60*s.* per 100. A splendid lot of Hessel and William Pears, Gooseberries, and Currants, from 8*s.* per 100.
T. EVES, Gravesend Nurseries.—Established 1810.

Green and Variegated Ivies of Sorts,
Large and small-leaved, in eight kinds.

ROBERT PARKER, having a Surplus Stock of fine Plants in pots of the above-named, will be pleased to dispose of them in quantities at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application.
Exotic Nursery, Tooting, Surrey, S.W.

RED CURRANTS (Dutch).—500 splendid young Trees, 3 feet high and through. Just the Plants to produce a crop at once. Must be sold, as the land is wanted. Price and every particular on application.
100,000 RASPBERRIES for Sale. Fine Canes and best kinds. Price on application.
H. RUMSBEY, Swanley, Kent.

New Cucumber, Sir Garnet Wolseley.

JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, post-free for 30 stamps.
"The points in which Cucumber Sir Garnet Wolseley surpasses all other long-fruited varieties are the symmetry of its fruit, and the abundance with which they are produced; there being no shank or handle to Sir Garnet."—*Gardeners' Chronicle*, September 27, 1879.

FOR SALE, CHEAP FOR CASH, to clear the ground.
AUCUBA JAPONICA, 12 to 18 inches, and 18 inches to 2 feet.
YEWS, English, 1 to 5 feet.
HOLLIES, Green, 1 to 5 feet; Variegated, bushy, 1 to 3 feet.
APPLES, 2-yr and 3-yr. old. PEAR STOCKS, strong.
POTATOS, Sutton's Magnum Bonum and Carter's Improved ditto. Samples and prices on application to
W. TRIGG, Hook Hill, Woking Station, Surrey.

QUICKS.—Whitethorn, extra strong, well-rooted, 1½ to 3 feet, 3-yr., at 14*s.* per 1000 (nett); about 300,000.
P.S. Price LISTS of Herbaceous and Alpine Plants, Fruit Trees, &c.; also CATALOGUES of Kitchen Garden, Flower, and Agricultural Seeds, at very moderate prices, post-free on application.
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NICOTIANA LONGIFLORA.—A deliciously fragrant plant with pure white flowers; one will scent a whole house; easily cultivated, almost perpetual bloomer. Packet of seeds, with cultural directions, price 7*d.* Stamps with order.—W. J. MARSH, Woodbridge, Suffolk.

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GERANIUMS.—Stock Plants of New and valuable Geraniums with cuttings, for cash.
The magnificent new Silver-edged Geraniums, with grand flowers of all colours, strong plants 4*s.* 6*d.* per dozen, 25*s.* per 100, packed and put on rail. Strong rooted cuttings of all the best sorts 3*s.* per dozen, or 18*s.* per 100, by post. Cuttings 10*s.* 6*d.* per 100, post-free.
LISTS free on application. P.O.O. payable to
CHARLES BURLEY, Nurseries, &c., Brentwood, Essex.

Avenue and Park Planting.

WM. MAULE AND SONS offer:—WELLINGTONIAS, 6 to 8 feet; DEODARAS, 8 to 10 feet and upwards; ARAUCARIAS, 5 to 6 feet, at 10*s.* 6*d.* each, in equal proportions, and will deliver any quantity—not less than one dozen—carriage free to any railway station in direct communication, within a hundred miles.
☞ Terms cash, or good reference.
The Nurseries, Bristol.

STRONG FOREST TREES.
ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BIRCH, 1½ to 2, 2 to 3, 3 to 4, and 4 to 5 feet.
ELMS, of sorts, 3 to 4, 4 to 5, and 5 to 6 feet.
LARCH, 1½ to 2, 2 to 3, and 3 to 4 feet.
SPRUCE, 1½ to 2, 2 to 2½ feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

Immense Quantities of Young

FOREST TREES, CONIFEROUS, ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, and 3-yr. QUICKS, very cheap.
CATALOGUES will be sent free on application.
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Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, London, E.C.

Special Offer.

WILLIAM WISEMAN AND SON have to offer the following, cheap:—
2,000,000 1-yr. LARCH
300,000 2-yr. 1-yr. LARCH.
1,300,000 2-yr. FIR, Scotch, True Native.
800,000 2-yr. 1-yr. FIR, Scotch, True Native.
Samples and prices on application.
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SEED POTATOS.—

Snowflake	Paterson's Victoria
Early Rose	Regent
Myatt's Prolific	Dalmahoy
Fortyfold	Fluke
Bresee's Prolific	Champion (Scotch)
Early Shaw	Redskin Flourball

And other leading varieties. Prices on application to
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To the Trade.

CARDNO AND DARLING can still supply:—
LARCH, transplanted, from 12 to 24 inches.
FIR, Scotch, Native, transplanted, 2-yr. 1-yr.
" Scotch, Native, transplanted, 1-yr. 1-yr.
" Scotch, Native, transplanted, 2-yr. seedling.
Samples and prices on application.
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THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.

Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

LEICESTER RED CELERY has again proved itself to be the hardiest, sweetest, most solid, and best Celery this unfavourable season; when most kinds have been soft and watery this has been good in every way. Those wishing to obtain the true article should have it in printed packets, price 1s.; post-free on receipt of 13 stamps.

BROCCOLI, Harrison's new Dwarf Hardy; a late valuable kind, 1s. per packet.

SAVOY, Harrison's King Coffee Garden, 1s. per packet.

TURNIP, Harrison's Exhibition; a perfect round white variety, from 6d. per packet.

CARROT, Harrison's Early Market, 6d. per packet.

HARRISON'S "LEICESTER SEEDS," of choicest quality, are supplied in collections of 21s. and upwards, sent carriage free. Trade Prices and full particulars on application to

HARRISON AND SONS, Seed Growers, Leicester.

TREE SEEDS.—

ABIES DOUGLASII, post-free, 2s. 6d. per ounce.
" MENZIESII, post-free, 4s. per ounce.
PICEA NOBILIS, post-free, 4s. per ounce.
PINUS MONTICOLA, post-free, 3s. per ounce.
LARCH, Native, 2s. per pound.

The above are all of crop 1879, and collected from Trees grown in Scotland, and may be fully relied on for purity and hardiness.

Special prices for large quantities, and to the Trade on application.

BEN. REID AND CO., Nurserymen and Seedsmen, Aberdeen.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are prepared to make special offers of their choice stocks of HOME-GROWN GARDEN and FIELD SEEDS to those who have not yet completed their supplies for the coming season.

Seed Growing Establishment, Wisbech.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to

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London Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

SPIRÆA PALMATA.—This beautiful pink variety, with immense flower bunches, justly called "The Queen of Spiræas," is offered at 20s. per 100, strong clumps.

Wholesale CATALOGUES free on application.

BUDDENBORG BROTHERS, Bulb Growers, House, Bloemswaard, Hillegom, near Haarlem, Holland.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, offer as under:—

At per 1000:—

ALDER, 2 to 3 feet, 22s.; 3 to 4 feet, 27s.
ASH, Mountain, 3 to 4 feet, 20s.
DOGWOOD, Red, 1 to 1½ foot, 40s.; 1½ to 2 feet, 60s.; 3 to 4 feet, 80s.
FIR, Silver, 4 to 6 inches, 8s.
" Spruce, 4 to 8 inches, 5s.; 6 to 9 inches, 7s.; 9 to 15 inches, 9s.; 1 to 1½ foot, 12s.; 1½ to 2 feet, 20s.
LARCH, 1 to 1½ foot, 15s.
POPLAR, Black Italian, 3 to 4 feet, 23s.; 4 to 5 feet, 28s.
PRIVET, yellow-berried, 1½ to 2 feet, 16s.
QUICKS, 9 to 15 inches, 12s.; 1½ to 2 feet, 22s.
WILLOW, Huntingdon, 4 to 5 feet, 30s.
FLOWERING SHRUBS, in variety, 40s. to 60s.
BERBERIS, Aquifolia, 6 to 9 inches, 12s.
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" Dulcis, 9 to 12 inches, 20s.
MEZEREON, Red, 9 to 18 inches, 60s.
IVY, Irish, 25s. and 40s.
LAUREL, Common, 9 to 12 inches, 35s.; 1 to 1½ foot, 40s.
" Portugal, 1½ to 2 feet, 60s.
PERNETTYA, mucronata, 6 to 9 inches, 25s.
RHODODENDRON, hybrids, 4 to 6 inches, 50s; 6 to 9 inches, 65s.; 9 to 15 inches, 85s.
" ferrugineum and hirsutum, 80s.
WHIN or GORSE, double, 1 to 1½ foot, 80s.
YEWS, 9 to 12 inches, 75s.; 1 to 1½ foot, 100s.; 2 to 3 feet, 200s.

At per 100:—

ARBOR-VITÆ, Tom Thumb, 6 to 9 inches, 7s.
AZALEA, pontica, 1½ to 2 feet, 30s.
BOX, elegantissima, 6 to 12 inches, 10s.
CEDRUS, Deodara, 1½ to 2 feet, 60s.
CRYPTOMERIA, elegans, 9 to 15 inches, 15s; 1½ to 2 feet, 30s.; 2 to 3 feet, 35s.
HOLLY, 1 to 1½ foot, 20s; 1½ to 2 feet, 28s.
PICEA, nobilis, 2 to 3 feet, 60s.
PINUS, Cembra, 4 to 6 feet, 30s.
RETINOSPORA, plumosa, 4 to 6 inches, 12s.
THUJOPSIS, dolabrata, 3 to 4 inches, 10s.; 6 to 9 inches, 18s.; &c.

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A liberal discount to the Trade.

ROSES, Dwarf, the best Hybrid Perpetual varieties, 5s. per dozen, 35s. per 100.
VINES, good planting canes of Black Hamburgh, Buckland's Sweetwater, Gros Colmar, Foster's Seedling, Muscat of Alexandria, &c., 2s. 6d. each.
CHERRY, Dwarf-trained Morello, fine, 2s. 6d. each.
CEDRUS, Deodara, 3½ to 4 feet, 30s. per dozen.
CUPRESSUS, Lawsoniana, 4 to 5 feet, 12s. per dozen.
" " 6 to 7 feet, 21s. per dozen.
" macrocarpa, 2 feet, in pots, 50s. per 100.
LAUREL, 2 feet, bushy, 18s. per 100.
THUJA, chinensis, 2½ to 3 feet, 50s. per 100.
" aurea, 2½ feet, splendid specimens, 2½ feet through, 6s. 6d. each.
" elegantissima, 3 feet, 42s. per dozen.
BEECH, 5 to 6 feet, 15s. per 100.
CHESTNUT, Horse, 9 to 10 feet, with fine heads, splendid trees, 18s. per dozen.

H. BLANDFORD, The Dorset Nurseries, Blandford.

GEO. JACKMAN & SON
WOKING NURSERY SURREY

JACKMAN'S Descriptive Priced CATALOGUE, Free on application, containing—
JACKMAN'S List of FRUIT TREES, suitable for large or small Gardens.
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JACKMAN'S List of CONIFERS, for Lawns and Pleasure Grounds.
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JACKMAN'S Assortment of TREES and SHRUBS, adapted for planting by the Sea-coast, on Chalk Soil, beneath the Shade of Trees, and in Cities and Towns.

GEO. JACKMAN & SON
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DISEASE-RESISTING
SEED POTATOS.

	Per Peck, 14 lb.	Per Bush., 56 lb.
MAGNUM BONUM (true)	3s. 6d.	12s. 0d.
MARKET CHAMPION	2 6	9 0
JOHNSTONE'S DOWNSHIRE	6 0	21 0
REDSKIN FLOURBALL	2 6	9 0
BEAUTY of HEBRON (new)	3 6	12 6
Also the following early varieties:—		
AMERICAN EARLY ROSE	2s. 6d.	9s. 0d.
RIVERS' ROYAL ASHLEAF	2 6	9 0
MYATT'S ALHLEAF	3 0	10 6

All Orders of 20s. and upwards, Carriage Free.
Special quotations for large quantities.

Beautifully Illustrated Catalogue of Choice Kitchen Garden and Flower Seeds, Lilies, Gladioli, &c., gratis and post-free to all Customers and intending Purchasers on application.

DANIELS BROTHERS, Seed Growers,
Royal Norfolk Seed Establishment, Norwich.

Cheap Orchids.

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

To the Trade.

EXTRA CHOICE MIXED FRINGED PRIMULA, from a splendid strain.

E. WILSON SERPELL, 21, Cornwall Street, Plymouth, begs to offer the above to the Trade at 30s. per ¼ oz. or 100s. per oz. Retail packets 1s. and 2s. each, post-free.

THE FOLLOWING TREES to be disposed of at very low prices:—

ABIES DOUGLASII, from 10 to 15 feet, fine handsome well furnished plants.
LAWSONIANAS, 14 to 15 feet.
BOREALIS, 13 feet.
PEAR TREES, 60 fine Pyramid, from 10 to 12 feet, good sorts
LAURELS, Portugal, fine handsome bushes, 4, 5, and 6 feet.
ASH, quantity of Mountain, 9 to 10 feet.
" quantity of Common, 3½ to 4 feet.
WALNUTS, from 6 to 7 feet.
" a few fine handsome, 14 feet high, 8 to 9 feet through.
CHESTNUT, Horse, strong, 5½ to 6 feet.

Low prices on application to

C. DEVEREUX, Bridge Acre's Nurseries, Bridgnorth.

TREES for AVENUE, PARK, or STREET PLANTING.

ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
" Horse, 14 to 16 feet, girting 8 to 10 inches.
" Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
" Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.

They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.

The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.

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To GENTLEMEN, BUILDERS, and the TRADE.

S. MAHOOD AND SON have to offer a large stock of HARDY and ORNAMENTAL SHRUBS and TREES, in great variety, comprising Hollies, Cupressus, Thujopsis, Cedrus Deodara, Box Trees, &c., 6 to 8 feet high, good specimens; a large quantity of smaller Shrubs, Aucubas, Portugal Laurels, &c.; also a large quantity of Golden Euonymus, 9 to 18 inches high, good bushy stuff. All in good condition for moving, and at low prices. An inspection invited.

DICKSONS AND CO., NURSERYMEN and SEEDSMEN, 1, Waterloo Place, Edinburgh, are now Booking Orders for the beautiful DOUBLE MATRICARIA, figured in the *Gardeners' Chronicle* of Dec. 13, 1879, at 1s. 6d. each, 12s. per dozen, or 75s. per 100—all free by post; and are now sending out well-established Plants of their lovely new SAXIFRAGA WALLACEI, at 1s. 6d. each, 12s. per dozen, or 75s. per 100, free by post. Usual discount to the Trade.

D. & Co. have the largest stock of BEDDING VIOLAS in the country.

Descriptive CATALOGUE free on application.

To the Trade.

MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.

Seed Growing Establishment, Wisbech.

SPECIAL CHEAP OFFER
TO THE TRADE.

APPLES, Pyramid, extra strong and well rooted, 40s. per 100.
PEARS, Pyramid and Standard, extra strong and well rooted, 50s. per 100.
CHERRIES, Standard trained, } Prices and sorts on
PLUMS, Standard trained, } application.
PEARS, Dwarf trained, }
SPRUCE, Norway, 2 to 3 feet, very bushy and well rooted, 40s. per 1000.
THUJOPSIS BOREALIS, 5 to 6 feet, 24s. per dozen; 6 to 7 feet, 30s. per dozen; 7 to 8 feet, 48s. per dozen.

W. G. CALDWELL AND SONS, The Nurseries, Knutsford.

Kent, the Garden of England.

COB NUTS, fine Kentish; Kentish PLUMS, CHERRIES, PEARS, DAMSONS and APPLES; specimen MULBERRIES, large AUCUBAS, large LIMES, YUCCAS, and the finest general stock of FRUIT TREES in the Kingdom, some 200,000 to choose from.

General Descriptive FRUIT LIST on application.

The Trade supplied.

THOS. BUNYARD AND SONS, Old Nurseries, Maidstone.

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R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.

All goods delivered free on rail in London or at own residence within six miles of the Nurseries.

CATALOGUES free by post on application.

EVERY ONE WHO HAS A GARDEN

SHOULD SEND FOR

KING'S PRICED LIST of CHOICE HOME-GROWN FLOWER and VEGETABLE SEEDS. CATALOGUES gratis and post-free, on application. Established 1794.

JOHN K. KING,
COGGESHALL, ESSEX,
Seed Grower to Her Majesty the Queen and His Royal Highness the Prince of Wales.

SPECIAL OFFER TO THE TRADE.

A. M. C. JONGKINDT CONINCK,

TOTTENHAM NURSERIES,

Dedemsvaart, near Zwolle, Netherlands,

Has to offer:—

	Per 100	£	s.	d.
DIELYTRA, spectabilis, strong plants	.. ..	0	10	0
SPIRÆA, filipendula fl.-pl. ,, ,,	.. ..	0	8	0
,, japonica ,, ,,	.. ..	0	5	0
,, palmata ,, ,,	.. ..	0	10	0
,, ,, elegans ,, ,,	.. ..	2	2	0

STRONG ROSE STOCKS,
Fit for Immediate Working.

Rosa Manetti, 25s. per 1000, £10 per 10,000.
Rosa multiflora de la Grifferaie, 2 s. per 1000, £7 10s. per 10,000.

TREE PLANTING:
AN INVESTMENT.

That Timber Growing will be found to be a profitable application of the soil, and a sound investment to Capitalists in the future, is being made obvious by the increasing demand for Wood, and its anticipated scarcity in places abroad.

Nurseries have long been noted in Scotland for successfully and cheaply raising FOREST and other TREES, and the Subscribers devote every attention to conducting efficiently one of the largest establishments in the country.

In connection with their business arrangements Correspondents are respectfully reminded that their Priced CATALOGUES are sent, post-free, on application. The prices are quoted as reasonable as any. Plants are fibrous-rooted, robust, and grown unsheltered. Inspection of Nurseries invited, but if inconvenient, Samples of Trees will be furnished. Planting contracted for, Carriage Rates lessened, and Packages saved by using "Through Trucks." Export Orders carefully supplied, and Correspondence solicited.

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Moisture	4·03
Organic Matter, Carbon and Salts of Ammonia	22·34
Phosphoric Acid	20·42
Lime	26·85
Oxide of Iron	7·10
Sulphuric Acid	7·10
Alkaline Salts and Magnesia	6·11
Carbonic Acid, &c.	1.34
Insoluble Siliceous Matter	4·71
	100·00

Containing Nitrogen	2·92
Equal to Sulphate Ammonia	13·77
Equal to Tribasic Phosphate of Lime	44·58
Containing Potash	3·18
Equal to Sulphate of Potash	5·89

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"The sample analysed by me was in a dry condition, finely prepared, and in my opinion **a concentrated, intrinsically valuable fertiliser,** and well adapted for general 'Horticultural' purposes.

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7 lb., 2s. 3d. .. 14 lb., 3s. 6d. .. ¼ cwt., 6s. .. ½ cwt., 9s. 6d. .. 1 cwt., 15s. .. per ton, £12 .. Canisters, 1s. each.

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THE QUEEN'S SEEDSMEN,
And by Special Warrant to
H.R.H. THE PRINCE OF WALES,
READING.

THE
Gardeners' Chronicle.
SATURDAY, FEBRUARY 7, 1880.

LONGPOD AND BROAD BEANS.

THE Bean, like the Pea, plays a very important part as an article of the national food, but secondary to it in importance. There are some persons who dislike the Pea as a vegetable for the table, and there are many more who reject the Bean. Perhaps the latter is thought to have plebeian associations which renders it unfit for the tables of the higher orders in society, though "bacon and Beans" is regarded as a delicacy by the *gourmand.* He that can enjoy his dish of Beans shows by so doing the possession of rude health.

It is said that the Bean has been cultivated in Britain from very remote antiquity. It is thought to have been introduced to this country by the Romans, though it is supposed to be of Egyptian origin. It is from the Greeks we have the earliest accounts of it, and it is thought they received it from that country as a cultivated vegetable.

The seed list of a leading wholesale house gives a list of twenty varieties of Beans in all, but these can be reduced by the deduction of certain synonyms. Of these twenty there are ten Longpods and five Windsors; the others are made up of the Dwarf Fan, Bog or Cluster, the Mazagan, and the white and scarlet-blossomed types.

One of the best known and earliest of the cultivated Beans is the Mazagan. It is a type by itself, with small seeds approaching in character very close to our common horse Beans, pods 4 or 5 inches long, rather narrow, and containing four or five seeds. The Mazagan Bean is supposed to have been originally brought from a Portuguese settlement on the coast of Africa, hence its name. When grown in that place the seeds are said to be smaller even than our horse Beans, but they grow to a larger size when cultivated in Portugal or this country.

Philip Miller, in the edition of his *Gardeners' Dictionary* published in 1731, enumerated "four sorts of Beans commonly planted in gardens, viz., the small Lisbon, the Spanish, the Sandwich, and Windsor Beans." In later days the common Early Longpod Bean came to be known as the Early Lisbon and the Sandwich, while the Windsor also came to be known as the Broad Spanish. How or when these various types of garden Beans originated—types showing differences amounting almost to specific variations—is involved in some obscurity. Modern writers have attributed to them terms which designate them as species, but it may be that they have originated from one or two common stocks. The largest seeded variety, known as the "Windsor," is said to have been first cultivated in that neighbourhood by some of the Dutch gardeners who came over to England at the Revolution. We have it on authority that there is a field near Eton still, or comparatively recently, called "the Dutchman's garden."

There is lying before us a seed catalogue

published by the seed-house already referred to as far back as 1853—that is, twenty-seven years ago—and it contains eighteen varieties of garden Beans, but includes two names not found in the list for the present year, namely, the "new Thick Windsor" and the "Toker," the last a Longpod type. The former represented a Bean unusually thick at that point where the cotyledons issue, but it is no longer maintained as a distinct variety, and when required is obtained by sifting the Windsor Beans; those that do not pass through the mesh of the sieve represent the thickest seeds, and form the "Thick Windsors." In its original form (and it would be very interesting if the origin of the name could be traced) the "Toker" differed from the Windsor in that the seeds were of an elongated oval shape, and though an excellent bearer, was considered of coarse quality. The name is still retained in some seed lists, though it has ceased to be cultivated as a distinct variety.

The green forms of the Longpod and the Windsor are in all probability sports from the normal form. The former is known as the Green Genoa, and the sport might have been of Italian origin, and introduced from there to this country. That garden Beans are sportive in character has been demonstrated in the case of "Beck's Dwarf Green Gem," which originated as a sport on a plant of the Dwarf Fan or Cluster, at Shipston-on-Stour. The Dwarf Fan is a distinctive type of Bean, and a garden variety, but only sparingly cultivated in gardens till the green form appeared about 1858 or 1859, when it was distributed by Messrs. Beck, Henderson & Child, and is now a standard garden variety, being very early, productive, and of excellent quality.

The white-blossomed and the scarlet-blossomed Beans are of tall growth, and the seeds about the size of those of the Mazagan. They are not grown for culinary or edible purposes, but as ornamental plants, and are mostly used in shrubberies for the display their flowers make. Their produce is not large, indeed they are spare croppers, the pods being of medium size, and containing generally four or five Beans. In the case of the scarlet-blossomed type, the colour of the flowers is generally of a bright red approaching to scarlet, but varying from a pale red to a dark or almost black colour. Miller mentions a black-blossomed Bean, which is very likely a variety of the red or scarlet, as it often approaches to a black colour. In the case of the white-blossomed variety the flowers differ from all others in being pure white, having no dark spots on the vexillum nor alæ, so that it can be easily distinguished when in flower from the above circumstance. This variety possesses the curious anomaly of having the whitest flowers and blackest seeds of any.

One of our largest seed-houses requires every year for the purposes of trade something like 4000 bushels of Longpod Beans and 3000 bushels of Windsor Beans. These are required for garden and market purposes. The Green Windsor is not found in the London markets, but it keeps its colour better; it is finer in flavour, but not such a free bearer. It is worthy of note that, while Peas can be held over for a year or two without much, if any, depreciation in the matter of appearance, the white Beans become sadly discoloured in the course of the year, and are thereby rendered valueless for trade purposes, though the growth might be all that could be desired. The green varieties maintain their colour much better than the white-seeded types.

The Dwarf Fan Bean is in large demand in Scotland, and is grown there in preference to the others, probably because, being of dwarf growth, it does not suffer so much from the gales. In Ireland, Longpods are in large demand. In Lancashire and Cheshire Longpods are grown in large quantities. A great many Longpod Beans as well as Windsors come into the London markets; the neigbourhood of West Drayton, Slough, Mitcham, Streatham, &c., furnish the chief part of them.

The best Windsor Beans are grown in Suffolk for seed purposes, Longpods mainly in Kent; and, as in the case of Peas, when the contracts are made with the growers for a supply, selected stocks are sent for sowing. The Beans are harvested, threshed out, and the crops sent to London, as in the case of Peas, and they are then sifted in the first instance and handpicked by women. The season of 1879 produced very spare and much damaged crops, hence the leading kinds are scarce and higher in price.

Of late years some fine selections in the way of Longpod Beans have come into the London markets. They are the Seville Longpod and the Aqua dulace, a new French variety having fine pods of great length. Then there is the Leviathan or Giant Windsor, a selection made by Mr. Ernest Benary, of Erfurt, the pods of unusual size, unusually productive, and of superior quality. These are all fine exhibition varieties; and now that the Longpod and Windsor Beans play such an important part in cottagers' and other exhibitions, where the culture of vegetables is encouraged, large-podded Beans are much sought for. In some parts of England where shows of this character are held there are classes for shelled Beans, and in others it is required that the pods be laid open, but the Beans not displaced.

Sometimes the Longpod Bean is grown in fields for market purposes as a first and early crop. No London market gardener cultivates either the Longpod or the Windsor Bean for market purposes to any great extent; we have to look farther afield for our supplies. In some cases breadths of Beans are planted along the lengths of fields in the form of bands, in order to form dividing lines between other crops. *R. D.*

New Garden Plants.

CYMBIDIUM COCHLEARE, *Lindl.**

"This Cymbid is from Burmah, and the habit of the plant is more thin and graceful than that of Cymbidium eburneum." This was written in Mr. Low's letter. The rather narrow leaf is more than 2 feet long, with a median nerve, which is very prominent behind, and one lateral on each side, the breadth not quite equalling 2 centimetres. The inflorescence is very nice, according to my taste at least, since I do not sigh for scarlet and orange colours. A very thin, very hard, bent, blackish-violet peduncle bears lax, light brown, rather contiguous, long, broad, acuminate sheaths. The peduncle at hand has eight beautifully developed flowers, which make one think of no species excepting C. elegans, Lindl. The shape of the flowers is just the same, yet they are much longer and narrower. The bracts are almost obsolete, as Dr. Lindley has stated. The stalked ovaries are of a bright green, with a violet hue on the upper part. Chin nearly obsolete. Sepals, petals, and lip shining, as if covered with rubbed wax. Sepals almost linear, the odd one a little galeate, middle line light, greenish at the borders, both sides of a beautiful sepia-brown. Petals long, linear, a little broader towards the apex, with numerous small brown spots on yellowish-greenish ground. Lip long, unguiculate, deltoid; side laciniæ quite abrupt, upright; middle lacinia sessile, with broad basis, triangular, rather blunt, wavy, with a narrow white border. This part is of good yellow, or perhaps rather of deep orange colour, with very numerous red spots. When seeing it you must remember Cymbidium giganteum. Two almost obsolete yellow keels run from base to base of the anterior lacinia, but it is only there that they rise in such a manner as to deserve the name of keels. At the end they are abrupt; the whole side laciniæ are of a light wax-yellow, with a very faint hue verging to olive-green, and covered with such an incredible quantity of reddish-brown spots as to make you think at a certain distance they were totally reddish-brown. The shape of column is as in Cymbidium elegans, Lindl., light whitish-green, with some scattered violet dots in front, and a copious exudation of nectar at the base. Anther and pollinarium very near those of the last mentioned species.

I cannot help confessing that I felt very satisfied to recognise finally in the splendid material the almost obscure Cymbidium cochleare of Dr. Lindley. It was only gathered once in Sikkim by Dr. (now Sir) Joseph Hooker, but lucky as he was in the discovery, yet he was not so lucky to see the plant in its elegant *tournure*, since it was in an advanced condition not admitting a successful examination. Thus Dr. Lindley saw the callus ending in a free spoon, which may have been quite accidental, since I found it ending bilobed as well as abrupt. Then Dr. Lindley could even not ascertain the shape of the apex of the lip. Having been enabled to make the most careful study, thanks to the liberality of the Kew authorities, I can now give evidence of the success of such liberality by writing a full and, as I venture to hope, rather satisfactory description of a plant that was previously very obscure. It is, indeed, a greater satisfaction to reveal one such mystery than to describe a multitude of new species. Our elegant species is quite a swell among the Cymbidiums. There is not the least difficulty in distinguishing this from Cymbidium elegans, which various of my English correspondents have sent me in a most splendid state. This one has a dense many-flowered inflorescence, and even middle lacinia of lip, broader sepals, and two upright lamellæ on base of the lip. These have been very well represented by Dr. Lindley (*Sertum*, 14), but his fig. 2, the pollinarium, is at variance with any one I have ever seen, which all had a nearly square, never a round, caudicula, with appended glandula. *H. G. Rchb. f.*

LÆLIA DORMANIANA, *n. sp.* (*hybr.?*)*

The bulbs of this plant are most nearly like those of Cattleya bicolor, or of the rare C. Wilsoniana and velutina. They are terete, thin, slender, 1 foot being the average height. Leaves one or two, very cuneate, acute, oblong-ligulate (m. 0.13 by 0.025 as greatest breadth). Peduncle with two "to five" flowers, enclosed in part in a long, very narrow spathe. The flower at hand is about the size of that of a good Cattleya superba. Petals and sepals olive, greenish-brown, marbled outside with light port-wine colour, which is diffused as a light hue inside, excepting the top of the odd sepal and petal, which have numerous dark port-wine coloured spots around the limb, which look very pretty. Lip of the lightest purplish-white, with darker veins, and a beautiful middle lacinia of that warm mauve-purple which is the high merit of Cattleya superba. There are some few short purple lines on either side the serrulate blunt very short keels at the very base. Column white, ears of mauve-purple, as well as the border of the stigmatic hollow.

The anther contains four fully developed and four rudimentary pollinia, some cohering one with another. This is the usual case in all hybrids between Lælias and Cattleyas, as we know from those curious experiments made in the Royal Exotic Nursery of Messrs. Veitch by the zealous efforts of Messrs. Dominy and Seden.

The plant is said to be very free flowering, and as Mr. Blunt, who is not extravagant in his praises, called it magnificent, it may develope a good deal. Mr. Bullen tells me every plant is showing vestiges of flowers, even from small (*i.e.*, inch) bulbs.

I guess this to be a hybrid, probably between Cattleya bicolor and Lælia pumila. The latter suggested itself to me from the large ears to the column. A seed vessel, kindly given by Mr. Bullen (who sent not only various parts but even a strong plant with a shoot having leaves, brown beneath), is no reason to the contrary. The great tendency to produce flowers might be another argument for the hybridity. It recalls to my mind what Sir Trevor Lawrence said the other day about Cypripedium Sedeni.

Mr. Henry Blunt discovered the plant in Brazil in September last; Mr. Richard Bullen, Woodlands Nursery, Hither Green, Lewisham, London, S.E., introduced it; Mr. Charles Dorman, of The Firs, Laurie Park, Sydenham, London, S.E., first flowered

* *Cymbidium cochleare*, Lindl., Contrib. Ind. Orch.—"Gracilis caule tumido brevi;" foliis linearibus acutis plurinedalibus; pedunculo gracillimo rigidissimo nutante, dimidio inferiori; vaginis oblongo-ligulatis obtuse acutis scariosis cinnamomeis laxis; racemo laxo plurifloro (8—13); bracteis minutissimis, ovariis pedicellatis anthesi brevibus (0.05 m.), perigonio campanulato connivente; sepalis (0.045 m.) linearibus apicem versus paulo dilatatis acutis; sepalo impari fornicato, tepalis subæqualibus, labello a basi valde augusta dilatato triangulo apice abrupte trifido, laciniis lateralibus magnis subtriangulis prope rectangulis, lacinia mediana sessili triangula undulata, carinis geminis in disco anteriori assurgentibus supra basin, laciniæ mediæ abruptis; columna elongata, trigona, apice incurva, caudicula oblonga quadrata; polliniis pyriformibus in stipitibus cereis senilibus, postice fissis.

Pedunculus atroviolaceus. Sepala brunnea linea mediana et marginibus flaveolis. Tepala flavida plurimis guttulis cinnamomeo-brunneis. Labellum cereum maculis innumeris brunneis supra lacinias laterales; lacinia antica aurantiaca maculis rufis. Columna pallide viridiflava, guttulis antice violaceis. Sikkim, J. D. Hooker! Burmah, Boxall! *H. G. Rchb. f.*

* *Lælia Dormaniana* (n. hybr.?).—L. pseudobulbo pedali teretiusculo demum sulcato monophyllo seu diphyllo; foliis cuneato oblongo-ligulatis acutis; pedunculo 2—"5" floro, e spatha angusta; sepalis oblongo-ligulatis; tepalis paulo angustioribus, paulo undulatis; labello trifido, laciniis lateralibus semioblongis obtuse acutis, lacinia mediana obcordata transversa, carinulis serrulatis brevissimis in ima basi; columnæ auriculis dentatis magnis antheram tegentibus. *H. G. Rchb. f.*

it, as it appears; and the plant may justly bear the name of this gentleman. *H. G. Rchb. f.*

Odontoglossum Pescatorei limbosum, *n. var.*

This is a new variety, and a very remarkable one. It has the dark spots of Odontoglossum Pescatorei purpuratum, but very few of them. In addition to this the whole of the border of the anterior blade of the lip is adorned with numerous beautiful mauve-coloured spots. For this novelty I have to thank S. Cuming, Esq., Harberton, Hornsey Lane, Highgate, N. *H. G. Rchbf. f.*

GENERAL MUNRO, C.B.

It will be a surprise to many to learn that this officer, whose decease occurred on the 29th ult., had claims on the respect of his countrymen as a learned botanist as well as a distinguished soldier. Indeed, we do not overstate the case when we place his botanical achievements before his military services, great as they were. It is given to many men to be brave soldiers and excellent officers, but few there are among scientific men who have been able to attain a just and comprehensive knowledge of so vast and intricate a family as the grasses. That a such a knowledge should have been acquired in the broken leisure and amid the thousand impediments of active military duty, is, in itself, marvellous. His military career is briefly summed up in the following notice, extracted from the *Times*:—

"General William Munro, C.B., died at Montys Court, near Taunton, at the age of about sixty-four. The eldest son of the late Mr. William Munro, of Druidstoke, Gloucestershire, he was born about the year 1816, and entered the army as ensign in 1834. He was promoted to lieutenant in 1836, to captain (39th Dorsetshire Regiment of Foot) in 1844, and to major in 1852. He saw much active service in India, and was severely wounded at the battle of Maharajpore, for which he received the medal. He commanded the 39th Regiment in the Crimean campaign from the close of 1854, and was present at the siege and fall of Sebastopol; and he also commanded the supports of the 1st Brigade (3d Division) at the attack on June 18, 1855. His subsequent commissions bore date respectively—lieutenant-colonel, 1853; colonel, 1854; major-general, 1868; lieutenant-general, 1873; and general, 1878. In 1870 he was gazetted to a staff appointment in the West Indies, and was appointed colonel of the 93d Sutherland Highanders in 1876. He was nominated a Companion of the Bath (Military Division) in 1857."

He was the commanding officer and acting Governor in Bermuda during the difficult times of the blockade runners, and the last years of his service were spent as the General Commanding-in-Chief in the West Indies. His career, then, was a distinguished one. Whether as a subordinate or as a commanding officer, he never allowed his scientific pursuits to interfere in the least with his military duties. Nevertheless, as we have said, he contrived to combine with them such a knowledge of general botany and horticulture, and so close a study, so searching an investigation of the characters, affinities, nomenclature, and classification of grasses, as to have been for many years the most trustworthy referee in that difficult order.

It is no wonder that General Munro published comparatively little. Think of the difficulties in the way of specimens and books, requisite for consultation and examination, to be encountered by an officer on active service. It is clear that such difficulties could not wholly be overcome, and that the botanist, under such circumstances, must necessarily be thrown very much on his own unassisted resources. This independent study has no doubt special advantages, so far as the individual is concerned, but when it becomes necessary to communicate his knowledge to others, then it is requisite to study and annotate the literature of the subject so as to adjust and corelate the results of his own researches with those of his predecessors and contemporaries. Apart from the difficulties of transport of books and specimens a great expenditure of time is required on the part of those who draw up original monographs, and that time is not likely to be available in the case of so active and conscientious a soldier as the late General Munro. Hence it is that, with the exception of a monograph on the Bamboos in the *Transactions* of the Linnean Society, General Munro published but little. That monograph, however, affords sufficient evidence of his ability, industry, and profound knowledge of his subject. It was elaborated, we believe, in one of the intervals of active service.

When, two or three years since, he retired from the army and established himself near Taunton, he at once commenced a general monograph of the whole order. This was intended to form one of the monographs in the series of such works now being issued in continuation of the *Prodromus* by MM. Alphonse and Casimir de Candolle. To the abiding loss of botany this monograph remains incomplete. It is to be feared that a long time must elapse ere any competent monographer will take upon himself the irksome labour of elaborating such a work.

General Munro was frequently consulted by the conductors of this journal on points relating to grasses. Several of his contributions to our knowledge of cultivated Bamboos were published in these columns, and the General had promised to favour us with a complete horticultural monograph of Bamboos and other grasses, scientifically known, we may almost say, to him alone. It will be felt as a matter of great regret that this promise cannot be fulfilled.

It is characteristic of the man that when serving in the Crimea as Commander of the 39th he contrived to send home bulbs and other plants, and to discover near Sebastopol interesting relics of Greek art, some of which, as we learn from Sir Joseph Hooker, are now in the British Museum.

To gardeners the career of General Munro has additional interest, inasmuch as he himself was an enthusiastic practitioner. Gardening with him was no selfish pursuit indulged in for his own gratification. In various stations in India, in Canada, and in the West Indies, he established gardens for the recreation and comfort of the soldiers.

In private life the General might have been taken as the type of the soldier—*sans peur et sans reproche*, and of the gentleman—high-principled, firm, yet gentle and courteous; he won cheerful obedience where others would have had to command it, and he secured the heartfelt respect and esteem of those with whom he was associated.

CONCERNING FLOWER SHOWS.—I.

Every one who has had much experience of flower shows in the country must be aware of the varying degrees of success attending their management. Some shows are admirable in all respects; intelligent foresight, well arranged plans, a good organiser at the head of affairs, ensure a minimum of friction where a good deal of close contact and conflicting interests are necessarily unavoidable. Other shows are so badly managed that every one engaged in them is harassed and worried, and irritation, vexation, and annoyance are deplorably predominant. Of course there always will be some differences; and a good manager with a clear head, well-arranged plans, unquestioned authority, and a sufficient staff of assistants, will usually contrive to get through the work of a show with less worry and exertion and more success than an inferior man whose head gets muddled with the first hour's work, more particularly when, as too frequently happens, his authority is weak, his assistants inefficient or too few, and the arrangements are pretty much left to make themselves. It may be said that in marking the two classes of shows so broadly I am overstating the case: the good are too good, and the indifferent are made worse than they really are. My object I trust is obvious, and my method justifiable, for I want to indicate the limits, or something approaching them, on all sides; and I candidly confess that a large number of flower shows are both less perfect than my first type, and not quite so bad as my second. Still I maintain that the majority incline towards the worse kind in general characteristics, and it is with the hope of being able to offer hints which, if acted on, may help to mend matters, that I have undertaken to discourse a little at length concerning flower shows.

To begin at the beginning: the inception of a really well organised flower show will start with a carefully prepared schedule of prizes, which will vary in details according to the locality where, and the time when, the show is to be held. If the exhibits are to be drawn from the immediate neighbourhood, that circumstance will be borne in mind, and the exhibiting capacity of the probable competitors remembered. If the funds are sufficient to provide good prizes open to all comers the draughtsman of the schedule will not forget the class of exhibitors he hopes to attract, nor be unmindful of the competitive power he desires to provoke. One of the main purposes of attracting important and well-known exhibitors from a distance is to show the local gardening community how plants, fruit, vegetables, and flowers are grown by the chief masters of the art, and so to impart valuable information and give a healthy stimulus; but another object, nearly if not quite as important, is to add to the attractiveness, extent, and general interest of the show in the eyes of the public. These two points must be borne in mind in fixing the amount of the prizes, and it will invariably be found desirable that there should be no very great difference in the money value of the first, second, and third prizes if a goodly number of exhibits from a distance are desired, for exhibitors are very materialistic, and remember that railway charges and other expenses are usually consumptive of coin, which they prefer to have provided for them out of the prize fund rather than their own pockets. There is usually too much money given for first prizes and too little for the second and third. The terms of the schedule and the regulations should all be clearly and explicitly stated, so as to leave no room for doubting what they really mean. This is a point of great importance, which is sadly neglected in many schedules.

The time for the closing of entries should be fixed with discrimination, so as to be near enough to the day of exhibition for the entries to be real and not illusory ones; so that the intending exhibitors may be in a position to decide with something approaching to positiveness what they will be able to exhibit. It should also be sufficiently long before the show to give the management time enough to make the necessary arrangements as to tents and other requirements. One of the commonest causes of trouble and disappointment at flower shows is the absence at the last moment of important exhibits, particularly collections of stove or greenhouse plants. Entries are made by several exhibitors to show in the most important class, and the manager is bound to provide sufficient tent-room for the accommodation of what promises to be a grand and extensive display. He apportions the space, and, already in anticipation, delights in the extent and beauty of the exhibition; and with a view to attract company he gets the friendly reporters to dilate in the columns of the local newspapers on the wonderful collections of plants that will be exhibited, which are stated to be so numerous that it will be necessary to provide far more tent-room than was anticipated, and all the neighbourhood is set talking. On the eve of the long-expected day every one is on tip-toe looking out for the arrival of the exhibitors' vans, and all kinds of anticipatory arrangements are made for the comfort of men and beasts. At length the first arrival is announced. Then after an interval comes another. Still there are most important absentees of whom no word has been heard. Night closes in, and the anxious manager retires to bed, but not to sleep the sleep of the contented, for vague doubts have begun to beset him that he will rise on the morrow and find his tents ready, but not the plants to fill them. Wearily the night passes, and with redoubled anxiety the manager rushes off to the exhibition-ground. One more arrival from a distance he finds, and no more. Knowing that these important exhibitors are always early on the ground, or do not come at all, he realises his worst fears. By-and-by the postman comes, and then he finds letters from A. and B. and C., regretting inability to be present, and expressing hopes that their absence will not be productive of inconvenience, &c. Then well-made arrangements are all upset; unsatisfactory re-arrangements have to be made; great blank spaces have to be dealt with as best they may be. Do what he can, the manager knows that when his company arrives they will see that they have been deceived, and that the flourish of trumpets has been executed to herald a ragged army. This is no overdrawn picture; it is a state of affairs constantly occurring, but which ought never, or only very rarely, to occur. How is it to be prevented? My own impression is, that every exhibitor who enters to show a collection of plants of an extent large enough to constitute a feature in a show, and demanding for its proper display any considerable amount of space, should be required to deposit with his entry a sufficient sum of money (£2 to £3, possibly more, according to the extent of the promised display), which should be forfeited in the event of the collection not being staged, unless at least three days before the show-day notice be given of intention not to exhibit, in which case half the money should be returned, the other half going towards the expenses incurred on the faith of the entry; the full deposit to be of course returned to all who stage according to their entries. *G. E. R.*

(*To be continued.*)

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NOTES ON NEW ZEALAND PLANTS.*

(*Concluded from p. 76.*)

15. Olearia Haastii (Eurybia parvifolia), Mr. Julius Haast's arborescent Aster, or Daisy.—A dense growing small tree or large shrub, with rigid ovate leaves, averaging about an inch in length, of a dull somewhat glaucous green on their upper surface and whitish below. A young plant, about 18 inches in height, growing in an open border, was not the least injured. In Hooker's *Handbook of the New Zealand Flora* twenty arborescent and frutescent species of this genus are described, most of which are natives of the Middle Island, where several of them are found at such high altitudes as to ensure their being suitable for our climate; and apart from the peculiarities of their foliage, their Daisy-like flowers would give a novel and interesting appearance to our shrubberies and woodlands. Like their near relation, that old greenhouse favourite the Aster argophyllus, or Musk-tree, several of them are musk-scented. The timber of the larger-growing kinds is hard, beautifully mottled or veined, and used for inlaying and veneering.

16. Veronica Traversii (W. T. Luke Travers' Speedwell).—A very pretty evergreen shrub, thickly clothed with small, light green, smooth, opposite leaves, which are regularly set in four rows along the branches. A plant about 18 inches high was perfectly uninjured, although several of the more generally known V. decussata of the Falkland Islands were completely killed in its vicinity. These last were from the island of Rousa, where, as well as in others of the Orkney Isles, this species may be said to have become naturalised, coming up abundantly from self-sown seed, and forming the best of shrubs for withstanding the violent sea winds of that comparatively mild climate.

17. Veronica salicifolia var. (the Willow-leaved Speedwell and *Koromiko* or *Korimuka* of the natives, also known as V. Lindleyana).—Of this somewhat variable old inhabitant of our gardens I had seeds from Canterbury, New Zealand, about ten years since, which produced plants that were of a more rigid bushy growth, as well as decidedly hardier than those I had growing previously. They were, however, a good deal injured by the unusual severity of last winter, but are readily reproduced from self-sown seed.

18. Veronica pinguifolia.—This small dense growing glaucous-leaved shrub is remarkably pretty at all times, but more especially when covered with its profusion of white flowers. It proved perfectly hardy in different situations; and is particularly suitable for rockeries.

19. Veronica Hulkeana.—A somewhat slender shrub of about 3 feet in height, with dark green ovate leaves, from 1 to 1½ inch in length, and handsome large branched spikes of pinkish-lilac flowers. I had no plant of this species in the open air last winter, but previous experience showed it incapable of withstanding our severest frosts without suffering more or less. Its very handsome flowers, however, entitle it to a little protection from very hard frosts; and they recommend it as a pot plant for winter forcing, or blooming in greenhouses during spring.

20. Muhlenbeckia complexa (Polygonum complexum and Coccoloba complexa—interlaced, or complex branched Supple-Jack).—A tough slender climber, rambling over bushes and trees to considerable lengths; but comparatively dwarf and compact when grown without support. Planted on the west wall of a two-storey house, it reached the slates in six years, and two years later, in 1877, it covered a considerable portion of the wall with its thickly interlacing slender branches, and a profusion of small pretty light green leaves. In August and September of that year it produced an abundance of inconspicuous green flowers, which, however, were not followed by the expected crop of its Mistleto-like berries. Previous to last winter it never sustained the least injury from frost, but then many of the branches were so much affected that they had to be shortened or cut out. Of this very interesting plant I have cultivated two varieties, the one having entire leaves, while those of the latter are deeply indented or contracted in their middle.

21. Libertia grandiflora major.—A very handsome herbaceous evergreen, with stout grassy-like leaves, from 20 to 30 inches in length by a third to half an inch in width; and having spike-like panicles about 3 feet high of pure white showy flowers that are produced in succession from a month to six weeks. This variety, which I have grown about twelve years, has larger flowers and more compact panicles than that previously in cultivation. Till last winter it grew freely, flowering and seeding abundantly; but the plants then suffered less or more from the excessive frost, although none were entirely killed, and some even flowered and seeded last summer as profusely as before. The bulky produce of tough leaves which this Libertia yields claim for it the attention of paper-makers; and as an ornamental plant for flower borders, shrubberies, or moderately open woodlands, the abundance and pure whiteness of its flowers render it particularly attractive, while if once introduced where its self-sown young plants are allowed to grow up, it will maintain a conspicuous existence even among our stronger growing wild flowers.

22. Libertia ixioides.—A pretty white-flowered evergreen herbaceous plant, with more branched inflorescences than the last, and only about a third of its size. Well adapted for growing on rockeries, and perfectly hardy.

23. Cordyline australis (Cabbage-tree or Grass-tree of the settlers, and *Houka* or *Ti* of the Maoris).—In hopes of acquiring hardier forms of this well-known elegant Palm-like tree than those usually cultivated in our greenhouses, I, through the kind assistance of Mr. James Melvin, of Bonnington, Ratho, obtained seeds from its colder habitats in Otago, the plants raised from which grew for six or seven years, sustaining a minimum temperature of 20° without any artificial protection, by which time they attained a height of 3 to 4 feet; but a severe winter then killed them to the ground, with the exception of one which stood unharmed till last winter, when it also succumbed. The late Dr. Moore, of Dublin, who saw this plant in April, 1876, told me it was now recognised as a new species, named C. calicoma, and distinguished from C. australis by having flat instead of incurved leaves. The graceful growth and wind-withstanding properties of this Cabbage-tree and its varieties recommend them as portable summer decorative plants for growing in vases or large flower-pots, and they may be wintered in any glass-roofed structure without artificial heat.

24. Chrysobactron Hookeri (Anthericum Hookeri).—A showy deciduous herbaceous plant, 1½ to 2 feet in height, with bright yellow flowers, having much the appearance of our pretty Bog Asphodel, Narthecium ossifragum, but larger in all its parts. Is quite hardy.

25. Phormium tenax (the New Zealand Flax or Flax Lily: *Harareke*, *Harakeke*, *Korari* and *Coradi* of the Maoris).—The highly interesting paper which was read at our last meeting from Dr. Wm. Traill on the growth of P. tenax in Orkney, where it flowered and perfected seeds last year, showed its greater suitability for that northern climate than for the occasionally severer winters that we experience in the Lothians. A minimum temperature of 15° seems about the lowest that it will stand without injury, so that the last winter minimum of 9° injured the tops of the leaves, and disfigured the plants considerably. Of late years several variegated leaved varieties of the P. tenax have been special objects of attraction in our greenhouses and flower shows, but they have generally been deemed too tender for outdoor cultivation; two of these, however, stood the last winter on my rockery fully as well as the ordinary green sorts, and all sent up fine young leaves in the course of the summer. All the varieties, when grown in large vases or flower-pots for outdoor decoration in summer, contrast effectively with the surrounding shrubs and flowers; and, like the Cordyline australis, may be wintered in glass-roofed structures without artificial heat.

26. Carex secta (Carex virgata, β secta, the Grass-tree of settlers).—Is so called from its forming large tufts of roots from 1 to 6 feet in height, and 6 to 18 inches in diameter, somewhat resembling the stems of Tree Ferns. Three year old plants have stood uninjured, without as yet showing any appearance of forming tufts or stems.

27. Arundo conspicua (New Zealand Reed, *Tohi-Tohi* or *Toe-Toe* of the natives).—This tallest of New Zealand grasses frequently exceeds 10 feet in height; and bears a considerable resemblance to the now generally known Pampas-grass of South America (Gynerium argenteum), but its elegant feathery white panicles are produced in July instead of October, like those of the latter, compared with which it is decidedly more tender, and was so much injured last winter that my old plant had to be lifted, and those portions that were alive replanted.

28. Polystichum vestitum?—Height 6 to 10 inches. This Fern has stood in my rockery without protection for the last fourteen years, and its remarkably dark green, rigid shining fronds, entitle it to much more general cultivation than it has yet received.

29. Todea superba (Leptopteris superba, the superb New Zealand Filmy Fern).—This most elegant of Ferns has grown well with me for the last six years in a cool frame at the north back of a garden wall, having only a thin covering of tiffany under the glass to ensure for it the deep shade of its native forest habitats. When the plant came into my possession its fronds were only about 9 inches long, but now several of them are more than twice that length. On lifting the frame-sash where it was growing during the hardest frosts of the present and last winter, I found the soil about it a solid frozen mass, while its densely crowded minute pinnæ, which retain the condensed moisture, were separately enveloped in a white icy covering, so that the fronds far surpassed the finest ostrich feathers in elegance.

30. Clianthus puniceus (the Glory Pea and Parrot-beak flower of the settlers, and *Kowhai ngutu-kaka* of the natives).—This being, according to Sir J. D. Hooker, a native of only the Northern Island, or New Ulster, it has since its introduction to Britain in 1832 been generally treated as a greenhouse plant, although in numerous instances it has survived mild winters on southerly exposed walls. A variety having much smoother leaves than the original, which was raised in England and named C. p. magnificus, is also much hardier than it, and has fully as beautiful racemes of 2 to 2½ inches long scarlet flowers. A well spread plant of this variety on a south wall attained with me a height of about 14 feet, and had upwards of a thousand flowers all fully expanded at one time. Next winter, however, it was killed down to within 3 or 4 feet of the ground, and although two seedlings from it flowered and seeded in the open ground in summer 1877, they were both killed in the succeeding winter; but several residents at Bute and other Clyde-side watering places to whom I gave seeds were more successful with their products.

In concluding these remarks on the few New Zealand plants which have been objects of cultural experiment with me, I may state that their number is much too limited, and the indigenous habitats of most of them are at too low altitudes to convey any idea of the variety and extent of the botanical treasures suitable for our climate which still await introduction from the snow-capped Canterbury and Southern Alps, as well from other elevated mountain ranges, of which may be mentioned the following from among other trees and shrubs:—At least ten Leguminosæ, six Saxifrageæ, four Myrtaceæ, eight Araliaceæ, twelve Rubiaceæ, thirty Compositæ, twenty Ericeæ, five Cupuliferæ (evergreen Beeches), and ten Coniferæ. One Palm, the Areca sapida, found on the higher parts of Banks' Peninsula, and above the lower glaciers on Mount Cook. Herbaceous plants in immense variety and many of them of great beauty; while for the quantity and elegance of its Ferns, New Zealand is not surpassed by any country of like extent in the world.

In 1850 Mr. John Jeffrey, and in 1863 Dr. Robert Brown, were sent to North-west America as botanical collectors by an association which originated in Edinburgh. Could not such an association be now organised for sending an efficient botanical collector to New Zealand? And if so, it would be well to secure the co-operation of proprietors on the western and northern coasts and islands of Britain, where the mildness of the winters would be most conducive to the success of the introduced plants, and where they might be extensively reared and grown by private or public enterprise, such as in a botanical garden

* "Notes on New Zealand Plants that withstood the severe winter of 1878-9 at Rait Lodge, Trinity, near Edinburgh." A paper read at the January meeting of the Botanical Society of Edinburgh, by William Gorrie, of Rait Lodge.

having a judiciously selected site, for of all botanic gardens now in Britain only one of any importance, viz., that of Liverpool, is situated within the influence of the west-coast climate, and even compared with it many much more favourable sites could be got along the western coasts of Scotland. As showing that this notion of introducing the hardier plants of New Zealand has been one of some standing with me, I may mention that at a meeting held in 1863 to consider the best place for sending Dr. Robert Brown to as a collector, on the question being put to me by George Paton, Esq., of The Carnies—afterwards the Lord Justice Clerk—I unhesitatingly replied, "To the great western mountain range of the Middle Island of New Zealand;" which was met by the objection "That place has never been thought of; and besides it cannot be got at as there is no shipping or trade connected with it." The finding of gold has since however brought both shipping and trade to it; and yet its native flora is almost as little known to British culivators as ever.

In addition to the scientific names of New Zealand plants in the preceding list, those applied by the settlers and natives are also given, so far as they are known, as by such names collectors can get any kinds of seeds they may be in want of, with more ease and certainty than by using the botanical names only.

A CONSERVATORY AND BILLIARD-ROOM.

The illustrations (figs. 32 and 33) represent the plan and interior view of a conservatory and billiard-room now approaching completion at Theydon Grove, Epping, the residence of J. Finlay, Esq., and we commend the design to the attention of our readers as exhibiting a very convenient, handsome, and appropriate arrangement of these two ornamental and luxurious additions to a gentleman's mansion. It will be seen on reference to the plan of the conservatory, and the view, which is shown as it would be seen by a person standing at the door of the drawing-room, that the main pathway is exactly opposite the drawing-room door. It is about 50 feet long, and terminates in a bay, which faces a terrace walk in the grounds. This walk is of considerable length, and leads to a small artificial lake, the whole forming a splendid vista. The desire to preserve and augment the effect of this vista led to the somewhat peculiar arrangement of the conservatory.

The main roof runs the whole length of the building, and the ornamental lantern which surmounts it is central with the pathway below and the terrace, while the east front has three domed roofs—the middle one, which embraces the entrance from the east terrace, being rather larger than the others. The various gutters are supported by handsome iron columns with enriched caps and bases and ornamental brackets. The interior is tastefully laid out with stages and beds, baskets hang from the roof in various positions, while directly opposite the east terrace is a small pond and fountain, and an archway in rock-work for Ferns.

At the north end of the conservatory and close to the drawing-room door is the entrance to the billiard-room, a spacious and highly ornate apartment, exhibiting several novel features. In the first place, the wall between it and the conservatory is pierced by several windows of plate glass, the central one, which is very large, having a particularly pleasing effect. This window on the conservatory side is surrounded by the rockwork archway before mentioned, so that a person standing in the billiard-room, or seated in the recess on the west side, commands an uninterrupted view through this window, under the archway, past the fountain, through the conservatory, on to the east lawn. At the south end, and divided from the billiard-room by a handsome colonnade, is a raised smoking gallery, to which is attached a lavatory, &c. We understand that the billiard-table is to be placed on a brass railway flush with the floor, so that it can be wheeled into the recess on the west side of the room, thus converting it into a very handsome and convenient ball or concert-room. In either of these cases the smoking gallery would be utilised as a place for the band or orchestra. It is also intended, with a view to this, to place an organ in the recess at the back of the gallery. The buildings were erected by Messrs. J. Weeks & Co., of Chelsea, by whom they were also designed.

KUBANKA AND SAXONKA WHEAT.

(*Concluded from p.* 108.)

At what time this form of Wheat was first called Saxonka I do not know. I have compared it, in both the white-chaffed and red-chaffed ears, with awny spring Wheat, and they do not differ from each other in the very slightest particular, but seem to be both one variety.

No one regards our common spring Wheat as a degenerate form of Wheat. That the farmers of Samara call Saxonka a "degenerate" Wheat may point to what they believe, but no more proves that it is derived from Kubanka than the analogous belief that Darnel (Lolium temulentum) is degenerate Wheat, proves a genetic relationship between Wheat and Darnel. Nor do the experiments of Professor Buckman with one of the varieties of the wild Oat (Avena fatua) seem to possess any higher value. The cultivation of other experimenters has not turned the wild Oat into a "Tartarian" or into a "Potato Oat." The wild Oat has been as long in cultivation as any cereal Oat (see Virgil's *Georgics*, lib. i.), but it has as yet retained its characteristics, frequently throwing up fifty stalwart culms from one seed, carrying many thousand returns, and maintaining such a firm hold of its cosmical environment as to completely defy extirpation.

Why the Saxonka form of Wheat should be regarded as degenerate is certainly not obvious from the plant itself. The quality of a Wheat is relative; there is no general standard of comparison. If a variety called A produces 4 qr. to the acre, and a variety B produces 6 qr., B is the better Wheat for the farmer. But if A produces a higher percentage of fine flour than B, then with the miller A is the better Wheat; and again the Wheat whose flour absorbs the greatest weight of water is probably the better Wheat in the estimation of the baker. With certain chemists the Wheat which contains the highest proportion of flesh-formers is best, while with those people who do not wish to become fat, and desire a pleasant gusto, the Wheats having high percentages of starch are better.

Now in the London market Kubanka has sometimes been regarded as a good Wheat, and sometimes as inferior to lighter Wheats. In the minutes of evidence of a select committee of the House of Commons on the "Sale of Corn," of date 1834, an "agent for the purchase of foreign grain" states that the Kubanka Wheat, weighing 63 lb. to 64 lb., is worth 25 per cent. less than Dantzic Wheat weighing 60 lb., the reason being that the Dantzic gives whiter flour. Again, in a work on *Wheat*, published in 1865, it is stated that Kubanka under proper management yields flour of great strength, and that it astonished the London millers and bakers, producing 108 loaves to the sack.

We see, therefore, that this question of transmutation is only confused by being looked at in relation to fluctuating opinions. If a plant were to become fitter for the support of man, that would be no proof that it had cosmically improved; or if it became less fit for human purposes, that would be no proof that it had cosmically degenerated. The question is not whether a plant has improved or degenerated, but whether it has changed. Evolution is not the slave of humanity. It is simply the collective process going on about us, of which we learn to take more or less advantage. Whether, therefore, Saxonka Wheat is a degenerate Wheat as compared with Kubanka, under any assigned category, is not a question of evolution, and any solution of it would throw no light upon the real inquiry, which is simply this, Did Saxonka Wheat come from Kubanka seeds? The various forms of Wheat have been wandering over the face of the earth and mixing familiarly with each other from immemorial time. No pure stock of Kubanka—(Is this name from the river Kuban?)—of any extent ever came into Samara or any other country. And as the complete proof of transmutation would be extremely easy, requiring only that a Kubanka seed, planted beside a pin to mark the spot, shall be surmounted by a Saxonka plant, or some element of it, no amount of collateral plausibilities can be accepted.

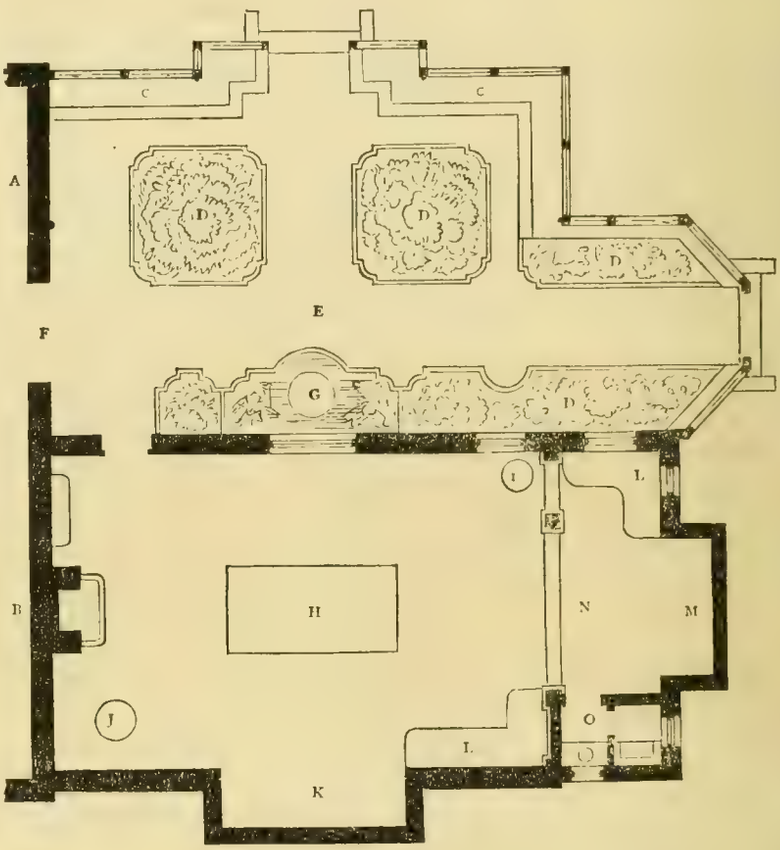


FIG. 32.—GROUND-PLAN OF A CONSERVATORY AND BILLIARD-ROOM AT THEYDON GROVE.

REFERENCES TO PLAN:—A, Conservatory; B, Billiard-room; C, Stepped stages; D, Beds; E, Ornamental tile floor; F, Glass door leading into Drawing-room; G, Fountain, with rockwork on each side; H, Billiard table; I, Cues; J, Card table; K, Recess for seat or table; L, Seat; M, Recess for organ; N, Raised smoking gallery; O, Lavatory, &c.

When the history of the cereals is written, the chapter on transmutation will embrace opinions from all ages. Parkinson, reviewing certain ancient notions (*Theatrum Botanicum, Cerealia*), tells us that "Galen writeth that both he and his aged father, who tooke delight in husbandry, having sowed both Wheate and Barley very well cleansed from any other seede, of purpose to prove whether they would change their natures into Darnell and haver-grasse, or whether these were natural seedes of their owne kinde, found that much Darnell rose among the choise Wheate, and much Ægilops or haver-grasse among the Barley; whereby it seemeth he doth confirme that current opinion, that these and other graines and seede will change into others either better or worse; but surely I could never meete that countrie or husband man that could certainly prove it (although some have averred verbally and earnestly) that there was any such metamorphosis."

In what direction we should search for an explanation of higher fertility in one form of a cereal or other seed, than in some other closely allied form, may not be easily determined. But there can be no doubt of the existence of the principle in animal as well as vegetable life. I have seen the two-rowed variety of Barley called Italian, which has a thick-set ear, planted in the same conditions as the two-rowed variety called Chevalier, which has a thin-set ear, and the latter producing from fifty to eighty ears, while the former did not go beyond twenty and thirty. Higher fertility is therefore a *vera causa* in the supplanting of one form of Wheat by another, and may be seen in operation and studied in the lifetime of a man.

I have thus placed high fertility, or a high reproductive power, as the chief cause why one form of Wheat, in certain circumstances, exterminates other less prolific forms, and seems to transmute these other forms into its own. But doubtless there is sometimes a concurrence of favouring causes. In the case before us, the Saxonka form of Wheat is not only more prolific, except on rich virgin steppe land, it also comes sooner to maturity; the seeds are more easily shaken out of the pales by wind, so as to produce self-seeding; and it has the capacity of living on less food than the Kubanka. It is brought to the front, not by the transmutation of other forms, but by that combination of cosmical forces which selects one line of vitality in preference to another; life is most prevalent on the easiest lines of vitality, and the more prevalent forms of life are probably those which are most in harmony with current rearrangements of cosmical materials. But whether the relationship between one form of vegetable life and other forms is a biogenetic or a cosmical relationship—that is, whether one form of life originates from other forms of life, or whether those causes which are capable of originating one form of life are capable of originating all forms of life—is not settled by the acceptance of evolution.

In all probability the causes which bring about whatever change from one form to another does actually take place, are dependent on the cosmical processes in current operation, and make no appreciable show even in the lapse of many human generations. We know that the form of the ear of a Wheat already exists in the embryo from which it is to grow. In the forty or sixty embryos standing in a Kubanka spike coming to maturity in the autumn sunshine, exist forty or sixty microscopic ears of the Kubanka form and not of some other form. And if they are there in virtue of existing cosmical forces, whence are the forces which shall alter them? The form of a plant cannot be permanently altered but by the alteration of that collocation of cosmical influences which gives it whatever statical permanence it possesses. A mere physiological amplification or deduction, a physiological resultant or sum, is not a biomorphic evolution. We have not yet got beyond the notion that such periods as our seasons, or the long journey of the major axis of our planet's orbit round the heavens, are mere dead cycles. There are no cycles, and the motions taking place are but marks of the life of the evolution which has brought our Wheats to their present form. Such experiments as the present have no philosophical interest except in whatever degree they help to clarify our vision as to the current creative processes going on around our doors.

It is now twenty-five years since, in a small book called *The Unity of Matter* (1855), I made the contention that the interpretation of Nature logically demands that the phenomena of sight, like the phenomena of the other senses, should presuppose, not a specific ether filling all space, but an appropriate form (an ethereal form) of the common fund of matter which appeals to other senses than vision; and that consequently a transfer of matter from the great solar decomposition into the structure of the planets, for the very purpose of carrying them to higher stages of evolution, is the very work which is on hand, the very explanation of what all this cosmical stir is about. The planets are not dead and finished supports of living plants and animals, merely going round the sun, like the hands of a clock, to tell the number of the years; they are living organisms and are being carried round, not by barren projections, but by the very forces and forms of matter which require this carrying round to work out the evolution of planetary globes. The evolution and the life of plants and animals are intelligible only on the assumption of the current evolution of their platform. The earth does not go round the sun for nothing or by way of holiday; it is carried round the sun by forces perpetually present, for the very purpose of being enlarged from the actual materials thrown out in the sun's decomposition. And these contentions do nothing but complete the logic of the sense of seeing. But never till this view becomes accepted science is it possible that our eyes should be opened to the creative drama now being played before us. And never can this view become accepted science, till the curtain of a specific ether with its fictitious scenery be drawn aside, and it be seen that the common matter which appeals to sensation has forms which appeal to all the senses, necessarily demanded by the very fact of their evolution. *A. Stephen Wilson, North Kinmundy, Summerhill, by Aberdeen.*

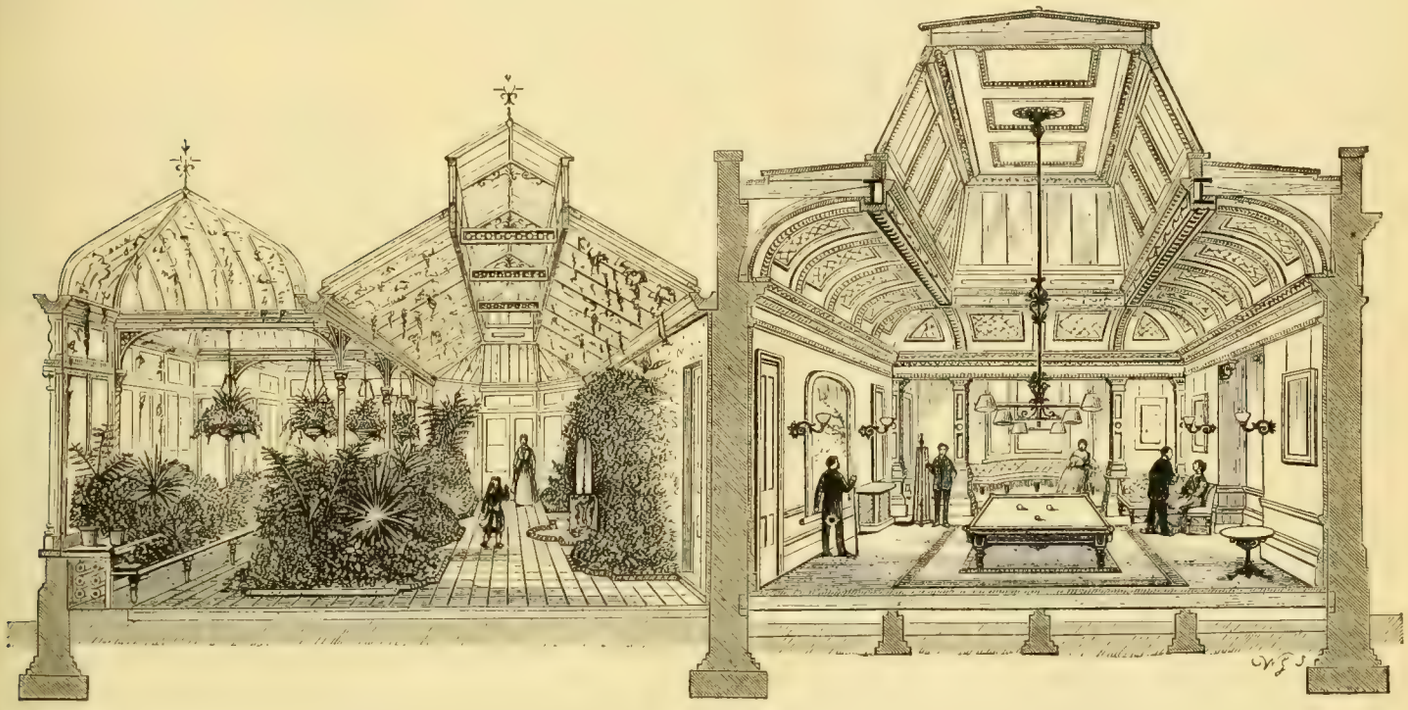


Fig. 33.—Conservatory and Billiard-room at Theydon Grove, Epping. (see p. 172.)

Foreign Correspondence.

King William's Town, South Africa: *Dec. 27, 1879.—Grevillea robusta.*—We have for about four months experienced a very severe drought, which still continues, and the manner in which a well-known favourite of the sub-tropical garden at home has withstood such a trial induces me to say a word in its favour. I allude to Grevillea robusta, of which we have some fine specimens from 40 to 50 feet in height of about ten years' growth. Notwithstanding that they have been for some time covered with their very showy orange-coloured racemes of bloom, and are now heavily laden with seed—the most exhausting period of a tree's existence—they do not appear to be suffering in the least, their truly elegant and graceful foliage having that rich dark-green hue which is characteristic of robust health, though they have no artificial watering, and are growing at too great a distance from any water for the roots to reach.

I think it is certainly worth planting extensively in this, at present, desert-like country, which, but for the long-continued droughts we suffer from, would be one vast garden. I do not know what is the quality of the timber, but if any of the readers of the

Gardeners' Chronicle who have seen it used in Australia or elsewhere would enlighten me on this point I should be much obliged.

Casuarina equisetifolia.—There is one other beautiful tree which has stood equally well—the Casuarina equisetifolia, or Beefwood—a native of the South Sea Islands; this has about the same rate of growth as the Grevillea, with a clean, straight stem, and graceful foliage, which is well described by its specific name.

Acacias.—Two other Australian trees which make noble specimens here are Acacia dealbata, the Silver Wattle, and Acacia Melanoxylon, the Blackwood, but of these many would have died had they not been supplied with water. This latter is the favourite tree for street planting in this district, and where there is a small stream of water constantly running down each side of the roadway, which is not uncommon, there is not a finer tree for the purpose—a really well-furnished shady avenue being obtained, under these favourable circumstances, in five or seven years, the trees being planted when one year old.

Oaks.—There is a nice avenue in the garden of Oaks (var. pedunculata). The Oak does extremely well here, but most of the leaves at present have quite a white appearance—the effects of hot winds which we experienced on the 24th and 17th inst., when the thermometer registered 150° in the sun and 108° in the shade (Fahrenheit).

The Gums, Eucalyptus globulus, and other species of course far outstrip any of these in rapidity of growth, and stand well in either wet or dry situations when once established, but they are not to be compared with any one of the above for handsome appearance.

There are other things worthy of notice, but I must conclude this time with the wish that it had been possible to have exchanged a little of our weather for some of the surplus rain you have had during the past season. *J. C. Nelson, Curator, Botanic Garden, King William's Town, British Kaffraria, Dec. 27.*

Boston, Mass., U.S.A.: *Twin-flowered Cypripedium insigne.*—I do not know whether it is a common thing with your cultivators to grow specimens of this pretty old plant with two flowers on each stem; it is occasionally seen in this way in some of our collections, but we believe it is rarely, if ever, that every stem on a single plant produces two flowers. Such a specimen was recently exhibited before the Massachusetts Horticultural Society, January 3, by Mr. J. Tailby of Wellesley. The plant was in an 8-inch pot, had nine stems, and every stem produced two flowers, one of them springing from the sheath at the base of the first flower. Such a specimen was thought so remarkable that Mr. Tailby was requested to give some account of his treatment, and at the last meeting, January 10, the subject for discussion was this Cypripedium. Mr. Tailby gave a detailed statement of his mode of culture, but it differed in nothing from that which is customary except in the material in which it was potted. This was sphagnum and coarse sand only, with plenty of liquid manure during its growth. Mr. Tailby thought he had done all this by his treatment of the plant, and believed he could produce three flowers on a stem. Other cultivators thought it only an accidental circumstance, and could not be done with the same plant again. This remains to be seen. As a novelty in culture it was certainly quite remarkable, and I should be glad to know if it is a common occurrence. *C. M. Hovey, Jan. 11.*

Florists' Flowers.

Dahlias from Seed.—Some of our Dahlia raisers must have reaped a short harvest of seed during the unpropitious autumn of 1879. It was not so much that the flowers did not produce seeds as that the season proved so late; the seeds had scarcely time to develope, and the persistent autumnal rains caused many of the matured seeds to rot. Still, some were obtained, and though the seedling Dahlias raised in 1880 will not be so numerous, in all probability, as in previous years, the floral succession will not be broken, and some yearling plants will be surely forthcoming to reward the labours of the florist.

Messrs. Keynes & Co., Castle Street Nurseries, Salisbury, the foremost raisers of Dahlias in the present day, plant out every year about 15,000 seedling Dahlias for trial. It is only the very finest flowers—distinguished by symmetry, colour, and perfection of petal as well as of centre, that are permitted to carry seed. As the petals decay they fall from the flowers, and if any adhere they are removed, so that they may not become vehicles for conveying rot to the seeds. In wet weather the pods are gone over occasionally and the moisture squeezed out of them, for it is the practice to leave them on the plants till frost sets in, in order that the seeds should become as fully developed as possible. When the pods are cut they are removed with stems and tied in bunches, a dozen or so in a bunch, and left hanging in a drying place two or three days, and then opened, for it is found if this be too long delayed the seeds will suffer. The seeds when taken from the pods are dried, and then made up into packets of a hundred or so, and put away in a drawer till wanted, but the seeds should not be packed away till dry.

The time to sow is at the end of March. The seeds are sown in shallow pans or well-drained pots placed in a brisk, moist heat, when they soon germinate, and if grown on carefully increase rapidly in size. It was a part of the late Mr. Keynes' practice to place the pans containing the soil for the seed in heat a day or two previously, to get it throughly warmed before sowing. Mr. Keynes found that the best seed—that which produced good flowers—was generally very thin, and he said he cared little for plump seeds, the progeny was invariably disappointing.

Those who deal with but few seedlings can pot them off so soon as large enough, and grow them on into size. In dealing with an enormous number, they can be pricked off into store-pots, pans, or boxes, or put out into a warm frame, and kept till planting-out time. They are then planted out in a piece of good ground, previously deeply dug and well manured and prepared for their reception. The Dahlias are put out in lines, which are some 20 inches apart, and the plants themselves 6 inches apart in the lines. A very large number of the inferior varieties bloom early, and they are at once pulled up by the roots and thrown away. Any promising flowers are marked and a description taken of them. Out of the large number of seedlings Messrs. Keynes & Co. raise in a year, they are satisfied if they obtain from fifty to sixty promising flowers, and these are propagated from the following year, and well cultivated, so that their capabilities can be displayed to the utmost. A seedling is always grown for two years before it is sent out, in order that any change of character may be made apparent. Sometimes a flower that had shown itself in high-class character till the time for sending out will deteriorate after being distributed, and become of little or no value for exhibition purposes. In 1852 Mr. C. Turner, of Slough, purchased from Mr. George Wheeler, of Warminster, for the large sum of £105, the stock of Queen Victoria, a flower of rare merit at that time, having a rich yellow ground, the petals handsomely tipped with carmine-crimson, and of symmetrical build. At the end of 1854 it was said of this promising variety:—"Queen Victoria has been exhibited on one occasion only, when it created quite a sensation. Shall we be going too far if we venture to predict that, as a show flower, we have 'looked our last' on this variety?" The prediction came true, the blooms came hopelessly hard-eyed, and the variety had to be thrown out of cultivation.

Perhaps, as a general rule, the new Dahlias of any particular year are not shown in so good a state as when exhibited as seedlings the previous year. The result will almost always occur, in a greater or less degree, though there are always exceptions. The reason for this was well put by the late Mr. John Sladden some years ago. He said, "When a seedling is to be put upon its trial it enjoys peculiar advantages. Being then, for the most part, in the hands of the raiser, it experiences, so to speak, a kind of parental care or solicitude: from the earliest period of its existence to the time it is 'brought up for judgment,' it is watched and tended with the utmost anxiety; every appliance of Art and Nature is summoned to its aid: and when, at length, it is produced before the world, it follows, as a matter of course, that it comes forth in the highest state of perfection to which it is capable of being raised. Now let us note the career of such a production. Week after week it is exhibited, three or six blooms, as the case may be, and always in excellent condition. Such a gem cannot escape observation: every grower looks upon it as a great acquisition—sees, in imagination, its splendid appearance in his stands for the ensuing year, and orders it accordingly. The stock, it may be, is limited, while the plants required are very numerous, and what, now, is the fate of this pet—this spoiled child, which has been reared in the lap of luxury? Alas! it becomes the victim of over-popularity. The demand is great, and the supply must be made to keep pace with it, be it ever so enormous. Our unfortunate subject is therefore forced and driven to, and almost beyond, its utmost powers of endurance; for every bud it produces must, if possible, be converted into a distinct independent being, having a perfect organisation of its own, and complete in all its parts. In due time a plant thus artificially reared comes into the possession of the grower, who, instead of nursing it tenderly, is often anxious to make the most of it in another sense, and who, under the erroneous impression that he will have a better chance of blooms from two or three plants than from one, still further mutilates and multiplies it, unthinking that he is deteriorating the quality in the exact ratio that he increases the quantity of his new acquisition. What marvel, then, that under such unnatural treatment the constitution of the variety should become seriously impaired? It may retain indeed the principles of simple vitality, it may grow freely, and be apparently healthy and vigorous, and yet its powers of reproduction may have suffered to such an extent as to render it incapable of yielding perfect blooms until time and less severe discipline shall have restored it to its pristine state, and a year or even more may elapse before this restoration is complete." *R. D.*

Garden Operations.

FLOWER GARDEN, ETC.

The long-continued wintry weather having hitherto hindered the performance of all new or extra work, that only that really must be done should now be carried out, as under no circumstances should such work be allowed to interfere or interrupt the usual routine labours which an advancing season always brings. Perfection of keeping, by which is meant general neatness and order, is only attainable by doing everything at the proper time; therefore, let all extra labours be at once brought to a close. Of course, if additional hands are allowed extra work can still be done, but unfortunately gardeners are supposed by some employers never to require additional assistance. In frosty weather all strength should be concentrated on clipping and trimming hedges, cutting Laurels, Hollies, and other shrubs, and the more straggling shoots of Rhododendrons, and the removal of the old seed-pods from such as through lack of time were not done as soon as the flowering season was over; and this, together with wheeling or carting of manure or soil, as the case may be, will afford profitable employment till a change occurs, and then all tree and shrub planting still on hand should have first attention, that they may get established in the soil before there is danger of their being checked by drought. When practicable a mulching of stable litter should be given.

A change to milder weather will start spring-flowering plants into active growth, and when this has taken place they are more susceptible of injury at each recurring frost, hence the necessity of affording the tenderer kinds some slight protection by evergreen boughs, or tiffany supported by hooped sticks, and the ends of it pegged into the turf. After each sharp frost all the beds should be gone over and the plants well firmed in the soil. A mulching of cocoa-fibre refuse is a good preventive of such upheaving by frost, and at the same time gives a neat appearance to the beds. The season for division, re-arrangement, or for making new plantations of hardy herbaceous and other perennial plants is at hand; the following are showy, lasting, and easy of culture:—Antirrhinums, Anemones, Aquilegias, Delphiniums, Dianthuses, Funkias, Helianthuses, Irises, Liliums, Myosotis, Pentstemons, Pæonies, Phloxes, Pyrethrums, Spiræas, and Tritomas. Where such plants are grown in borders entirely devoted to them a knowledge of their height and habit of growth is necessary, in order to assign the rightful position to each; but when grown in rockery gardens, in odd nooks and corners, or in front of shrubbery clumps, the arrangement is not of so much importance.

I have long had in my mind's eye—but hitherto no opportunity of working it out—the *beau ideal* of an herbaceous border. It is as follows:—Plants arranged in lines and distances according to height and spread of growth—fine-foliaged and variegated kinds to alternate with the free-flowering kinds; spring and autumn flowering kinds also to alternate, or, at least, to be so intermixed that at all seasons there should be an even balance of flowers throughout the arrangement: the interstices between each plant, or line of plants, should be filled with bulbs—Crocuses, Daffodils, Snowdrops, Scillas, Liliums, Gladioli, &c.; whilst the whole groundwork of the border should be covered with

surface-rooting Sedums of various colours. I hope ere long to be privileged so to arrange such a border; for, the year round, there would always be in it something of beauty and interest. Anemones, Ranunculuses, and Gladioli ought to be planted as soon as the frost is out of the ground, for early planting prevents the exhaustion and consequent deterioration of flowers which takes place when growth is developed prior to planting the bulbs; and if through any circumstance they cannot yet be planted, keep them, to hinder growth, in as cool a place as possible. In preparing beds for these the soil should be deep, and if of an adhesive nature there should be a liberal admixture of leaf-mould and plenty of drainage; for a light soil a good allowance of cow-manure is necessary to obtain fine flowers. Sweet Peas are always welcome flowers, and it will now be safe to sow these in the open ground. Though I have occasionally sown them in pots, and raised them in warmth, and transferred them to the open ground as the weather became mild, the gain was so little that I would not commend the practice.

Summer bedding arrangements ought now to be completed, that due time may be afforded for the propagation of the necessary plants; and to those who have hitherto mainly depended on Pelargoniums, Lobelias, Calceolarias, and plants of similar nature, I would say, make an effort to get out of this rut, not by entirely excluding these, but toning down the necessarily high colouring which such plants produce by using others of more sombre hues, and particularly aiming to work in as many hardy plants as possible. Thus, whilst ensuring permanency of effect, there will be less work to be done in the propagation of tender plants. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

With the unsettled state of the weather, which as I write inclines to a thaw, one can hardly speculate upon what the morrow may bring forth. The fact, however, remains, that ground operations, as far as the planting of fruit trees is concerned, has been suspended for nearly three months, and that all these arrears of work, together with minor routine duties, are now claiming prior attention to more seasonable work. The thinning and pruning of overgrown orchard trees, such as Apples, Pears, Plums, Cherries, and Damsons, has come in for more than a usual share of attention, owing to the protracted severity of the frost, and although the benefit to the trees may not be perceptible during the present season, the operation, if skilfully performed, will be sure to exercise a beneficial influence on future crops. Where wall trees are advanced in years and thinning out was included in the prospective programme of last autumn, the idea of prosecuting the work with much hope of success had better be abandoned until next winter. Young trees may yet be lifted, in order to fill up blank spaces on walls which are unsightly, as well as being unprofitable. The loss or gain of a season's growth is oftentimes of vital importance to the gardener, and as fruit trees generally cannot be expected to yield heavy crops this season, an effort should be made to have them established at the root, thereby giving greater security of a crop next year. With a view of facilitating this kind of work, the pits should be got in readiness for the reception of the trees, so that there may be no delay in pushing forward the work when the weather is propitious. Our pits are made 2 yards long, and from 3 to 4 feet wide, and 3 feet deep; in wet, tenacious soils, 2 feet 6 inches would be deep enough. I think the latter depth would be sufficient in any locality in a north aspect, where evaporation takes place slowly in consequence of the situation being shielded from the action of the sun.

The pits should be bricked round, and drainage provided according to the general conditions of soil and climate. The trees should also be carefully mulched with litter, and their branches will only require to be roughly tacked up for the present.

The pruning, tying, and nailing of wall trees has come within the category of possibilities for a few hours each day lately, and the cleaning and washing of the walls which should have taken place previously in order to dislodge insect pests, will have to succeed, instead of precede, the work of training. I do not know that the labour generally allowed in gardens will admit of more being done in this way than to give the walls a good scouring with soapsuds, applying it with force by means of a garden-engine, and I do not know that a more tedious, if more expensive, process would be more likely to eradicate the foe more efficiently.

Bullfinches have already put in appearance with us, and a careful eye will have to be kept upon them. They will attack the most forward fruit-buds, and denude a whole tree of every blossom if not detected in time. The pruning of bush and other fruits will have to be pressed forward with energy during the present month, and material for protecting wall and other fruit trees had better be seen to some time before it is required. *W. Hinds, Canford Manor.*

FRUIT HOUSES.

Peaches and Nectarines.—If any of the late kinds of Peaches in the early house are still in flower, the ventilators opposite the trees must be kept sufficiently open to admit of a circulation of air without producing a draught, and unless they are known to be sure setters the favourite mode of fertilisation may be followed up. When all the fruit is set, syringing once or twice a day with tepid water will be necessary for cleansing the trees of the remains of the blossoms and keeping insects in check until it is considered safe to fumigate the house. This stage having been reached all exhausted fermenting material may be removed from inside borders, and if the latter are in a fit state for watering advantage should be taken of a fine morning for giving a moderate supply of tepid liquid to old trees that show signs of weakness, and water without the stimulant to young ones which seldom exhaust themselves by carrying a profusion of flowers. Under generous treatment, with due attention to moisture and early closing, the young shoots will now grow very fast, and require daily attention to disbudding, the little and often principle being the best. By commencing at the extremities of the trees and taking the foreright shoots first a check to the flow of sap will be avoided, and the weakest and least forward parts will gain strength, which may be still further increased by pinching out some of the points of the side shoots on the strongest branches at subsequent disbuddings. In early houses those closely stopped shoots form spurs which invariably ripen well and set plenty of fruit the following year, but the system is not so applicable to late ones, as they do not swell off such large Peaches as shoots that are laid in from the lower part of the bearing wood of the current season. The trees in succession-houses will now be swelling their buds very fast. With us they give promise of an abundance of very fine flowers, which will be thinned on the under sides of the shoots before they open. The inside borders have been well watered this week and lightly mulched with short litter as a means of protection to the surface-roots, and the house will be fumigated when the blossoms begin to show their charming tints of colour. In days gone by it has been usual to advise the retarding of cold houses as a means of escaping spring frosts. This may still receive attention where the latest Peaches are grown under glass, but we hope the lesson of the past two years will have led the owners of all cold houses to take advantage of the low price of hot-water pipes, and that Jack Frost may now be met by a counterblast that will deprive him of his power to destroy in a single night that which has cost the anxious attendant the work of a year. *W. Coleman, Eastnor.*

Melons.

With an increase of light and occasional blinks of sunshine these are making a nice growth, and to encourage a quick, but at the same time a sturdy growth, every available means must now be employed. To achieve this, let us assume that the cultivator has sufficient top and bottom-heat at command, and by ventilating on all favourable occasions, and shutting up early with genial atmospheric moisture on bright days, a quick, sturdy, and consolidated growth will be the result, which with the Melon, as other plants, is the foundation of success; and when the after-treatment is consistent with the requirements of the plants satisfactory returns will invariably be the result. Great care, however, must be exercised in not admitting an unbroken current of air while the wind remains in the north and north-east quarters in which it has been stereotyped for some considerable time past. A piece of hexagon netting, doubled a couple of times, and placed over or under the ventilators, as the case may be, will answer this purpose. Cover dung frames with double mats and plenty of fern at night, and see that the linings are regularly attended to—that is to say, that the old linings are removed and replaced by fresh fermenting material. Maintain a top and bottom temperature as previously recommended. Sow little and often for succession and other purposes, as it is always well to have a few plants more than one wants. *H. W. Ward, Longford Castle.*

Cucumbers.

Maintain a night temperature of from 65° to 70°, and from 80° to 90° with sun, and put a little air on on all favourable occasions, shutting up early in the afternoon, with plenty of atmospheric moisture on bright sunny days. This, with a judicious application of tepid liquid-manure to the roots, will cause the plants to make a free growth. Crop lightly and keep the plants clean. Young plants will now be ready for transferring to the hillocks in the Cucumber-house—assuming that the said house has been thoroughly cleansed, and that the soil has been in it a few days previous to planting, that it may become warm. The soil having been pressed firmly around each plant, a stick should be put to each, and fastened to the first wire of the trellis; and should there be bright sunshine at the time of planting a light shading should be applied for a couple of hours, from 11 to 1 o'clock, for a few days, to prevent their flagging, after which it can be discontinued and the plants subjected to the full influence of the sun's rays. See that the linings of dung frames in which Cucumbers are growing are made up weekly or fortnightly, according to the state of the weather and the fermenting material existing at the time; and to meet this and other demands keep a good supply of well mixed dung and leaves in readiness in the reserve yard. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

Conservatories.—With the many forced things that are now fast coming in, and others that are flowering naturally, these structures may be made gay and interesting, but to impart the latter desirable feature it is necessary to vary the arrangement occasionally, and to introduce plants of bold type or such as are admired for the beauty of their foliage. None commend themselves more in this latter respect than small Palms and Ferns, either of which not only impart a more ripened and finished appearance to any house, but help to tone down the colour and give character to the whole, especially if judiciously interspersed so as to maintain the right balance. To crowd a place with only such as are in bloom—to think of producing the best effect in that way—is a great mistake, as, although Nature provides most plants with ample leafage to set off their blossoms, she distributes others amongst them in such a manner that there is always beauty of form and plenty of greenery for the eye to rest on.

Camellias being now in a very advanced stage, soot-water or other liquid manure will be of great assistance in helping the flowers to expand, but whichever is used it is of the greatest importance that it be perfectly clear, as otherwise it stops up the pores of the soil and keeps out the air, so important to the welfare of the roots. On no account should these be allowed to become dry at this season, as when they do the plants suffer immediately, so great is the demand now made on them. It is not the frequent slopping that is wanted—this is more to be guarded against, but a thorough soaking should be given, and then none till the soil is in a fit condition to receive the same again, in which way it may be kept sweet and wholesome for the fibrous rootlets to feed on. Where roof climbers have become worn out or exhausted, the present is a good time to set about their renovation or renewal, which may be done in the former case by removing a good portion of the border and substituting for the part taken away an equal bulk of fresh fibry loam and peat—a mixture that most conservatory climbers delight in. When borders are newly made, these ingredients cannot well be used too rough, and to keep them porous for a long period sharp sand is of great service, as also a few bushels of finely-broken charcoal and bones, both of which add materially to the health of the plants. Good and proper drainage is the first consideration, and this may be provided by 6 inches or so of soft red brickbats, and to keep the interstices of these open it is a good plan to cover them with thin-cut turves previous to putting in the soil already prepared. Those who would grow the Lapageria well should use nothing but peat in large sods, with sand sprinkled between; by doing which the fleshy roots have full liberty to ramify, and the water required in such abundance will meet with no obstruction in its passage, and can pass freely off. Without such a provision being made, peat soon becomes a sodden, inert mass.

Stoves.

A busy season is now before the cultivator in these, as not only is there much potting to be done, but there is the work of propagation to be carried on in order to get up a stock of such things as flower next winter—Euphorbia jacquiniæflora, Sericographis Ghiesbreghtiana, Thrysacanthus rutilans, Justicia flavicoma, Plumbago rosea, and Centropogon Lucyanus. When it is intended to keep old plants of any of these, no time should be lost, after they have done blooming, in cutting them back, that they may break again as quickly as possible, as, in a general way, they get rest enough when in bloom by being kept in cool houses. Till they make a fresh start, moderate dryness at the root is essential, as otherwise they bleed, and do not push so strongly as they would. Before any re-potting commences, it is always advisable to go through the whole stock of plants, and give them a thorough cleaning, that when they get into their new soil they may at once be stood away to grow without any further interference or disturbance; and not only this, but they may be handled more readily and safely now than when the young foliage is in a more advanced stage. Roof climbers that grow overhead will require special attention to free them from insects, one of the worst of which—mealy-bug—the Stephanotis is particularly liable to, but the leaves being of such thick texture, they will fortunately stand a fierce squirting of water, which is the best way of dealing with these pests when their ambition leads them to such exalted positions. *J. Sheppard.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Feb. 9	Sale of Liliums, Tuberoses, Tigridias, &c., at Stevens' Rooms. Sale of Lilies, Orchids, &c., at The Mart, by Protheroe & Morris
TUESDAY,	Feb. 10	Royal Horticultural Society: Meeting of Fruit and Floral Committees at 11 A.M., Scientific Committee at 1 P.M., Annual General Meeting at 3 P.M.
WEDNESDAY,	Feb. 11	Sale of Roses, Fruit Trees, &c., at Stevens' Rooms.
THURSDAY,	Feb 12	Sale of Orchids, at Stevens' Rooms
SATURDAY,	Feb 14	Sale of Hardy Plants and Bulbs, at Stevens Rooms.

THERE is some danger that the worn and threadbare simile of the "cool Parsley bed" is to be revived. A new crusade seems about to be preached against ART IN OUR FLOWER GARDENS, as seen in what is called bedding out. Last summer a Parsley bed was cold enough to have frozen the beholder, whilst bits of colour were scarce and sadly wanting. The blaze of hue was nowhere too warm, bloom and colour were sighed for, but, alas! in vain; the old simile lost all its force, and its power to ridicule is, if not gone for ever, at least considerably toned down. After what we have gone through it will be long ere any effort will succeed in overthrowing the taste for summer gardening, and for masses and combinations of floral colours.

From the foundation of art there have been in all its varied branches schools of thought as diverse as possible. Architecture, sculpture, painting, music — all have found in their devotees thoughts and ideas entirely dissimilar; and between these schools there have waged wars of the bitterest kinds. Looking back from our modern and advanced standpoint, we are disposed to laugh at these mediæval quarrels, and willingly concede to each school its right to think as it likes. We have need to employ some of this charity when we take sides in some modern art controversy, even though it be upon such a simple and unpretentious topic as Art in our flower gardens. The first thing to be admitted is the undoubted right of every one to do as he likes in his own garden. Any rule of rigid dealing would but land us in the misery of utter monotony. The diversity of ideas and tastes give us diversity in garden aspects, and although there may be many gardens below mediocrity, yet no two are exactly the same, even though the tendency to imitate is perhaps as great amongst gardeners as it is in any portion of the community.

There can be no fixed rules of art in gardening simply because gardening, and flower gardening specially so, is a matter of taste. That taste may be vulgar, or it may be most refined. To one parterre bedding is an abomination, to another it is the elegance of a seventh heaven. It is all a question of taste and of tolerance.

A garden often reflects the tastes and predilections of its owner. If one visit a garden and see nothing but gaudy flower-beds, without a particle of interest in them beyond a blaze of colour, the effect produced is just similar to what would be felt on entering a library and finding it stocked with green and yellow paper-covered books of the railway-stall order of literature. So, if one enters a garden where close under the drawing-room windows there are huge oval or circular beds with a straggling Arbor-vitæ in the centre, some cachectic Roses and superannuated herbaceous plants around it, one is apt to be reminded of an old-clothes shop.

Good taste by itself is not enough—a flower-bed may be unexceptional, a herbaceous border full from February to November with gems and plants as superior in interest to the meaningless gauds of the parterre as the coats of armour in the old hall are to the tinsel and pasteboard of the stage, and yet they may be made unsuitable or out of place. The beauty of appropriateness takes precedence. A well designed flower-bed is most appropriate near the house in association with architectural features. Herbaceous borders as a rule suffer from too close approximation to the dressed garden, and even shrubbery borders are best at a little distance from the house. Wilderness walks and wild gardens generally are best quite away from the house, although some of their admirers would displace the flower-beds to substitute the freer and admittedly more interesting plants. With all our love for the natural style of gardening, we think this would be a great mistake. The ideal garden should contain a little of everything that is good, but that little should be disposed in the right places.

In the planning and planting of floral parterres the art-feeling of the operator is brought strongly into play, first, in the arrangement and sketching of pleasing designs; second, in the harmonious combinations of colours. In both these matters rules may be laid down, but training and taste after all are the best guides, because the object and purpose of a decorative garden is to please and gratify those for whom it is fashioned. That the best abilities and highest art evolutions will afford the widest gratification there can be little doubt. The beds produced by the floral artist must inevitably carry away the palm from mere "hearth-rug" patterns and designs, but even these will find plenty of admirers. There is no antagonism in the one floral art school as embodied in the lovers of parterre bedding: there may be divergences as to results, as obtained by different artists, but on the main point—as to the desirability and beauty of the system—there is none. The antagonistic school are the garden pre-Raphaelites, the "natural" worshippers—men who are inconsistent enough to fall into ecstasies over a painted window, showing in unusual brilliance all the colours of the rainbow, and to preach a *jehad* against rich combinations of colour in flower gardens. To these the *beau ideal* of a garden is found in trees, rockwork, masses of shrubs, green grass, borders and beds of heterogeneous plants of all kinds, sizes, and characters, and perhaps a wild or weed garden. There is just a dash of Whistlerism about them, and they favour Golden-rod amidst a mass of Laurel, of a purple Clematis amongst a ground of Ivy as nocturnes of green and gold or green and purple rich in perfection and artistic beauty.

Differ as widely as we may in discussing this matter, we come back inevitably to the starting point, that it is a matter of taste, and that no rules can be laid down which shall say what should and what should not be. We may even take the matter out of the region of art into that commonplace one of trade, and say that here the bedding-out system has its advantages. It causes work, it promotes trade, as thousands of garden labourers and florists can testify. That it does involve considerable labour there can be little doubt, but so also must any garden work, even to the most simple feature, if it is to be done well. Then parterre flower gardening is more a taste of the wealthy than of the poor, and the wealthy might do worse than spend their riches in the promotion of their own fancies in flower gardening. Even in humble circles, however, where the love for a good show of summer flowers prevails, the disposition to spend any spare cash is well directed where a love for gardening and bedding-out predominates. The frequent changes incidental to floral bedding also promotes additional interest in garden work.

The changes from spring hues of softness and beauty to summer colours rich and glowing, that gradually soften off and fade into the cold dull hues of winter, when even a silver or golden leaf is treasured as a flower, are all full of deep interest and promote excitement. These are charms that "natural" gardening yields not in like degree, and which its votaries, happy in their ignorance, are unable to appreciate. Nature now and then throws together for our delectation some magnificent masses of colour. A common of Gorse all aglow with golden bloom, a field of scarlet Poppies like a crimson sea, huge waving masses of Bluebells—all excite our admiration and delight. What Nature here does the flower gardener with art seeks to emulate in his parterres: the scarlets, the yellows, and blues, subdued and combined with softer tints, create a spectacle of beauty. As we shiver in the cold blasts of winter we mentally ejaculate, "May we soon gaze upon the like again and again."

—— A BROOK-SIDE VIEW.—In the midst of fogs of Stygian blackness it is pleasant to be reminded of other sights than smoke, vapour, and rime. Mr. FITCH's drawing of a brook-side view carries us in retrospect and in anticipation to the flowery mid-summer tide, and it furnishes a hint to gardeners and others in their treatment of water and its adjuncts. It is astonishing how little use is made of our native Water Lilies, our Lythrums and Lysimachias—how we pass over the Persicaria, the Yellow Flag, the flowering reed, the Buckbean, the Villarsia, and a host of hardy aquatics, indigenous and exotic, which are not surpassed in beauty or interest by any class of plants.

—— THE INTERNATIONAL POTATO EXHIBITION.—A meeting of the committee established for carrying out the International Potato Exhibition was held at the Masonic Club, 101, Queen Victoria Street, E.C., on Friday, January 30. The financial statement brought before the meeting was very satisfactory, there being a balance in hand of £23 7*s.* 2*d.* It was decided to hold the exhibition for this year at the Crystal Palace, Sydenham, on September 22 and 23. The Lord Mayor, Sir FRANCIS WYATT TRUSCOTT, has kindly consented to accept the office of President for this year, and in all probability will proceed to the Crystal Palace in state to open the exhibition on Wednesday, September 22. The schedule of prizes has been slightly enlarged, 5th prizes being added in Classes C and D, and 4th prizes in E and F.

—— FARMERS AND THE INCOME TAX.—Sir CHAS. W. STRICKLAND writes:—"I see that you quote in your last number the decision of the Board of Inland Revenue, that they would only make an allowance in income-tax on a return of rent when it was made in the form least beneficial both to the landlord and tenant. Of course no one who is acquainted with the character of Government officials, especially of those connected with the office of Inland Revenue, can be surprised at so unjust and senseless a decision, but it seems to me to be carrying the natural oppressiveness of the tax collector rather far to charge those landlords who take the greatest interest in their property, income-tax upon income which they do not receive, when it is not charged upon others."

—— ART IN THE CONSERVATORY.—We omitted to state that the series of designs exhibited at the Leeds Architectural Society by Mr. MAURICE ADAMS, and one of which was reproduced in our columns a short time since, form part of a work prepared for Messrs. MESSENGER, of Loughborough, and on the eve of publication, entitled *Artistic Conservatories.*

—— EXTENSIVE PLANTING IN SCOTLAND.—The *Journal of Forestry* states that on the estate of Mr. YOUNG, Durris, Kincardineshire, upwards of four-and-a-half millions of young forest trees have been planted within the last three years. The area occupied by this immense number of plants amounts to about 1400 acres, and the sorts planted consist of Scots Fir, Larch, Abies Douglasii, Silver Fir, and Spruce.

—— THE NEW FOREST. — The important appointment of Deputy-Surveyor of the New Forest has been conferred upon a son of the Earl of HAREWOOD, the Hon. GERARD LASCELLES.

—— DEATH OF MR. M'COMBIE, OF TILLYFOUR. — Mr. M'COMBIE, of Tillyfour, the distinguished agriculturist and late Member of Parliament for the Western Division of Aberdeenshire, died on Sunday evening last, at his residence at Tillyfour, Aberdeenshire, in his 75th year. He had a remarkably successful career as an agriculturist, more especially as a breeder and feeder of cattle; and was the author of a book entitled *Cattle and Cattle Breeders*, which has reached a third edition. He was also the first tenant-farmer returned to Parliament from Scotland, and the second in Great Britain.

—— THE LAW OF FIXTURES.—We note that the important paper on this subject, which was read by Mr. J. SMALMAN SMITH, Barrister-at-Law, at a late meeting of the Institution of Surveyors, together with the discussion which followed, is published in full in the current number of *The Estates Roll*.

—— THE LATE SEVERE FROST IN FRANCE.—The following extract from a letter received from the Messrs. TRANSON, of Orleans, has been sent to us by Mr. CHARLES LEE, of Hounslow:—"Acacia, Cerasus, Cratægus, Euonymus, Laurus, Roses, Ligustrum, Peaches, Platanus, Prunus sinensis are all injured, and you may have an idea of our losses if we mention that the Cedars of all kinds, Abies Pinsapo, A. Nordmanniana, Wellingtonia, Thuja gigantea, and all the orientalis tribe — all the Rhododendrons and all the evergreen plants, with the exception of Buxus, are killed down to the snow line. Only the small plants which were covered by snow have escaped. There is not one standard Rose left—even the Dog Rose stocks in the woods are dead." This is a terrible picture, and needs no comment; but it may tend to assuage the concern of English nurserymen for the comparatively small losses sustained in this country.

—— SIR CHARLES W. STRICKLAND, BART.—We understand that, in consequence of Mr. BEAUMONT, who was nominated High Sheriff of Yorkshire or the coming year, declining that honour, Sir CHARLES W. STRICKLAND, of Hildenley, Malton, a well-known horticulturist and member of the Council of the Royal Horticultural Society, will take the position.

—— THE "AMERICAN ENTOMOLOGIST."—We have received the first number of a new series of the *American Entomologist*, which has been brought out under the join editorship of Prof. C. V. RILEY, of Washington, and Mr. A. S. FULLER, of Ridgewood, New Jersey. This interesting monthly was started originally by Prof. RILEY and the late Mr. WALSH, but from various causes ceased to be published nine years ago.

—— THE IRISH POTATO CROP OF 1879.—Dr. HANCOCK, the eminent Irish statistician, estimates the average total value of the Potato crop in Ireland at £9,250,000, and the loss sustained by the failure of last year's crop at £4,626,000.

—— HYBRID HEATHS.—In another column will be found an account of a tribute of respect honestly earned and worthily paid to one of the most eminent of Scotch gardeners. To his fellows there is no need for us to dilate on his merit. Nevertheless, for the benefit especially of the generation now rising up, we venture to call special attention to the record now given of his achievements and of his career. The details Mr. TURNBULL supplies as to the history of the cultivated Ericas, in whose origination and culture he has played so distinguished a part, are exceedingly interesting. There is one part of his statement upon which we are in a position to throw some light. It seems that in the times of which Mr. TURNBULL was speaking, it was considered by a certain section of no doubt worthy people to be almost an impious thing to raise hybrid plants. It was deemed a sacrilegious interference with the laws of the CREATOR, and so strong was this prejudice in certain quarters that some of the nurserymen at that day were fain to conceal the hybrid parentage of the plants they offered, and to catalogue them as if they were imported species from the Cape! The groundlessness of such a prejudice seems preposterous enough now-a-days, but it must be remembered that in the earlier volumes of this journal similar objections were raised to the theory of the metamorphosis of flowers, which, in substance, is now everywhere adopted, and is not found to have had such terrible

FIG. 34.—WATER PLANTS. (SEE P. 176)

results as was anticipated. Indeed, like any other advance in our knowledge of the CREATOR's works, it must of necessity tend to higher and deeper notions and enhanced reverence for Creative Wisdom. In a few years' time theological (as contradistinguished from religious) objections now sometimes raised to certain current scientific notions, will seem as preposterous as it does now to us to remember that to he minds of some people it was considered impious to raise hybrid Heaths, or formulate theories as to the plan upon which flowers are constructed.

—— INTERNATIONAL AGRICULTURAL EXHIBITION AT HAMBURG IN 1882. — A committee has been formed in Hamburg for the purpose of arranging for an International Agricultural Exhibition to be held in that city in 1882. The first and only exhibition of this kind held there was in 1863.

—— SUTTON'S MAGNUM BONUM POTATO.—A correspondent who has heard that in the schedule of prizes to be offered for competition at the next International Potato Show, a class will be again introduced for the best dish of "Sutton's Magnum Bonum," writes to ask, "in no joking spirit," as he puts it, whether the "improved" forms of the same variety, offered for sale by other firms, will be eligible; because if they are not—and it is difficult to see how they can be—the committee should make the fact known.

—— HOAR FROST. — Natural phenomena, seen under any aspects, are never lacking in interest, and ofttimes in beauty; there may be diversities in their capacity to produce enjoyment, because some have surroundings that are so pleasing as to admit only of the keenest pleasure, whilst others can be seen only under conditions that may be productive of discomfort, or even danger. The marvellous visitation of hoar-frost, or rime, seen throughout all the midland district last week was a phenomenon that comes only in the latter category; for singularly beautiful—nay, even majestic—as was the spectacle presented by all kinds of vegetation, yet the intense moist cold and fog that prevailed added elements of discomfort and danger that detracted immensely from the pleasure incidental to the sight of such an unwonted spectacle. Four days of successive fog, at times of the thickest description, and as many nights of intense frost, produced on the trees and plants such a coating of silvery sheen as perhaps few living persons have before seen. We have heard of the great coatings of rime in years past that presently broke down branches from trees as though over-weighted with snow, but such mishaps scarcely resulted last week; still the accumulation on even the tiniest spray was marvellous, the encrustation increasing day after day as the thick fog came into contact with the frosted wood or leafage, and the vaporous particles were solidified. Not a glance of sunshine, not a current of air, intervened to relieve vegetation of its unwonted load, but much of the frozen vapour fell of its own weight, unable longer to sustain the continuous accumulation of matter. When at length the end came the rime lay beneath the trees several inches in thickness, like a heavy snowfall—a covering of snow without a snowstorm. Popular tradition has it that rain will inevitably follow upon three successive white frosts. Although falsified a thousand times the tradition has yet abundant believers. To have got such wondrous hoar-frosts in one of the driest winters in the memory of man is perhaps unusually remarkable; but to have such frosts and no rain following must prove a death-blow to the old tradition henceforth. In years to come we shall oft quote the month of January, 1880, as the time of the great hoar-frosts, and tell of all their wondrous effects and beauties.

—— THE FLORA OF ST. CROIX AND THE VIRGIN ISLANDS.—Baron H. F. A. EGGERS has published in the *Bulletin* of the United States National Museum, issued under the direction of the Smithsonian Institution, a classified list of the plants of the Central West India Islands above named, prefaced by an interesting note on the physical features of the islands in question. It may be of interest to growers of West Indian plants to note that the yearly mean temperature of the islands is 27°.2 C., the coldest February being 25°.6 C., the warmest 28°.9, a difference of 3°.3 only. The same uniformity is observed in the daily variation, which scarcely ever surpasses 5° C. The differences in temperature are therefore insufficient to produce much variation in the development of vegetable life at different seasons. Differences in the amount of moisture have more effect. The moisture of the atmosphere is comparatively small in amount, owing to the high temperature and the frequent high winds. There is thus a high amount of evaporation from plants, rendering it necessary for them to receive a large supply of water. The average rainfall is about 42 inches—February being the driest month, 1.5; October the wettest, 7 inches. The number of days on which rain falls averages 161. The rainfall is therefore slight for a tropical district, a fact explained by the low elevation of these particular islands, and the consequent relative absence of precipitation. The vegetation as a whole is not different from that of the other West India islands, and may, like it, also be divided into four groups—the littoral, the shrubby, the sylvan, and that pertaining to the region of cultivation.

—— BEAN-CAKE MANURE IN CHINA.—Bean-cake is, it appears, the principal manure used in the South of China both for Rice and Sugar cultivation. It is annually imported into Amoy to the extent of about 300,000 piculs, and so far the attempts to supply its place with guano have proved fruitless, the cultivators saying guano stimulates but bean-cake nourishes the earth, and though a larger crop is obtained in the first year the land is exhausted by the use of the former.

—— THE FLUKE KIDNEY POTATO.—The particular type or variety of the Potato, like the typical dog, has its day. It is now many years since this variety was raised by a Lancashire weaver, from, it is said, seed of the Lapstone; and when it became known, to such an extent was it appreciated that the highest character was given to it as a cropper, while for its fine quality as a keeper and a disease resister, it was thought by some to be a variety for all time. At that time it was pitted against Regents, Lapstones, and others, and pronounced to be superior in every respect. It is still grown somewhat largely in Lancashire and adjacent counties, but it has ceased to occupy a place as a leading garden variety. It is occasionally met with grown by some one who swears by it and prefers it to all the new varieties of recent years. It yet exists, with the Ashleaf, Regent, and Lapstone, and is likely to be grown for years to come; but it has fallen from its former high estate, as some that are now exalted to such a position surely will before many years have passed over our heads. And now that new varieties are being much more freely introduced than they were a few years ago, the struggle for existence is intensified, and shorter in its duration. Of one thing we may be certain, that good Potatos, like the poor, will not cease from the land.

—— ORCHIDS FLOWERING IN JANUARY. — The following is a list of the Orchids which have been in flower during the past month at Forest Farm, Windsor Forest, the residence of JOHN C. BOWRING, Esq. :—

Angræcum distichum
,, eburneum
,, sesquipedale
Barkeria elegans
Calanthe vestita
,, ,, lutea
,, Veitchii
,, Turneri
Cœlia bella
Cœlogyne cristata pandurata
Cypripedium barbatum
,, insigne
,, longifolium
,, pardinum
,, purpuratum
,, Roezlii
,, Schlimii
,, Sedeni
,, stenophyllum
,, villosum
Cymbidium giganteum
Dendrobium album
,, crassinode Barberianum
,, Findleyanum
,, heterocarpum
,, moniliforme
,, nobile
,, primulinum
,, superbiens
Epidendrum cuspidatum
,, equitans
Epidendrum erectum
,, sp. from Jamaica
Lælia carminata
,, anceps
Leptotes bicolor
Liparis sp.
Lycaste Skinneri, many vars.
Masdevalia amabilis
,, mycterina
Maxillaria crassifolia
,, densa
,, pallidiflora
,, variabilis
Odontoglossum cirrosum
,, crispum
,, leopardinum
,, Pescatorei
,, pulchellum
,, ,, majus
,, roseum
,, Rossii majus
,, Uro-Skinneri
Oncidium cheirophorum
,, aureum
,, obryzatum
,, serratum
,, aurosum
Pescatorea Dayana splendens
Phaius maculatus
Sophronites grandiflora
Zygopetalum Mackayi

—— PRESERVED VEGETABLES IN FRANCE.—As is well known a large trade in what is called tinned goods is carried on at Nantes in France; these goods consist chiefly of sardines, tunny fish, lobsters, green Peas, Asparagus, Choucroute, &c. The plantation of German Cabbage for making Choucroute has succeeded very satisfactorily in the district of Nantes. In 1878 about 170 acres of land were planted with this Cabbage, which produced upwards of 500,000 heads, equal to 750,000 kilos. of Choucroute. It is only within the last two years that this manufacture has been undertaken, and it promises to be most successful, and to compete seriously with the productions from Alsace, which are now subject to duty on being imported into France. Independently of what is sold in France, large quantities are exported to England, America, and the French colonies. A very important contingent of the trade, we are told, is the manufacture of the boxes, which gives continual employment to numerous establishments. On an average 12,000,000 boxes are annually turned out, of different patterns, for fish and vegetables. Some makers work solely for certain houses, others sell what they make to the best purchaser. The boxes for exportation to Spain and Algeria for sardines, and to Singapore, Cayenne, and Martinique for preserved Pine-apples, are sold either finished or cut and prepared for soldering, so as to save the expenses of carriage. About 4,000,000 boxes are exported annually.

—— SEWAGE FARMING.—At the monthly meeting of the Council of the Royal Agricultural Society, held on Wednesday last, under the presidency of the Duke of BEDFORD, the report of the judges of sewage farms (Mr. C. S. READ, M.P., Mr. BALDWIN LATHAM, and Mr. T. H. THURSFIELD) entered to compete for the prizes offered last year was read, and in accordance with their recommendations the Council decided to award the prize (of £100) in Class 1, for farms utilising the sewage of not more than 20,000 people, jointly to the Corporation of Bedford and to Lieutenant-Colonel A. S. JONES, V.C., of Wrexham, their respective farms being, in the opinion of the judges, equal in merit. In Class 2, for farms utilising the sewage of more than 20,000 people, the prize of £100 was awarded to the Earl of WARWICK, for the Leamington Sewage Farm. A special prize of £25 was given to Mr. R. S. BRUNDELL in connection with the sewage farm of Doncaster, which was stated to be an admirable example of thrifty management, and showed how sewage can be applied to general farming. The sewage farm of the Birmingham, Tame, and Rea District Drainage Board was highly commended.

—— DEATH OF THE REV. HENRY MOULE.—The Rev. HENRY MOULE, Vicar of Fordington, near Dorchester, died on Tuesday last, at an age not far short of eighty years. He was in 1829 appointed to the living of Fordington, which he held for half a century. He was the author of very many works on religious, social, and industrial subjects, and also the inventor of the "earth closets" now so generally adopted in country houses and public institutions. In support of this invention he published several small works—*A Letter on the Dry Earth System, The Science of Manure as the Food of Plants, The Advantages of the Dry Earth System, Land for the Million to Rent, National Health and Wealth*, &c.

—— THE WEATHER.—General remarks on the weather during the week ending February 2, issued by the Meteorological Office, London :—The weather during this period has been fine and dry over the greater part of England, but fogs of exceptional density and duration have prevailed in the south-eastern counties; rather cloudy or overcast in Scotland, and generally dull and squally in Ireland, with rain at times. The temperature was again several degrees below the mean in England, but as much as from 3° to 5° above at the Irish and Scotch stations. Very low readings were recorded over England during the first three days, but by noon on Jan. 30 the warmer weather prevailing in the West had extended to all districts, and on the following day the thermometer rose to 56° at Loughborough, and 55° in London. The lowest of the minimum readings (9°, at Marlborough) occurred on January 28. The wind was generally fresh to strong from S.W. at all our western and northern coasts, reaching a gale in the N.W. on the 31st. In the south-eastern districts calms or variable airs were experienced. The rainfall was again less than the mean in all parts of the kingdom, the deficit being only slight in Ireland, but amounting to several tenths in England and Scotland.

—— GARDENING APPOINTMENT.—Mr. ALFRED BISHOP, Manager of Mr. WILLIAM BISHOP's nursery at Wells-next-Sea, Norfolk, and late Foreman to Mr. WARD, Gardener to Baroness WINDSOR, Hewell Grange, Worcestershire, has been appointed Gardener to E. G. GIBSON, Esq., Grange House, Saffron Walden, Essex.

MR. TURNBULL.

On January 28 a number of the friends of Mr. Andrew Turnbull, of Bothwell Castle, invited him to meet them in the St. Enoch's Station Hotel, Glasgow, to receive a present, consisting of a gold eye-glass and a purse of 170 sovereigns. A. B. Stewart, Esq., of Ascog, occupied the chair, and called upon Mr. Thomson, of the Tweed Vineyard, to make the presentation, which he did in the following terms :—

As representing your numerous friends in various parts of the country we have asked you to meet us here to-day, that we may have the great gratification of presenting you with a small token of our profound respect for you as a man, and our high appreciation of the great services you have rendered to the profession of which you have for more than half a century been an ornament, in the hybridisation and raising of so many improved varieties of plants, more especially of that grand genus the Erica. Only those who have a thorough technical knowledge of such matters can form the slightest conception of the amount of thought, skill, care, and plodding perseverance you have brought to bear on this one subject, and the results have surely been equal to the most sanguine hopes you could have cherished. Any one who saw the Heath-house under your care last autumn as I saw it, containing as it did thirty-three of your own seedlings in full bloom, would be disposed to say "Rest and be thankful." All this has been achieved in the utter absence of any mercenary consideration, and out of pure love for the subjects you were manipulating. As the work of one man, I know of no achievement of the same character to compare with it. Those grand Heaths, some of which are in the hands of the public already, are destined to hand down your name and reputation to men yet unborn. When asked to occupy the position I do here to-day, while I could have wished some one more capable of doing the occasion justice had been selected, I felt at the same time that there was an appropriateness in the selection, in as far as I am now nearly your oldest friend. It was my good fortune to be sent to you as a journeyman gardener by the late Mr. J. Austin on December 13, 1832, an event which I have always looked upon as a most fortunate one for myself. Ever honourable and upright in your conduct, you have been an example to your men in all the relations of life that you have occupied. I heard from the lips of your aged father, forty years ago, what a good son you were to him—I know from your brothers and sisters, all gone before you, how well you sustained that relationship. As a master you have ever been just and honourable, anxious to advance the best interests of your men, but always requiring them to do their duty as you did your own. As a servant you have been trusted and highly respected by a succession of noble employers, to whose interests you have devoted an amount of practical skill and energy that rarely fall to the lot of any man, and this for a period of more than fifty years. In view of all these circumstances you cannot be surprised that we, who are mostly interested in pursuits similiar to your own, have desired thus to give expression to the feelings we cherish towards you, by presenting you, as I do now, with a gold eye-glass, a purse of 170 sovereigns, and an engrossed address signed by us in the name of 150 subscribers, a list of whom I now hand you. That you may live many years in the enjoyment of good health is the sincere wish of all your friends.

In reply Mr. Turnbull said :—

I have always shrunk from everything like speaking in public, and must just thank you heartily for placing me in a position I never expected to occupy, and though it may not adequately express my feelings, I do not the less feel and appreciate your kindness in making me such a handsome and valuable presentation, which I gratefully accept on the ground of my having done something for horticulture, though I fear the kindness of my friends has overrated my claims.

Reference was incidentally made in the circular sent to my friends to my unfortunate connection with the City of Glasgow Bank, and though this connection swept away the savings of a long life, I never felt seriously depressed. I was thankful in the possession of my health, and in the continued duties of a situation I have held for more than fifty years, under a succession of noble and generous families, who have always been liberal and kind to trustworthy servants ; and while I received many kind letters of sympathy from friends referring to my loss, by far the kindest and most considerate were from the Earl of Home and Lord Douglas. The latter is now my sixth employer at Bothwell Castle, where, though it is his lordship's smallest estate, I pay £200 a year chiefly to labourers no longer able to work, or the widows of such as have died in service. I am induced to make these remarks to correct an impression made in some quarters that this testimonial was either necessary or intended to compensate in some measure for my losses through the bank—on no such grounds could I have accepted it.

Experiments in Hybridising.

Reference has been made to my efforts to improve various genera of plants by hybridisation. I began with the Calceolaria, at an early period of its history, and raised varieties that were thought good in their day, but I daresay very few know now that the first hybridiser of the Calceolaria was my highly esteemed friend, the late Mr. Wm. Morrison, then gardener to Lord President Hope, at Granton. His finest lot of hybrids went to Messrs. Young, at Epsom, in 1829, as far as I remember. Heaths, however, have been my favourite tribe of plants, and on entering my present situation my then employer, Archibald Lord Douglas, said that the Heaths were in an unsatisfactory state, and he wished them improved. I needed no stimulus to effort in this direction, and I had the satisfaction of being told by the late Mr. Wm. MacNab, of the Botanic Gardens of Edinburgh, some ten years after I took charge of them, that they were the best house of Heaths he had ever seen. I then had Erica retorta 6 feet in diameter, and a plant of E. elegans of the same size.

With regard to the hybridisation of Heaths, I commenced that shortly after I came to Bothwell Castle. I was not then aware that Messrs. Rollisson, of Tooting, had practised it for twenty years before me ; this I learned from Mr. Cunningham, then of Comely Bank Nurseries, Edinburgh, and a short time after I saw a list of Heaths, said to be hybrids, raised by them, and was surprised to see amongst them some we had always considered distinct species from the Cape, and as such the date of their introduction given in Loudon's catalogue, ranging from eighty to one hundred years from the present date. To some of these I have been indebted for my best hybrids. From Irbyana, crossed with retorta, I raised Jacksonii ; from the same female parent, crossed with Hartnellii, I raised Marnockiana ; and I raised some very good varieties from Aitoni, a hybrid raised by Messrs. Rollisson. As this variety is so widely different from any Heath I know, it would be interesting to know its parentage. From it, crossed by jasminiflora alba, I raised Aitoni, Turnbullii and Lady Mary Scott, the latter an extra fine distinct Heath. From Aitoni crossed with Macnabiana I raised E. Turnbullii, and from the latter crossed with Marnockiana I have raised three excellent and very distinct Heaths, one of which I have named Countess of Home, the others I have not yet named. E. Douglasii was raised from Aitoni crossed with retorta major. I have raised a very good seedling from E. ferruginea crossed with Marnockiana, which I selected from fifty seedlings of a batch, and named E. ferruginea Bothwelliana. E. Lord Douglas is an extra fine Heath, raised from an unnamed seedling crossed with Marnockiana. Austiniana was also raised from an unnamed seedling crossed with retorta. I have also fine seedlings raised from E. Shannoni, much superior to the original ; but it would be an endless task to enumerate all the seedlings I have raised, and the hundreds I have thrown away for every one I kept. At first I freely gave away such as I did not think worth keeping, and I sometimes met with them under a grand name, and gave no more away.

I think much might still be done for the improvement of hard-wooded Heaths, though the process is tedious. I have sown seed and waited two, and sometimes three years before it vegetated, and then three or four more years before I saw them flower, yet the interest excited in watching their opening flowers was an ample reward. Many Heaths introduced from the Cape as species are in my opinion natural hybrids, as several varieties can be raised from the same pod of seed without impregnation. For example, E. ventricosa Bothwelliana alba is such a seedling from E. ventricosa superba, a very dark flowered sort.

I observe that a writer in the *Gardener* gives me credit for raising several varieties of E. ventricosa, notably the ventricosa Bothwelliana variety. Now I did not raise that Heath, nor was it raised at Bothwell Castle at all. Woodhall had then a collection of Heaths as Bothwell Castle had, and there was a distinct variety of this Heath at each place—the one was named the Bothwell Castle variety, and the other the Woodhall ; the latter was the best, and I have ceased to grow the former. The Heath now known as E. ventricosa Bothwelliana was what I grew as E. prægnans major. Cuttings of it got to London, and it was believed to be one of my seedlings, and was there named E. ventricosa Bothwelliana. E. ventricosa Bothwelliana alba is the only one of that section that I have raised.

It would be ungrateful in me were I not to state before I sit down that I have been fortunate beyond most men in having under me very able young men, fond of their profession, who rendered me valuable assistance in conducting my horticultural duties at Bothwell Castle. Some are now no more, others are my highly esteemed friends and ornaments to their profession, none more so than my friend whom you have selected to present me with such a valuable token of your respect, for which I again desire to return you my most respectful thanks.

Mr. Turnbull sat down amidst great applause, and Mr. Stewart proposed his health, comparing him standing in his Heath-house looking down the vista of time to Methuselah looking down amongst the generations that proceeded from his loins ; and expressing the opinion that Mr. Turnbull's progeny were, in all probability, the most orderly and easiest managed of the two families.

The address, which was beautifully engrossed on vellum, with a border of Heaths, Calceolarias, and the other flowers Mr. Turnbull has done so much to improve painted round it, reads as follows :—

"Presented to Mr. Andrew Turnbull, Gardener, Bothwell Castle, on the completion of his fiftieth year as gardener there, along with a gold eye-glass and purse of 170 sovereigns, by his numerous professional and private friends, as a mark of their profound respect for his private worth, and their high appreciation of his practical ability as a horticulturist—more especially the wonderful success of his labours in raising many splendid hybrid Heaths, Calceolarias, &c. ; and with every good wish for his future prosperity."

The address was signed by the Chairman and a number of Mr. Turnbull's oldest friends present, including Mr. Hunter, of Austin & McAslan ; Mr. McLellan, the Superintendent of Parks, Glasgow ; Messrs. Thomson, of Tweed Vineyard and of Drumlanrig, respectively ; Mr. Cairns, The Hirsle, and others. A portrait of Mr. Turnbull was given in our columns in 1874, p. 328, together with some autobiographical details of great interest.

THE CHINESE TREE PÆONY.

According to Loudon the first plant of the Tree Pæony reached Europe in 1787. In the *Arboretum et Fruticetum Britannicum* we find the following notice of it :—"From Chinese drawings, and from the extravagant praises bestowed upon this plant, in the *Mémoires sur la Chine*, published by the missionaries, an ardent desire was excited in Sir Joseph Banks and others to import plants into England ; and previously to 1786 Sir Joseph Banks engaged Mr. Duncan, a medical gentleman attached to the East India Company's service, to procure a plant for the Royal Garden at Kew, where it was first seen, through Mr. Duncan's exertions, in 1787."

"One of the largest Tree Pæonies within 10 miles of London stood till lately in the grounds of Spring Grove, where it was planted by Sir Joseph Banks. It was 6 feet or 8 feet high, and formed a bush 8 feet or 10 feet in diameter in 1825. South of London there are equally large plants at Rook's Nest, near Godstone, Surrey, which were planted in 1818. North of London the largest plant in the country is at the seat of Sir Abraham Hume at Wormleybury, in Hertfordshire. It is 7 feet high, and forms a bush 14 feet in diameter after having been planted thirty years. . . In the year 1835 this plant perfected 320 flowers, but it has been known to bear three times that number." Loudon also mentions some large plants in Scotland, at Hopetoun House, and Dalkeith Park.

From these extracts it would seem that the Moutan succeeds perfectly in England, and yet somehow it never becomes popular, and is never generally cultivated in this country. I shall now endeavour to point out what I believe to be the reasons of our failure, and to show how the Tree Pæony can be successfully cultivated in Europe. When we consider the great beauty of the plant, its noble flowers, and the diversity of its colouring, it certainly deserves our best attention. And now let me give a short notice of its history.

The Tree Pæony is found wild on the mountains of the central provinces of China, and is cultivated as a garden plant in all parts of the Empire. It was first seen by Europeans in the gardens about Canton, but it is not indigenous to that part of China. The Canton gardeners carry on a large trade with the Moutan growers, who bring the plants yearly in boats from the provinces of Hoo-nan and the western parts of Kiang-nan, a distance of at least 1000 miles. This takes place in winter when the plants are leafless and in a state of rest ; the roots are packed in baskets, open at the top, with scarcely any soil adhering to them : in this simple manner they are distributed over all the Empire without suffering any injury. On their arrival in the South they are immediately potted by the purchasers, and owing to the difference in the temperature soon come into bloom. As

soon as the flower-buds are fairly formed the plants are eagerly bought up by the natives to ornament their balconies, halls, and gardens. The price of each plant depends, not upon its size or strength, but upon the number of flower-buds it has upon it. This is reasonable enough when the circumstances of the case are considered. The Moutan, when brought into the hot climate of the South will not thrive for any length of time. As it is strong and vigorous when received, it blooms well the first year, but, being deprived of its natural period of rest—that is, a cold winter—it soon gets out of health, and although it may continue to exist, is ever afterwards quite worthless as an ornamental flower. The Southern Chinese rarely attempt to preserve it after it has once bloomed. This circumstance keeps up the constant yearly trade between the Moutan country and Canton. This, then, is the first lesson in Moutan cultivation—that is, we may give it as much heat as we like in summer, but it must have a period of perfect rest in winter.

I may mention here, that a few years ago Mr. Bateman presented to the Royal Horticultural Society his collection of Moutans for their gardens at South Kensington. They were in the most perfect health, and with proper care ought to have done admirably. But this mistake was made—they were planted in a house which was heated in winter; in fact, they were treated like the Canton plants, and I fancy met with the same fate.

When I discovered the Moutans in the garden near Shanghai, I found that the varieties were mostly different from those met with at Canton. The Shanghai country had not been visited by the Canton florists. The Chinese are a curious people in many respects. They had discovered the plant in Hoo-nan and Kiang-nan, and kept on from year to year supplying themselves from those quarters. Thus nearly all my plants were new, and very beautiful many of them were. Among the colours of the flowers were red of many different hues, white, blush, and lilac, all exceedingly beautiful. In my instructions from the Horticultural Society I was told to look out for a blue Moutan; I found a lilac one, which was pretty near it. And where are all these fine varieties now? I fear most of them are lost to our gardens.

I have already said that the Moutan requires a warm summer, and a complete rest in winter. That it will succeed perfectly in England is proved by the examples I have already given at Spring Grove and other places. Why then should such a beautiful plant be so much neglected? I think I can point to the cause, and I shall now endeavour to do so.

The propagation and management of the plant seems to be much better understood by the Chinese about Shanghai than in England. Our nurserymen always complain that they cannot propagate it with facility, and consequently this fine flower is invariably high in price. Let me now point out the Chinese method of propagation.

Propagation by suckers and cuttings is completely ignored. In the beginning of October large quantities of the roots of a herbaceous Pæony are seen heaped up in sheds and other outhouses, which are intended to be used as stocks for the Moutan. The bundles of tubers which form the root are potted in pieces, and each of the finger-like rootlets forms a stock upon which the Moutan is destined to be grafted. Having thrown a large number of the rootlets upon the potting bench, the scions are then brought from the plants which it is desirable to increase. Each scion used is no more than 1½ inch or 2 inches in length, and is the point of a shoot formed during the bygone summer. Its base is cut in the form of a wedge, and inserted in the crown of the finger-like tuber. This is then tied up and clayed round in the usual way, and the operation is complete. When a large number of plants have been prepared in this manner they are taken to the nursery, where they are planted in rows about 1 foot or 1½ foot apart, with the same distance between the rows. In planting, the bud or point of the scion is the only part which is left above-ground; the point between the stock and scion, where the union is destined to take place, is always buried beneath the surface. Kæmpfer states that the Chinese propagate the Moutan by budding; but this must be a mistake, as budding is never practised in the country, and is not understood.

Many thousands of plants are grafted in this manner every autumn, and the vacant spaces which one sees in the rows attest the success which attends the system; indeed it is rare that a graft fails to grow. In about a fortnight the union between the root and the scion is complete, and in the following spring the plants are well established and strong. They frequently bloom the first spring, and rarely later than the second, when they are dug up and taken to the markets for sale. When each has only one stem and one flower-bud, it is of more value in the eyes of the Shanghai nurseryman than when it becomes larger.

I have thus shown that the Moutan can be easily cultivated in Europe, I have given its history in China, and pointed out that it requires a period of rest in winter; I have also described how it is cultivated and propagated in its native country. I may add that I sent home a large quantity of the herbaceous kind which the Chinese use as a stock for grafting, to Messrs. Standish and Noble, many years ago. This is probably in the country, and may still be procured.

In conclusion, I have only to add that were our country gentlemen, nurserymen, and gardeners to take to the cultivation of the Moutan, they might be perfectly successful and would be well repaid for their trouble. Let us hope that horticultural and botanical societies may take the matter up, and add another feature to the splendour of the flower shows. *Robert Fortune.*

LONDON MARKET FLOWERS.

People connected with gardening, who for the first time see Covent Garden Market, usually express their surprise at the very few kinds of plants and flowers there to be met with as compared with what they expected. Neither is this to be wondered at when account is taken of the immense number and variety of plants cultivated under glass in private establishments. There are several causes to which this state of matters is attributable. It is no use for the growers to provide things which the public do not appreciate, for the public are much more conservative and less prone to change for the sake of novelty in the matter of plants than in most things. When once a plant becomes an established favourite with the many, it usually remains so for an indefinite time, and even if something better in its way appears, it takes the newcomer a considerable time to establish its superiority. The habit of the plant has also a good deal to do with its being generally accepted as a favourite; if a flowering subject it must be a profuse bloomer, and, with few exceptions, dense and compact in outline. Those that are wanted possessing more elegance and graceful habit are sought for amongst the Ferns and other fine-leaved subjects, such as Palms, Dracænas, and the like. The flowers likewise need to be of a fairly lasting character, and produced in succession. The plant, to be of any use for market, must be of such a nature as to carry well without liability to bruise or suffer by the chafing inseparable from carriage, and, above all, it must be easily propagated, free of growth, and quick in coming to a saleable condition, so as to admit of its being sold cheap.

In the case of cut flowers, they must be able to last fairly: the bloom of a day's duration, no matter how beautiful, is of no use. The colours must be decided and pure; light shades, especially white, much in excess of those that are darker, and a proportion are required to be sweet-scented. When all these essentials are added together, it will be easily seen that there is sufficient reason to account for the comparatively few plants that become favourites in the market; and amongst the limited number of kinds of both plants and flowers that are thus in demand there are few, if any, of even the most extensive growers who do more than cultivate a portion. Many there are who almost confine themselves to some half-dozen things. To this cause is traceable the uniform excellence of the market plants, and, taking into account the very small pots they are grown in—most of them in 48s — it would be very difficult to surpass the different subjects coming from the best growers.

Every peculiarity of the individual variety of plants grown is studied and soon discovered, and it often happens that a single sort out of scores or even hundreds, of the species or varieties, is found to distance all others of the respective family to which it belongs. Take, for instance, Zonal Pelargoniums, the names of which, as everybody knows, are legion, yet amongst the hundreds that have been named and sent out nearly all that the market-men care to have may be counted on the fingers of one hand. So it is with Roses for cutting. Out of the host of names that are to be found in the catalogues of the great Rose growers, how few meet the market grower's requirements for forcing? Of the white Tea variety, Niphetos, there is in all probability grown double the quantity of all others put together, some of the largest cultivators of forced Roses growing little else but this kind; and the same holds good with most other things.

Messrs. Beckwith, of Tottenham, have long been amongst the greatest and most successful growers for market, and although they go in for a greater variety than most others alike engaged, yet they have a few things which receive their particular attention, and for which they are especially noted, amongst these being the following:—

Bouvardias.

With these one after another of the immensely long houses may be seen filled and in bloom during the autumn and winter, until the visitor begins to think he is never to see the end of them. Last summer 25,000 were grown for selling when in flower, and 16,000 for cut bloom alone, all propagated from shoot cuttings, the plants to produce which are subjected about the end of the year to a short drying-off process, not unlike the way in which Fuchsias are often treated, by withholding water. As soon as all growth is thus stopped the points of the shoots are removed, the plants placed in a brisk heat, and the soil moistened; they break quickly all over, and furnish a full crop of cuttings in February, which are at once taken off and struck in a temperature similar to that which the plants that produce them have been submitted to. Directly they are rooted they are put singly into 60-sized pots; in April they are moved to those they are to flower in (48s), and kept in the same temperature they have been in all along (about 70°); they are stopped and remain in heat until half their growth is made, after which in the summer they are plunged out-of-doors and left there till September, when they are again removed to the houses. All except those not wanted to bloom before late in winter are subjected to heat varying in extent with the particular time they are required to be in flower, the bloom coming much the finest and in greater quantity with a temperature of 70°, which, as near as can be, is maintained with little variation night or day.

The plants grown as they are here, strong, furnish an immense quantity of flowers; 1000 bunches are cut per week all through the autumn and winter months, twelve trusses in each bunch. The daily work of cutting and preparing for market the produce of such portion of the stock as is kept for cutting is no slight affair. Even in December the Bouvardia, Roman Hyacinth, and Chrysanthemum bloom occupies four men half of every day in gathering and packing. The varieties grown are Hogarth, red; Elegans, a sport from Hogarth; and another sport which Messrs. Beckwith have obtained, also from Hogarth—a most beautiful variety, very bright, and of a considerably higher shade of colour than Elegans; Flammea, bright pink. Of whites, Candidissima, Jasminiflora, Vreelandii, and Humboldtii corymbiflora, the latter kept for the latest flowering in spring.

Pelargoniums.

These are grown to the extent of 70,000 yearly, all consisting of the larger flowered section—no Zonals. Messrs. Beckwith have given especial attention to Pelargoniums, to ascertain which are the best varieties for coming in, so as to afford the requisite succession of flowers, from those which will bear forcing earliest, on to such as come in in regular succession afterwards. Their earliest kinds are blooming and in the market in February, and it is needless to say that any such to be in so soon must stand forcing, and not only forcing in the sense in which gardeners usually understand the term when applied to this class of Pelargoniums, but able to bear, without becoming drawn in the least, considerably more heat than most people would think possible without producing a weakened condition of the plants. The varieties found best to stand the requisite high temperature for flowering so early are nearly all of market origin, that is, they have been raised by the market growers, and in a great measure their cultivation has so far been mostly confined to this class of growers, although there can be little doubt that they are equally suitable for growth in private gardens where early flowers are wanted, as these kinds possess all the essentials requisite in a good decorative plant,

Messrs. Beckwith grow four sorts for their earliest —Virginalis (Sweet), white and purple spots; Reflection (Weatherell), scarlet shaded with purple; Smith's Seedling, French-white, with carmine spot on each petal; and Monte Christo. The first-named is the earliest, and might be had in, at, or soon after Christmas if wanted. The temperature kept up for these through the winter is from 50° to 60° in the night; they are syringed overhead daily, and receive manure-water to the roots at short intervals. Plenty of air is given in the daytime with a brisk heat maintained to admit of this. The plants bear no signs of the forcing they are thus submitted to, but are as stout and short-jointed as we usually see them under ordinary treatment. Triomphe de St. Mandé (Chaté), sent out by Turner, rich deep crimson, large truss, very free bloomer, dwarf sturdy habit. This Mr. Beckwith considers the best market or decorative Pelargonium in cultivation, and he grows 10,000 of it. The following sorts, raised by Mr. Brown, of Hendon, are also grown in quantity:—Mermerus, crimson; Mermerus Improved; T. A. Dickson, crimson, deep maroon blotch; Integrity, bright salmon; Alliance and Harry Buck; Duchess of Edinburgh (Braid), white; Duchess of Bedford, white, but purer than Duchess of Edinburgh. The show varieties, as these make their appearance, are tried, and amongst them the following are found to answer for market work:—Lord of the Isles, Sovereign, Victory, Rob Roy, Mabel, Illuminator, Sappho, Viscount, and Yorkshireman.

Fuchsias.

As might be supposed, Fuchsias hold a prominent place here, 50,000 being yearly grown for flowering, and more than double that number are propagated. The first lot are struck in December, and these are full of bloom and in the market in April. The time of the year during which all their growth has to be made, and the early season they come into bloom is sufficient indication of the warmth necessary to be kept up to accomplish this. Most people who are only acquainted with the ordinary method by which Fuchsias and similar plants are cultivated, would suppose that when grown in heat such as here described they would flag, and both flowers and leaves drop off directly by exposure to the air in a temperature so much lower than they have been grown in, and to which they are unavoidably subjected, first in the market and afterwards at the hands of those who buy them. But if this were the case, the trade would very soon come to an end, for plants that are found not to stand soon cease to be saleable. These market plants grown in heat are simply evidences of what can be done in houses that give all the light possible, with other matters in their cultivation of equal importance alike skilfully carried out. With Fuchsias again, a compact habit of growth, free disposition to flower, and ability to stand heat are indispensable. The following sorts are found to bear this kind of treatment:—Lady Heytesbury, white sepals, corolla rosy-purple; Delight, corolla white, sepals and tube bright crimson; Crown Prince of Prussia, violet corolla, tube and sepals scarlet; La Belle Elise, Red Marshall, and Lucy Finnis.

Solanums.

These are done in quantity; 15,000 were grown last summer, all from cuttings—the stock plants to produce these selected for their general habit of growth and profuse disposition to berry. Those are chosen that throw their berries well up above the foliage, and are thus more conspicuous. The cuttings are struck in November. By getting them going thus early the plants flower much sooner, the berries, as a matter of course, attaining their size and colour proportionately earlier; the earliest this season, notwithstanding the wet sunless summer, were fully coloured at the beginning of autumn. The remains of stock left over and for propagating were amongst the best grown plants of their kind I have ever seen; from 15 to 18 inches across, and not more than 12 inches high. One house, 130 by 21 feet, was filled with plants for Christmas completely clothed with their bright berries.

Tree Carnations.

These are forced largely, for which purpose 10,000 plants are required; the principal sorts used are A. Alegatière, scarlet; Beauty of Scarborough in the same way, also scarlet, but brighter and better shape; Hermione, a very fine white; and Miss Joliffe, pale pink. The plants of these Carnations were beautifully grown, stout, bushy, and calculated to produce a full crop of flowers. *T. Baines.*

(*To be continued.*)

CYCADS.

We are induced to reproduce a figure of the male spike of the Encephalartos villosus which we published some time since, in order the more forcibly to contrast it with a noble spike now before us from Mr. Rann, gardener to C. Warren, Esq., Handcross Park, Crawley. Our illustration was two-thirds the size of Nature; but even making allowance for the diminished size, the original could not have com-

Fig. 35.—Male cone of Encephalartos villosus.

peted with the glorious spike grown by Mr. Rann. This spike, which in all points except size resembles closely the one figured, measures no less than 26 inches in length by 10 inches in circumference at the broadest portion. The colour is a delicate apple-green suffused with a pale glaucous bloom, and the perfume emitted is particularly delicate. The under surface of the scales is covered with yellowish anthers. It is indeed astonishing that these noble plants are so little grown in this country. Their great size and weight certainly offer objections in some cases; but those who complain of the monotony of their appearance forget the very charming appearance the plants present when throwing up the young foliage, and the truly noble aspect of the plants when producing their spikes or cones. We understand that it is Mr. Rann's intention to exhibit this spike at South Kensington on Tuesday next.

Home Correspondence.

Art in the Conservatory.—I have to thank you for publishing my paper on "Art in the Conservatory and Greenhouse," and can but be glad should its publication call forth some discussion among your practical readers, as my desire in writing the lecture was to acquire information as well as to give it, and I am fully alive to the fact that by publishing a technical paper in the *Gardeners' Chronicle* I have laid myself open to the critical remarks of some of the leading horticulturists of the day. Undoubtedly a glasshouse of whatever kind should first of all be built in the interests of the gardener and his plants, but beyond this I would go, and urge that in most cases the houses themselves can, with a little thought and trouble, be made good-looking, and in some sense, at any rate, architecturally correct, whether they are simply wooden or more monumental erections. Your correspondent, Mr. A. D. Mackenzie, to use his own words, "has been labouring under a mistake" in directing attention to my remarks upon vineries. His mistake is evidently due to the fact that he had read only some disjointed extracts from my lecture which were published in a gardening contemporary; indeed, that portion of my remarks referring to vineries was given only in last week's issue of your journal, to which I beg to refer your correspondent. He will there see that I said "for early vineries a half-span or rather lean-to structure is the best form of building, and that it should face the south, running east and west so as to have the benefit of the sunlight from morning to the evening." Then to show further that this was entirely my meaning, I would further refer to p. 106 *Gardeners' Chronicle*, January 24, 1880, the second line from the top. In my general remarks I said, "a span-roof house should be placed with the ends north and south, as by this means each side secure an equal amount of sun." Thus it will be seen that Mr. Mackenzie's concluding satirical thrust at me about teaching practical gardeners, &c., is unfounded; and I think the same may be said in the charge which he brings against me of doing "scant justice to other architects and horticultural builders," who have done much in the way of improving the appearance of conservatories. I clearly expressed my desire not to overlook such work, but it is equally evident that in so short a paper I could not enumerate a series or describe more buildings than I did. As to the rule which I gave for obtaining the proper quantity of piping to warm conservatories, I have only to say that it depends entirely upon the difference between the inside and outside temperature. Mr. Mackenzie makes this 70°, taking the outside temperature as zero, but this, I take it, is unnecessarily low, as we do not get so low a temperature once in ten years, if so often. Taking the external temperature

At 26°,	the result is	285	feet of	4-inch	pipe
,, 24°	,,	297	,,	,,	,,
,, 22°	,,	310	,,	,,	,,
,, 20°	,,	324	,,	,,	,,

while by the simpler rule I gave you get 270 feet, and for all practical wants this is sufficient, and 26° is low enough for ordinary calculations. Of course if any one is willing to pay for more pipe it can easily be arranged by taking a very low outside temperature. I have not relied entirely on my own knowledge in the matter of heating arrangements and in calculating for them, but have availed myself of the experienced assistance of a well-known horticultural engineer, Mr. Walter C. Burden, of Loughborough. There can be no doubt that a simple formula in plain figures, more simple than Hood's or any other that I know, is a want that very many people experience. The following query by a friend of mine was published in the *English Mechanic* last October, and as yet it has received no answer. I ask you to repeat it, as it gives my friend's rule, and some of your mathematical correspondents may be able to answer his query—"Can any one simplify this process, and put it in the usual shape? It is for finding the length of piping required for greenhouses. Multiply the glass or exposed superfices in feet by eleven times the required difference between the outside and inside temperature, and divide the product by fifteen times the intended difference between the temperature of the water and the air of the house. The outside air is to be taken at 32°, and the water at 180° Fahr." Surely this can be simplified, when no doubt it would be useful to your readers and *Maurice B. Adams, A.R.I.B.A.*

—— In reading what has appeared on this subject one cannot help wishing that some of the designers or builders of such structures could

have profited by the remarks and borrowed a wrinkle or two, as in the majority of cases conservatories are mere prison-houses for plants, and ill-adapted for the purpose required. Architects, as a rule, know little or nothing of vegetable life; they are great believers in bricks and mortar, stucco, and such-like ornamentation, but as to light and its need for the successful cultivation of plants that is largely ignored; and hence it is that we see the dungeons that are frequently to be met with connected with mansions. What I should like to see is several conservatories to every house in the form of bay windows, instead of having dwellings as they now are, mere boxes with rectangular holes cut in the walls, through which no one can see out except straight ahead. By having projecting windows the vision can be carried in any direction and rooms made tenfold more pleasant, the spaces so created being just the places for standing plants, which when so situated afford a daily feast of beauty unattainable in any other way. It is only those living in towns that know the joys derived from the window culture of flowers, and with better arrangements provided for them they might be had in every home. People attach great value to pictures and pay high prices for their possession, but once seen they are always the same, while in plants there are continual changes going on to watch, and much to instruct us in our daily intercourse with them. That the ove of plants is fast extending there can be no question, and it only remains for those who design our residences to break away from the monotonous style now so prevalent, and make them, not only fit habitations for man, but such that he may associate with the beauties of Nature. That this may be done any one can see where there is any departure from the old fashion, a striking instance of which I have recently met with, where a sort of double conservatory, one on each side, forms part of the house. In these plants flourish, and the song of birds is heard among them, the two combined lending such a charm as to make life pleasant within. *J. S.*

—— With reference to Mr. Adams' recent article in your paper will you allow me, in hopes of receiving some practical suggestions, briefly to describe a conservatory, architecturally a success, but horticulturally a failure? In shape it forms five sides of an octagon, and faces the south; the floor is 3 feet below the house-floor level, to which four steps lead to the door communicating; it is 14 feet wide by 12 feet long; front height 6 feet, with roof span of 7½ feet. It is glazed with clear glass except on the roof, most of which is obscured. It is ventilated at the bottom by four opening sashes, each 2 feet by 1 foot; and at top by opening sash on roof, 3 feet by 1 foot. There is staging round about, with border underneath planted with Ferns, and cement water-tank, 6 feet by 3 feet, in north corner, to grow aquatic plants. It is heated with gas, and provision is made to carry off any escape. The plants growing are greenhouse, stove, and florists' flowers, and none of them do well when taken into it, but go back every day; some lose their leaves, others drop their flowers, particularly Fuchsias and Acacias. Foliage plants stand best, but they, too, suffer. *S.* [The gas-heating is probably at fault; but in any case such a house is not a proper one for the cultivation of small plants. Eds.]

Adiantum fulvum.—My experience quite agrees with Mr. Walker's (p. 119) regarding this Fern. The name is frequently given in nursery catalogues, and I have more than once ordered it, but never received Raoul's plant. I believe it is not in cultivation in this country. Another species of Adiantum also requires correction. That is A. glaucophyllum. In almost every nursery catalogue the name appears, but any plants I have seen seem to be a small variety of our native Adiantum, which may be called A. Capillus-Veneris minus. Where this originally came from I am not aware. The true glaucophyllum of Hooker is a Mexican plant somewhat resembling cuneatum, but of a firmer texture and glaucous in the pinnules, as its name implies. Probably it, too, has yet to be imported. *P. Neill Fraser, Rockville, Murrayfield, Edinburgh.*

Humea elegans.—This graceful biennial, in addition to its beauty as a summer decorative plant for outdoor purposes, is also well adapted for the embellishment of the greenhouse and conservatory. On the first appearance of frost here last autumn several of the best plants were selected and transferred to a cool conservatory, and they have up to the present time continued to give a graceful and elegant effect intermixed with other plants, and to all appearance are likely to continue good for another month or longer. The flowers are also most useful when cut for mixing with other cut flowers for table decoration, lasting, as they do, for a considerable time. Seed sowed now (although I prefer autumn sowing) and kept growing on in a brisk heat would make nice plants for late summer and winter decoration. Being a strong and fast growing plant it requires plenty of pot-room when in a young state. *Thomas Carlton, The Gardens, Wildernesse Park, Sevenoaks.*

Sternbergia lutea.—There can be no doubt but that this pretty little Amaryllid is strictly autumn-flowering. Yet it does occasionally appear to reserve its beauty till the gloom of winter prevails and enhances it by contrast. I have seen patches of it in the same garden blooming under a wall in early September, while not far off the same spot but growing close to the Box edging in a herbaceous border, it might be seen flowering a couple of months later. The fact is, like everything else, this little bulb is accelerated or retarded in its growth, and consequently in flowering also, by circumstances, and the apparent anomaly which your correspondent "A." draws attention to may be due entirely to the defective ripening of last summer's growth. The plants may possibly not have been at rest at all, as is often the case with bulbs after a season like last summer, and may have been excited into premature activity by the mild weather that closed the old and ushered in the new year. But did "A.'s" plants not bloom last autumn, or has he not been accustomed to see them in flower at that season of the year? If he or "J. S." has a form that persistently and invariably blooms in spring, I should like to hear more about it. *Wm. Sutherland, Craigleith Nurseries, Edinburgh.*

Eucalyptus globulus.—In addition to the other extraordinary virtues that have been ascribed to the above-named plant, it appears that a fresh one has been discovered, for, according to an Italian medical paper, R. Rudolfi, a doctor, reports as follows:—Being seized with a coryza (sneezing fit), he happened to chew one or two twigs of the Eucalyptus, at the same time swallowing the saliva secreted, which had a bitter and aromatic flavour. To his surprise he found that in the course of half an hour the nasal catarrh had disappeared. Some days later he was seized with another attack from fresh exposure, when the same treatment was followed by an equally fortunate result. He then prescribed the remedy to several of his patients, all of whom were benefited in the same way. In making this known, it is to be hoped there will not be a fresh craze about this wonderful plant, which at one time was so exalted as a preventive of fever, which many thought from its use was to be banished from certain spots. Apart from all this, it is a great pity that the tree is not hardy enough to stand our climate, as from its quick growth and glaucous, silvery foliage, it would form a fine ornament in parks or pleasure-grounds associated with others of a darker hue. The past severe winters, however, have proved how useless it is to plant it, as they have succumbed everywhere to the inclemency of the weather. There are, I believe, other varieties under trial that may prove sufficiently hardy, and if any of these possess the same qualities that are said to attach to E. globulus, what a boon they will be to us Englishmen, who, from fogs and sudden changes, are coughing and sneezing a good part of our time. *J. Sheppard.*

Double Chinese Primulas.—Your correspondent "N." (p. 116) has not by any means over-estimated the merits of these plants. I know of no other class of plants so useful for winter flowering purposes. Provided some of the best kinds are obtained and liberally cultivated, their flowers will rival Carnations in size and beauty, and they will be produced in abundance all the winter if kept in a dry temperature, ranging from 40° to 50°. I would not advise any one who intends to commence their cultivation to depend on the seed offered as double by seedsmen. I find it generally ends in disappointment and vexation, producing after six months' care and attention principally semi-double flowers, which seed again and consequently are not to be compared with the real double kinds in any way, especially as regards their lasting properties when cut for vases, &c. By far the best way is to obtain a selection of named varieties and propagate them afterwards in the usual way. *W. H. Divers, Burghley.*

Another Rose Stock Pruner.—The plan followed here for seven or eight years past has been to simply harness a strong pair of *secateurs*, nippers, or grippers as they are called in some places—the people here call them *guilotines*—to a bench by means of two strong leather straps. The principle is precisely the same as shown in the patent instrument recently figured, and it is quite astonishing the power that can be exercised by their means: anything in the shape of a Brier can be quite easily trimmed. The additional merit you claim for Messrs. Laing's instrument, that it can be used for other purposes, applies with much greater force to this much more simple instrument; in fact, it can be used in many cases where it would be quite impossible to use the other; and where such a simple arrangement is possible, and one, moreover, capable of accomplishing all that is required, there is surely no necessity to spend money on a French invention of less utility. *T. Smith, Newry.*

Bees in the Peach-house.—Like Mr. Miller we have bees in the Peach-house, and right busy they are, with the best results, viz., the fertilisation of the blossom. I strongly believe in keeping bees in the garden for that purpose, and apart from the fact that they are interesting creatures, their industry is proverbial, and the person who watches their movements must be dull indeed if he does not learn a lesson therefrom. It is quite possible to make their acquaintance. I have my bee-house right in the midst of the forcing houses, and a few Orange trees placed round them afford a sure place for the queen to rest in when they swarm, and by placing them near the young men's rooms a swarm is never lost. Last year was the worst for bees that I have ever known, and I warn all keepers of them that they must be fed, and promptly too, or else they will starve. A few shillings spent during this and the next month, will be repaid twenty times before next August. We encourage the labourers here to keep bees, and give prizes at the cottagers' show held alternately here and at Bayham Abbey, always giving the preference to those who do not destroy their bees, and although I own that in most of our bee books their profits are set rather too high, still it is surprising what they will do in a fine summer. *J. Rust, Eridge Castle.*

The Uprooting of Conifers.—The loss of such trees as the Araucaria imbricata and Abies nobilis at Keir is deplorable, and every means should be taken to prevent further loss if possible. The coniferous trees are not generally deep-rooted; we have lost many fine Spruce trees from being uprooted with the wind, and on examination I have found all the roots within about 15 inches of the surface in a perfect mass; consequently trees with such a weight of foliage must give way before the wind sooner or later. After taking particular notice of the fall of the Spruce trees, I became alarmed for the safety of a few handsome trees, one in particular, a noble specimen of Abies nobilis, which stood very much exposed to the north-west gales. On the roots of this tree I put twelve good cartloads of soil, which raised the surface about 12 or 15 inches up the stem of the tree, sloping gradually away some distance beyond the extended branches. It rather improved the appearance of the tree than otherwise. This was done about eight years since; the soil is now full of roots, and the tree appears as firm in the ground as a tower. If so little labour would save such fine trees as those which, I fear, have been lost, would it not be wise to do it? I should add that the tree has made wonderful growth every year since the soil was put on, on three occasions making a leading shoot quite a yard in length. *William Culverwell, Thorpe Perrow.*

Hardy Primulas Wintering.—In his notes upon "Florists' Flowers," at p. 141, Mr. Douglas alludes to several hardy Primulas in words that may well lead those unacquainted with their habits to believe that they are really not so hardy as generally esteemed. Mr. Douglas says: "Some species of Primula in the same frames as the Auriculas have not wintered quite so well; of these may be named P. sikkimensis, P. purpurea, P. cashmiriana, and P. capitata. The newly-introduced P. rosea lost all the old leaves, but the crowns are sound. P. Parryi, a rare species, also lost all the old leaves, but it has a sound centre to start from." Now every kind named is strictly herbaceous, just as much as the P. amœna is, all of the varieties of which are as hardy as any border plants we have. P. sikkimensis is, perhaps, of all the family the most deceptive, as it lies dormant and crownless through the winter, considerably below the surface of the soil; it is almost semi-aquatic in habit, and as its home is some 17,000 feet high on the Himalayan slopes, we need not fear its capacity to withstand our frosts; it is not so easy to keep it well through the summer heats. P. purpurea and its ally P. denticulata are here in the open ground, with the dead foliage of last year lying all around the crowns, already throwing up new leafage and heads of bloom, literally enjoying and laughing at the frosts. No hard weather hurts them P. cashmiriana in pots, where no frost has reached, is as leafless as are those growing in pots in a cold frame, and the same may be said of P. rosea. P. capitata is equally deciduous. *A. D.*

Justicia flavicoma.—There is generally a great scarcity of yellow flowers, and in winter quite a dearth of that colour exists, for excepting this Justicia, the good old Coronilla glauca and Linum trigynum, there are none to be had at that season. Although Justicia flavicoma is by no means new, it is very rarely met with in stoves, which, considering its very showy character and remarkably free flowering habit, is rather surprising, the more so when one considers how exceedingly useful it is to associate with Sericographis, Euphorbias, &c., with the scarlet of which the soft canary of the Justicia shows up in fine contrast. With us it is one of the staple plants grown, as it can always be depended on to yield a supply of flowers for cutting, and having small vases to furnish it comes in admirably for that purpose, for even those in 3 or 4 inch pots carry several heads of bloom, which, if the plants are in a nice warm

position, last a long time in perfection. If these are wanted of large size, the cuttings should be put in early, and as soon as struck potted off and nursed on in a moist atmosphere, where they can enjoy a temperature ranging from 60° to 75° or so, and be stood near the glass so as to induce a dwarf bushy habit. To aid them in forming this it is necessary to nip out the point of the main shoot, and after the end of May it will be found that the plants will do much the best plunged in a bed of gently fermenting leaves or tan in a cold frame, where with others of a kindred nature they can be syringed and closed early in the afternoon to expedite their growth. By the end of September this will be complete, and the thing then is to remove them to a light house where they can have full exposure to ripen up the shoots, from the tips of which the heads of bloom are emitted. After flowering, the greater part may be thrown away, as fresh struck plants are generally the most vigorous, but if any of extra size are required they may be had by keeping a few of the old ones and cutting them partly back, and when they break again they should be shaken out of the old soil and repotted, to be afterwards grown on in the same way as the others. A mixture of peat and loam, or the latter and plenty of leaf-mould, is the most suitable to grow them in, to keep which open a sprinkling of silver-sand is necessary as well as free drainage below. Except greenfly, insects seldom trouble Justicia flavicoma, and these are easily depatched by the ordinary means of fumigation, which should be carried out as soon as they put in an appearance. *J. S.*

Select Vegetables (see p. 119).—Vicks' Criterion Tomato is certainly one of the best varieties as far as the quantity of fruit which it produces is concerned, and also for its quickness in coming to maturity, but for quality it is not to be compared with either Hathaway's Excelsior or Stamfordian, which contain a much greater amount of flesh in proportion to seeds and water. I am acquainted with several fruiterers who could not sell Vicks' Criterion last season while either of the above were obtainable. *W. H. Divers, Burghley.*

Primula farinosa.—Without disputing the correctness of Mr. Dod's observations of the habit of this pretty Primrose, I may venture to record my own experience of it in other localities, showing that it is much more accommodating to varied influences than is usually supposed. Between Geneva and Chamounix it may be seen growing in abundance in situations answering to Mr. Dod's localities, excepting that of elevation; while in the West of Yorkshire, called the Craven District, which is limestone, it is common up many of the "gells," and in moist situations, growing at an elevation of from 600 feet or 1000 feet above the sea-level. Occasionally I have heard the country people attribute to this Primrose the property of causing blindness to those who too freely inhale its perfume. Though in a wild state, and confined to a limestone soil, farinosa thrives in an ordinary border when it is not exposed to too much sunshine; in such a situation its head of flowers becomes almost globular. A root of this Primrose, that I grew in a damp shady border, was viviparous, producing a young plant on a withered whorl of flowers. *A. Clapham, Scarborough, Feb. 3.*

Strawberries.—Your correspondent, Mr. Ravenhill, at p. 120, speaks of having gathered last year 17 lb. of Strawberries from thirty-eight plants. As I consider this an extraordinary crop I should like to ask him whether they were grown in the usual 6-inch pots, and also whether the number specified were an ordinary batch, or a few selected, after the fruit were set, from a larger quantity of plants? If these two questions can be answered in the affirmative, I shall, as one much interested in Strawberry growing, be extremely obliged to your correspondent if he will favour me, through your columns, with a few details of his treatment. *A. G. Bridgeman, Thames Bank, Marlow.*

Outgrowth from the Roots of Ash.—The sketch I send is a rough representation of a peculiar tuber-like growth upon the root of an Ash. The swelling terminates the root, is 5 inches in its longest measurement and 4 inches at its broadest, of a flattish shape, and weighs 11 oz. No rootlets protrude from it, and it is of a hard woody texture. How has it been caused? [Possibly by some obstacle to downward growth. Eds.] *John Wilson, St. Leonard's Gardens, St. Andrews, Feb. 2.*

Orchards for Farms.—The present depressed state of the agricultural interest, the cause of which is now under the investigation of a commission of enquiry, suggests some remarks. Labour forms a heavy item, as also the expenditure for beer, excepting in a few districts where cider is grown. The growth of Apples and Pears to any extent is confined to a few districts, although there is a good market in all our principal towns; so much so, that immense quantities are annually imported from America, France, and other countries. I would suggest to landed proprietors that they would improve their estates and benefit their tenantry by planting orchards with a good selection of Apples and Pears suitable for market and cider. In the cider districts it is preferred by the labourer before beer, being more cooling. The expense of manufacture would not exceed 3*d.* per gallon, and it would keep for years if properly made. The small fruit would do for that purpose, and selected fruits would find a ready market at good prices. By selecting a grazing field as near the homestead as possible, and planting good standard trees at such a distance apart as to affect but little the grazing or mowing in a few years the farmer would be much benefited in having fruit for domestic and marketable purposes, and would be relieved of the heavy expenditure—which he cannot avoid—in beer. At present, when the attention of landed proprietors is drawn to the most efficient mode of benefiting the tenantry, I beg to offer the above suggestion for consideration, and, if entertained, I should be happy to give any information as to the kinds of fruits most suitable for the purpose. *John Paterson, 11, Faulkner Street, Bishop's Fields, Chester.*

How Have Grapes Kept?—It would be interesting to know how Grapes in bottles have kept so far, this being an exceptional season. I have at the present time between seventy and eighty bunches of Grapes left, after a daily supply since May, of the following varieties:—Lady Downe's, Black Alicante, Muscat of Alexandria, Gros Colmar, and a few Muscat Hamburghs, with Mrs. Pince. They are not keeping with me so well as last year, or in fact so well as they have done for the last twelve years. The bunches go mouldy, first at the shoulder, and then through the centre of the bunch, whilst the berries are as sound and firm as when first cut from the Vine. I sent in a bunch weighing 1 lb. 14 oz. of Gros Colmar on Sunday as perfect in bunch and berry as it was possible, with a very fine bloom, for dessert, and I have others left from the same Vine, cut at the same time, that I have been compelled to cut half away. I commence cutting for bottling in November, and continue at intervals until the end of December, never having found any benefit accrue either to the Grapes or the Vine by leaving them on later than the latter month. I may mention that frost has been entirely excluded by means only of a paraffin lamp, and we are possessed here of as perfect a fruit-house and Grape-room as it is possible to build. *J. C. Mundell, Moor Park Gardens.*

Camellia Duke of Lancaster.—I send for your inspection two blooms of one of the varieties of Camellia illustrated in your recent plate, viz., Duke of Lancaster. It is a seedling raised by a gentleman in this neighbourhood from Red Waratah. I purchased the stock thirty-five or forty years ago, and named it Duke of Lancaster. Messrs. Loddiges, Hugh Low & Co., Rollisson, Henderson, and others were all purchasers of it at that time. I submitted the bloom to Dr. Lindley, who gave a very favourable opinion of it, but pointed out its great fault, viz., the deep cut in the petals, which it undoubtedly has. I have the original plant in my possession at this time. *Richard S. Yates, Sale, Cheshire, Feb. 3.*

Brussels Sprouts.—With regard to the failure of Brussels Sprouts spoken of by Mr. Fish and other correspondents lately, it may be of some advantage, by way of solving the problem, to state that the plants which I found here never produced a single Sprout. The seeds were obtained (not by me) from a firm of unblemished reputation, and were sown in good time, carefully pricked off, and finally planted out on an open rich piece of ground, with the result above mentioned. Being the possessor of a Sprout of my own, and having greater faith in old and well-tried friends than in new ones, however fine their appearance may be, until I have "proved" them, I planted out an equal quantity side by side of both sorts, my own variety being so late that I entertained small hope of them turning out to be much, only I knew I could depend upon them sprouting. Had I not taken this precaution I should have been like Mr. Fish—without a single dish of Sprouts this winter. I exhibited a fair sample of the crop at one of the meetings of the Royal Horticultural Society last November, and although the seeds were sown later in the season and the plants not cared for in a young state, the crop was in every way satisfastory. I am aware I am treading upon delicate ground, and that the Editors have attributed the cause of failure to the arrested development of the plants owing to the past untoward season. I am of opinion that plants raised from "imported" seed lacked constitution to pass the ordeal of last summer, and I am sure the Editors will be pleased to publish any information that is calculated to render assistance to cultivators for the present season. *W. Hinds.*

—— I think I may consider myself one of the favoured few in having a good supply of greens, and particularly of Brussels Sprouts. In a general way Brussels Sprouts cannot be sown too early in the year, indeed my best have been those which were sown in heated pits between the rows of Potatos on November 30, 1878, and pricked off into boxes, then gradually hardened off, and planted out in well-prepared ground in the first week in April. Gathering commenced fully on November 5, 1879, and since that date we have sent into the house over 8 bushels, irrespective of other kinds of greens, Cabbage, Savoys, &c. I have at the present time plants ready for pricking off, which were sown on December 12; but I do not confine myself altogether to the early sown plants for a late supply, as I make successional sowings up to the end of February, but the latter are not so fine as the earliest. I grow the imported Brussels Sprouts, and Scrymgeour's Giant: the latter is by far the best. *J. C. Mundell, Moor Park Gardens.*

White Scale on Pines.—It is generally considered a most difficult task to rid Pines of white scale when they are once overrun with it, and I had formed an idea—and not without ground for doing so—that it was almost, if not quite, an impossibility; but I am now inclined to think my idea is erroneous, for I notice that a correspondent has been advised to try paraffin as a remedy. Is this an effectual remedy? If so, I am sure others besides myself will be glad to know, for it would be a simple way of eradicating the most formidable and destructive insect, excepting perhaps the Phylloxera, with which the indoor fruit grower has to contend. Happily our Pines are now clean, or I should give it a trial. On coming here I found a collection infested with this troublesome pest, with which I at once waged war, and after battling with it without success for over two years by trying various things which have at different times been recommended, including hot fermenting dung, as mentioned by you, and soot, and flowers of sulphur, as adopted by the late Mr. Tillery, of Welbeck, and quoted by Mr. D. Thomson in his excellent *Treatise on the Pine-apple*—also spirits of wine mixed with certain chemicals, the names of which I have now forgotten — we gave up the thought of cleaning them as hopeless; so after having secured from friends a stock of clean suckers and established them in a compartment devoted to themselves, the old stock was destroyed and the houses thoroughly cleansed. This is a certain and inexpensive way of exterminating white scale, but all are not favoured in having friends who have clean suckers to spare; therefore, if success can be attained by using paraffin it cannot be too widely known. *T. Coomber.*

"Acme Labels."—These labels have so many good points to recommend them, that they will doubtless soon become an "institution" in the gardening world. Being made of zinc, they are practically everlasting; while the letters being stamped in fine, bold type, and raised or embossed, there is no limit to their legibility. Where the name consists of two words, or lines, the type shows to best advantage, as it fills up the space. I think it would be an improvement to use a larger type for short names, particularly on the fruit-tree labels, such as Elton, Victoria, Dr. Hogg, Noblesse, and such-like—the type now in use showing to best advantage in such names as Baroness Rothschild, Duchesse d' Angoulême, &c. A great advantage may be claimed for these labels in the fact that while they are so distinct as to be easily read at some little distance, they are not so conspicuous in the aggregate as to form a disagreeable feature in a collection. If wanted they are easily found, while if not wanted they attract no attention. It often hapens that a few hundreds of white painted labels are a disagreeable feature in a garden, being sometimes much more conspicuous than the plants whose names they bear. *D. Melville, Dunrobin Gardens.*

Fungoid Diseases.—Is it a fact or a mere assumption, that just as great epidemics have declined amongst the human race they have increased in both the animal and vegetable worlds? Science has been so largely exercised in the direction of health improvement amongst men that great physical calamities produced by direct violations of the laws of Nature are rare occurrences. Plagues, fevers, small-pox, cholera, epidemics of all kinds, now create comparatively little alarm or little cause for it. Sanitary knowledge and practice have robbed them of their terrors and powers, and for all the ill they can accomplish men perhaps breathe more freely and more healthily now than at any time since the days of Adam. But what man has in that direction gained has been lost in others. In the animal world pleuro-pneumonia and cattle plague; amongst the denizens of our rivers, the destructive salmon fungus; amongst vegetable life, the deadly diseases that affect the Vine, the Potato fungus, the Hollyhock disease, and many others all of comparatively modern origin, seem to have sprung into existence to plague the lower world just in proportion to man's

emancipation from epidemic diseases. In dealing with diseases in the lower forms of animal life, and in the vegetable world, the absence of intelligence interposes serious obstacles to any sanitary efforts, just as in times past gross ignorance on the part of portions of the human race prevented the introduction of those great reforms that time has at last brought about. Our rivers have been so long the nation's open sewers that it is no wonder fungoid diseases are rife, the only present cure for which seems to be found in the freedom and purity of the open sea. The cattle plague has doubtless sprung from the long keeping and production of cattle under conditions that are too artificial. Perhaps the prevalence of vegetable diseases is to be explained in a similar way. If we have purified the atmosphere for the benefit of man's health, we must look in a similar direction for other good results for the behoof of the vegetable kingdom. *X.* [Without endorsing the ideas thrown out in this note, we may yet point out that sanitary science is, so far as it regards the prevention of human maladies, thanks to the doctors, much more in advance than in the case of plants. Because they cannot hope to save all their Potatos by any means yet known, cultivators still fold their arms and do nothing, waiting till a disease-proof Potato is sent from Heaven for their benefit. Eds.]

Azalea ledifolia var.—A ew words on an Azalea shown under my name at the last Horticultural Society's show, and noticed by you, may interest some of your readers. It is an Azalea of the indica type, with double or semi-double lilac flowers. Twenty years ago a large bush of it was growing in my garden, side by side with A. alba indica, and bloomed out-of-doors equally and excellently well. The large plant was moved for some alterations, and died; but some cuttings had been taken, of which the plant exhibited is the survivor in my garden, the others having been from time to time given away. This plant has, I may say, from early youth till last October always grown outside, without any protection, and appeared at the show in this wise. It was mentioned by chance to Mr. Taylor, the experienced foreman at Messrs. Veitch's, and he asked to see the blossom, and recognised an old and, as he fancied, a lost favourite. Thereupon the plant was dug up and sent to Chelsea, to be dealt with as thought fit. Mr. Taylor named it from memory, I believe; but on referring to the *Botanical Magazine*, pl. 2509, I think it is undoubtedly the Azalea indica var. β plena, there figured, which, later on, is suggested to be a variety of A. ledifolia. The interest lies in the undoubted hardiness of the plant, and perhaps in its being an old introduction lost. I have seen it nowhere else, nor Mr. Taylor, for many years. Perhaps some of your readers can give further particulars. *J. H. Mangles, Valewood, Haslemere.*

Aucuba superba.—In your last number reference is made to Aucuba superba, which induces me to offer a brief explanation how it with many other promising seedlings was raised. When Fortune introduced new and choice varieties of this valuable shrub, it became evident to the hybridist that a new and extensive field was opened for the practice of his art, and that time and patience were the only requisites to ensure success. Entertaining these views, an early opportunity was taken to secure picta bicolor, salicifolia, longifolia variegata, longifolia aurea variegata and limbata, the two former proved to be worse than useless, their pollen producing a large proportion of green seedlings, and no blotched ones: the other four varieties being females, an extra amount of labour was required to produce maculated salicifolias, male varieties of longifolia variegata, and broad-leaved variegatas. This will be understood when it is stated that after ten years' careful hybridising only about eighteen variegated plants were raised out of some 4000 berries, but besides these all the other desired properties have been obtained; and now that pollen from them will soon be abundant it is to be hoped that Aucubas of equal beauty to superba may ere long be easily attainable. The variegated lines noticed on this variety are common to all variegated Aucubas, and if these lines are traced upwards they will be found to be the source of variegation. Maculated plants exhibit dapples or occasionally a light yellow stem, which indicate increased colour in the foliage; the male plant of superba (which was raised from a different plant to that of a female of the same name) will explain these remarks—some parts of the plant being prettily variegated, while others are dark green. If advantage is taken of these peculiarities a system of graft-hybridising may probably work great results; by grafting [? inarching] a variegated or highly coloured scion on to a corresponding stock, an increase of either property will be secured. A proposed change of residence has induced me, most reluctantly, to relinquish a continuance of experiments in this direction, though I trust that those to whom I have given my entire collection will consider them of sufficient merit to deserve still further improvement. *A. Clapham, Scarborough, Feb. 3.*

The Poultry Yard.

Winter Layers.—There is probably more nonsense written about the getting a supply of hens' eggs in winter than concerning anything else associated with poultry. An old, though not very wise lady, once remarked "that she could not account for it, but it was the case—the fowls always left off laying when the eggs got dear." The old lady's experience is universal. Although hundreds of recipes have been given of food for hens to induce winter laying—although these have been enforced by hundreds of assertions and professed experiences—yet the winter supply of eggs remains as small as ever, as is shown by the fact that new-laid ones fetch in the London district 2½*d.* to 3*d.* each. The great panacea, in the estimation of would-be egg-forcers is feeding; and the diet advised invariably is of a stimulating and forcing character; but as far as experience has gone, one fails to find that forcing obtains more eggs than are secured where natural and simple conditions of diet are found. The cause of failure lies in the fact that we have no right to look for the performance of more work from fowls than from other species of the feathered family. Scarcely any other bird drops eggs in winter, not merely because it is not the natural season for the production of young, but also because cold is unfavourable to the development of the ovary. To feed liberally with a stimulating or heating diet is to force the internal system by artificial heat whilst the external conditions are directly counter to the production of the desired results. The process is about as sensible as it would be to force a vinery with the roof off. Far more practical than such a plan is it to house fowls in a genial temperature at all times during the cold season. If such a plan were practicable on a large scale, no doubt early pullets would, under the influence of the genial warmth, begin to lay several weeks earlier than they would if exposed to the winter's cold. If a large building were heated by hot water as a fowl-house, and the poultry confined to it during cold weather, no doubt it would pay in the long run, and be productive of much less permanent injury to the fowls than must inevitably follow when, by means of artificial feeding, it is attempted to force them to do that in January which Nature does not exact from them till March. *A. D.*

Reports of Societies.

Scottish Horticultural Association: *Feb.* 3.—The ordinary monthly meeting of this Association was held at 5, St. Andrew Square, Edinburgh. There was a large attendance of members; the President, Mr. J. Dunn, occupied the chair. Mr. John Sadler, Curator, Royal Botanic Gardens, communicated some notes on the hybridising of Fragaria lucida with other species and varieties, by Charles J. Burnett, Esq., Aberdeen. He sent plants of Strawberries, the result of Fragaria lucida crossed with Carolina: they were plants of vigorous growth, with much of the evergreen constitution of its lucida parent. He had found it entirely untainted with mildew, even when mixed up with runners of Black Prince and other sorts, and at the same time it thrives well on hot soils. Mr. Sadler next described some of the flower badges used by the clans on battle days and high days. He exhibited dried specimens of the various plants, giving the names of the people who adopted them as their insignia, and concluded by promising to pursue the subject further on a future occasion. Mr. Sadler also gave a short lecture on the "Leaf," illustrated with diagrams. In some plants the petiole took the form of a leaf, and was not unfrequently confounded with it. Diagrams of the different shaped leaves were exhibited and explained, and their structure in every form was also illustrated, as well as their arrangement in different plants. The stomata and their use were referred to in detail, and the movement of leaves was shown in such plants as Dionea Muscipula, Mimosa pudia, Droseras, &c.

Mr. Wm. Burns, Thingwall Hall Gardens, Birkenhead, sent a paper on the "Pear," his remarks applying to the cultivation of this fruit in the northern part of Cheshire, where there is a hard, cold clay subsoil with a slight decline to the North. In regard to the influence of the stock on the scion, he had nothing farther to add than what he communicated to the previous meeting, when he exhibited the Pears which were figured in the *Gardeners' Chronicle* of January 10. The tree was an Aston Town, which did not bear, and he regrafted it with Beurré Clairgeau. It has now borne well for two years, and the old spurs of the Aston Town have borne also. The Editor of the *Gardeners' Chronicle* had stated as a possibility that it was hybridised by the pollen from flowers of the Aston Town, but this would hardly be the case both years. If they are both in flower next year he will report to the meeting. [It would be well if leaves and flowers of stock and scion could be shown together for the purposes of comparison. Eds.]

Dr. Paterson, Bridge of Allan, exhibited Orchid blooms, which were much admired; Mr. R. Grieve, Falconhall, exhibited a large white flower of an Orchidaceous plant; Dicksons & Co. exhibited Pyrus Maulei, Scilla sibirica, Primula pulchella, Saxifraga Burseriana, &c. Mr. Robertson Munro, Abercorn Nursery, exhibited two Saxifragas in flower. There was also on the table, in flower, Acacia Riceana and Clematis indivisa. Mr. G. McKinlay, Tulloch Castle Gardens, exhibited a plan of a flower garden. The Council awarded a Cultural Certificate to Mr. A. McMillan, Broad Meadows, for the cultivation of Pelargoniums and Chrysanthemums; a Cultural Certificate was also awarded to Dr. Paterson, Bridge of Allan, for the cultivation of the original white variety of Odontoglossum Alexandræ. It was intimated that the herbaria for competition by under gardeners, members of the Association, required to be sent to the Secretary, Mr. A. Milne, Leith Walk Nursery, Edinburgh, by the 21st inst.

Meteorological: *Jan.* 21.—The annual general meeting of this Society was held at the Institution of Civil Engineers, Mr. C. Greaves, President, in the chair. Dr. Tripe read the report of the Council for the year 1879, which showed that the Society was in a very satisfactory condition. Eighty-four new Fellows have been elected, and the total number at the end of the year was 473.

The great local differences in temperature and humidity require to be more accurately ascertained than they are at present, and this remark applies not only to seaside places, but also to inland districts in their relation to hills and valleys. It is with a view to obtaining better knowledge on this subject that the Council have instituted a new class of stations of a third order, to be termed "climatological," at which observations of temperature, humidity, cloud, and rainfall are taken daily at 9 A.M. only, with certified instruments, the thermometers being in Stevenson screens, so that the observations of temperature at the different stations may be strictly comparable. The total receipts for the year were £799 6*s.* 9*d.*, and the expenditure £621 19*s.* 5*d.*, leaving a balance in favour of the Society of £177 7*s.* 4*d.*

The President then delivered his address, in which he advocated a more attentive enquiry by the students of meteorology into the subject of hygrometry. The appearance and disappearance of moisture, its diffusion, its origin in and withdrawal from the vaporous form, were matters which could now be readily defined through the increased supply of good observations, especially those so widely circulated by the Meteorological Office, and those recorded by the observers of the Meteorological Society. In furtherance of this object he produced a digest of all the observations published by the Meteorological Office for the year 1879, a year of abundant moisture, and one which could hardly fail to afford traces of the constancy or inconstancy of beds of moisture, if they were permanent anywhere, or of their coming and going, viewed substantially as to their own existence, rather than as borne by the force of the winds, or acted on by the power of the air in its baric relations. The preparation of this digest from the hygrometric elements for 1879 proved such a laborious work that, being still incomplete and wanting the customary corrections from the various observatories, he refrained from comments and deductions, and gave the digest itself for the use of any students who might desire to work at the subject. The tables contained the calculated dew-point, vapour tension, relative humidity, and thermometric dryness throughout. These various and full data exhausted all the aspects of humidity in its vaporous state, and would supply means for a thorough study of the British climate in a year of maximum humidity.

ROYAL HORTICULTURAL SOCIETY.

We have been favoured with the following "proof" of the annual report of the Council, to be read at the meeting on Tuesday next:—

The Council have to report to the Fellows a continuance of interest in the operations of the Society during the past year.

Notwithstanding the unfavourable weather which prevailed throughout the whole of last year, and which marred the success of the exhibitions and meetings generally, the receipts on account of these have not fallen greatly short of those of the previous year.

The fortnightly meetings have been liberally supported—groups of an interesting nature, and valuable collections of fruit, vegetables, and plants have contributed to sustain their high character; and the Council take this opportunity of acknowledging the valuable services rendered by the Scientific, Fruit, and Floral Committees, whose proceedings have been fully recorded in the *Journal* of the Society.

The great show of May 27 was equal to any former exhibition as regards merit and extent, and was honoured

by the presence of H.R.H. the Princess of Wales, and T.R.H. the Duke and Duchess of Edinburgh, the Crown Princes of Denmark and Sweden, the Count and Countess of Flanders, and the Duke of Teck.

The popular show upon Whit-Monday was an improvement upon that of the previous year, the Covent Garden growers filling the grand marquée with a brilliant display of the flowering plants which are specially grown for the supply of the London markets, and, in spite of the heavy rain, the number of visitors on this occasion was 8071.

The Council are desirous of fostering a love of horticulture amongst the humbler classes, and deeming this one of the objects to be kept in view by the Society they have resolved to hold a show upon Whit-Monday, May 17 next, and to postpone the competition for the cottagers' and artisans' prizes to the Bank Holiday, August 2.

In compliance with a desire expressed by the Fellows, the Council held a *conversazione* on the evening of Wednesday, May 28, which, in spite of the weather, was numerously attended. The tents of the great show and the conservatory were illuminated by different systems of electrical lighting, and the members of the Quekett Microscopical Club were present with their microscopes. The success of this *conversazione* encouraged the Council to hold an evening *fête* on July 9, the principal features of which were the exhibition of recent scientific inventions, including Edison's loud-speaking telephone, the phonograph, microscopes, with various other attractions. The gardens were brilliantly illuminated by electricity, and the attendance was very large.

Her Majesty's Commissioners for the Exhibition of 1851, having commenced legal proceedings in order to obtain immediate possession of the gardens, the Council were advised that they were bound to use every legal means of defending the interests of the debenture-holders, whose sole security for the payment of the interest on their bonds, as well as for the portion of the capital for which the property of the Commissioners was conditionally liable, would have disappeared with the termination of the lease to the Society. These proceedings are still pending. The Council cannot refrain from expressing their deep regret that the terms offered by the Commissioners some three years ago were declined by the debenture-holders—a refusal which not only involved the loss of an opportunity of obtaining repayment of a portion of their capital which might not easily recur, but has compelled the Society to embark in a litigation which they would gladly have avoided could they have done so with justice to the debenture-holders and with security to themselves. The Council have reason to believe that juster views of their position now prevail among the debenture-holders, and that if a similar offer were repeated it would be accepted by them. Such a course would be hailed by the Council with the greatest satisfaction. They cannot but think that, whatever may be the legal rights of the debenture-holders, strictly construed, their moral claim for considerate and even generous treatment by the Commissioners, on whose property their money was expended for objects warmly fostered by them and their late illustrious President, is very strong; while the amicable settlement of the question would greatly promote favourable arrangements by the Society with the Commissioners for the use of the gardens, or such portion of them, and of the adjoining premises, as would not be required for public purposes.

The fifth volume of the *Journal* has been completed during the past year. Amongst the papers may be mentioned notes by Dr. Masters, F.R.S., on "Root Hairs and Root Growth," and a treatise "On the Genus Tulipa," by H. J. Elwes, Esq. The reports of Chiswick trials have included Endives, Cabbages, double-flowered Ivy-leaved Pelargoniums, Abutilons, and Gloxinias.

The desire expressed by the Council in their last annual report, that correspondence should be opened with foreign and colonial horticulturists, has been gratified by the receipt of bulbs from Dr. Regel, of St. Petersburg, of many interesting Caucasian and Central Asian plants; and of seeds from various contributors at the Cape, in America, Australia, and Van Diemen's Land, seedlings from many of which will shortly be available for distribution amongst the Fellows.

The trials by the Fruit and Floral Committees at Chiswick have been continued as usual, but owing to the unfavourable season the results have not been so satisfactory as might have been desired, especially of those carried on in the open air. A complete trial of all the varieties of summer Radishes has been made, numbering 130 samples, a full report of which will be published in the Society's *Journal*.

The Society now possesses a fine collection of tuberous Begonias, many of which are hybrids raised in the gardens by Mr. Barron, who has also been most successful in raising several new and handsome varieties of the Chinese Primrose.

The violent hailstorm of August last broke upwards of 1000 panes of glass, while other necessary repairs at Chiswick have occasioned extra expenditure. The land on the west of the gardens having been sold and a new road made alongside, it was found necessary to erect a new boundary wall. The cost has been defrayed by His Grace the Duke of Devonshire, on the understanding that one moiety shall remain as a loan to the Society at 5 per cent. interest. The expenses of the gardens have been reduced to a minimum, while their efficiency has been maintained under the superintendence of Mr. Barron.

One of the large boilers which heats the conservatory at South Kensington, and had been worked for many years, failed during the last winter: this caused, with fixing, an outlay of about £100.

Owing to the excessive and continuous rainfall during the past season, and the unusually low temperature which prevailed, the out-of-doors fruit crop has been very poor. Strawberries were most abundant, but literally rotted on the ground.

The crop of Grapes in the large conservatory was exceptionally good, realising about £400.

The young Vines planted on the long glazed wall have grown very strong and promise well.

A large number of plants growing in the rockery were killed by the severe frost of last winter, but most of them have been liberally replaced by Mr. Ware, of Tottenham, and others; but the damage done by the frost of the present winter may prove far more serious.

A list of the donors of plants, &c., is annexed to this report. The cordial thanks of the Council are tendered to them for their much-appreciated contributions.

Great attention has been paid during the past year to the distribution of plants and seeds amongst the Fellows of the Society. The number of plants distributed has amounted to 10,250; cuttings of plants, fruit trees, and Strawberry runners, 2300 bundles; packets of seeds, 44,730, being double the amount of the previous year.

The Council regret that, owing to the great scarcity of all kinds of seeds, caused by the wet and cold of the past autumn, the distribution during the coming season must necessarily be limited; but a very large stock of plants is being prepared, particulars of which, with form of application, will be furnished in the next number of the Society's *Journal*.

A new railway station on the Metropolitan and District Railway has recently been opened at Acton Green, within four minutes' walk of the garden. Trains run every half-hour. The entrance to the garden is now removed to Sutton Court Road, adjoining the Vestry Hall, Turnham Green.

The Council are glad to observe the continued success of the numerous Floricultural Societies which have been established in various parts of the kingdom, many of which have associated themselves with the Society, and report that, of all the prizes offered by them, the Society's Silver and Bronze Medals appear to be most appreciated.

The Council also note with satisfaction the progress which has been effected by associations which have taken various branches of floriculture under their especial care, such as the Rose, the Pelargonium, the Auricula, and the Carnation Societies, and some others. They will be glad to co-operate with such societies, and afford them all facilities for holding their various exhibitions in conjunction with the ordinary meetings of the Society.

During the past year 238 free monthly tickets have been issued to students in the Science and Art schools, with permission to sketch in the gardens and conservatory.

The Society has lost during the past year 47 Fellows by death, and 92 by resignation. 149 new Fellows have been elected during the year,

The roll of Fellows now consists of—

837 Life Fellows.
430 Fellows paying £4 4s. annually.
772 " " £2 2s. "
2039

BALANCE-SHEET, DECEMBER 31, 1879.

CR.	£	s.	d.
To sundry creditors on open account	401	12	1
Life composition account	1502	17	5
Additional debenture (C. J. Freake)	5000	0	0
Legacy received from the late Miss Parry ..	90	0	0
General revenue account—balance carried forward	840	18	8
	£7835	8	2

DR.	£	s.	d.	£	s.	d.
By capital—				7141	18	2
Annual subscriptions — outstanding				345	9	0
Sundry debtors—						
Garden produce	116	14	6			
On open account..	65	18	11			
				182	13	5
Investment—						
3 per cent. Consols — £100 (legacy invested)				95	2	6
Cash at bankers	69	0	0			
Petty cash in hand	1	5	1			
				70	5	1
				£7835	8	2

We have examined the above accounts with the books and vouchers, and find the same correct.

JOHN LEE,
JAS. F. WEST,
R. A. ASPINALL, } *Auditors.*
SAMUEL JENNINGS, *Assistant Secretary.*

Jan. 22, 1880.

ANNUAL REVENUE ACCOUNT FOR THE YEAR ENDED DECEMBER 31, 1879.

DR.	£	s.	d.	£	s.
To establishment expenses—					
Salaries	554	1	2		
Wages	236	12	10		
Printing, Stationery and Cards ..	210	14	5		
Postages	53	18	10		
Gas	23	5	9		
Miscellaneous	75	2	5		
				1153	15 5
To special expenses in relation to horticulture—					
Journal	150	15	9		
Fruit and Floral Committees ..	72	2	4		
Editor of the *Journal*	100	0	0		
Plant and seed distribution ..	126	13	4		
Grants in aid	30	0	0		
				479	11 5
To Chiswick Garden expenses—					
Rent, rates, taxes, and insurance	267	11	6		
Labour	947	9	3		
Implements, manure, &c.	139	16	4		
Coal and coke	177	9	10		
Repairs	220	17	4		
Trees, plants, seeds, &c.	25	4	1		
Superintendent's salary	150	0	0		
Water	9	10	8		
Miscellaneous	100	17	1		
				2088	16 1
To Kensington Garden expenses—					
Rates, taxes, and insurance ..	491	4	5		
Superintendent's salary	100	0	0		
Labour	422	3	2		
Repairs	162	18	7		
Coal and coke	75	14	8		
Implements and manure	13	1	1		
Water	9	13	3		
Reading room	22	9	11		
Bands	127	4	4		
Trees and plants	7	18	6		
Miscellaneous	83	17	3		
				1516	5 2
To conversazione and evening *fête* ..				348	15 6
To exhibitions—					
Advertising	269	14	4		
Prizes and medals	935	7	0		
Bands	83	13	0		
Superintendent of flower shows ..	25	0	0		
Labour	96	19	8		
Judges' fees	16	16	0		
Sundries	183	11	2		
				1611	1 2
To balance to general revenue account				322	3 3
				£7520	8 0

CR.	£	s.	d.	£	s.
By 1/15 Life Compositions as at January 1	633	10	0		
Annual subscriptions	3852	9	0		
Exhibitions	1012	6	8		
Promenades	36	8	0		
Conversazione and evening *fête* ..	417	18	5		
Daily admissions	399	14	0		
Garden produce	634	18	11		
Packing charges	24	15	0		
Miscellaneous receipts	103	5	3		
"Davis bequest."—Interest appropriated under provisions of trust towards prize medals	60	17	6		
Bank deposit account — amount withdrawn	340	0	0		
Interest on ditto	4	5	3		
				7520	8 0

We have examined the above revenue account with the books and vouchers, and find the same correct.

R. A. ASPINALL,
JOHN LEE,
JAS. F. WEST, } *Auditors.*
SAML. JENNINGS, *Assistant-Secretary.*

Jan. 22, 1880.

GENERAL REVENUE ACCOUNT, DECEMBER 31, 1879.

DR.	£	s.	d.	£	s.	d.
To amount withdrawn from deposit and transferred to annual revenue	340	0	0			
Allowances made on garden sales on 1878 account	1	1	2			
Balance carried forward as per balance-sheet..	840	18	8			
				1811	19	10

CR	£	s.	d.	£	s.	d.
By balance of revenue account brought forward, January 1, 1879	859	16	7			
Annual revenue account—balance for the year 1879	322	3	3			
				1181	19	10
By balance carried forward				£840	18	8

We have examined the above account with the books and vouchers, and find the same correct.

R. A. ASPINALL,
JOHN LEE,
JAS. F. WEST. } *Auditors.*
SAMUEL JENNINGS, *Assistant-Secretary.*

Jan. 22, 1880.

Variorum.

QUALITY OF FARMYARD MANURE. — A knowledge of chemistry and physiology is not needed to enable us to comprehend that the quality and quantity of dung voided by any description of fattening stock or milk-cows is the balance between the food consumed and that portion of it which is retained in their bodies as flesh, fat, &c., or withdrawn in the form of milk, perspiration, respiration, &c. The dung is therefore inferior to the food from a fertilising point of view, just in proportion to the substances extracted from the food by the animal economy; but it is improved in form as food for plants by having been consumed by animals—they prepare it for the plants, which in turn again prepare it for the animals. A 4-year old beast extracts from the food given him only those substances which go to increase the soft

portions of his body, and to maintain the various processes of which his life is made up; but a young beast not only does both these, but also extracts what is required for developing the bone; hence the dung of a mature animal is more valuable than that of a young one, just in proportion to the amount of matter which the young one keeps to build up the bony and muscular structure of his frame. It follows, consequently, that the quantity of manure produced on a farm will depend on the quantity of food grown and consumed on it, and on the quantity of feeding stuffs purchased to supplement and improve the food produced on the farm itself; and that the quality of the manure will in like manner depend on the kind of stock kept, and on the kind of food purchased in addition to that produced. *From "Dairy Farming," by Prof. Sheldon.*

SOUTH AFRICAN TIMBER.—The useful kinds of timber indigenous to South Africa number some hundred varieties, only a few of which, however, have hitherto been used for manufacturing purposes, and those only to a limited extent; and yet, although the forests cover an area of many thousand square miles, there are not wanting indications in certain districts of a falling off in the supply. The colonial authorities are fortunately taking steps to encourage tree-planting and forest conservation generally, and, at the same time, we are glad to see that they are not losing sight of the equally important question of at once utilising the natural wealth of the country. Hitherto the colony has imported not only her rails, but the sleepers also, instead of utilising some of the durable timber awaiting consumption within her borders. The principal South African forests are within a short distance of the shore; and as the denser part of the population is located round the coasts, and the railways are consequently confined to within a comparatively short distance from the seaboard, it would have seemed the natural course for the colonists to have utilised their native supplies of timber in their construction. The people, however, did not actually know the extent of their own possessions in this respect, and custom had probably a good deal to do with the maintenance of the system of "bringing coals to Newcastle," which has gone on so long. Now that the railways have thoroughly tapped the forest country, the utilisation of native timber will become more general, and more stringent laws for the preservation of the forests from further drain will be necessary. The cutting of timber and brushwood in the Crown forests is placed under strict surveillance, and licenses are required to be taken out by all persons cutting timber therein. The measures adopted for their preservation, however, are a heavy item in the expenditure of the Government; and the forests, instead of being a source of revenue, are actually a dead loss, costing £2500 in Cape Colony alone every year, and yielding only £2000. Many of the preserves, however, will bear largely thinning out; and with proper management, and new openings for the use of their produce, they ought rapidly to become a profitable property. *The Colonies and India.*

The Weather.

TATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, FEBRUARY 4, 1880.

Month and Day	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
Jan.	In.	In.	°	°	°	°	°	°	°		In.
29	30.02	+0.26	30.4	15.0	15.4	23.2	— 15.1	21.8	95	WNW: N.W.	0.00
30	30.04	+0.27	50.2	19.8	30.4	36.4	— 2.0	31.7	84	S.S.W.: S.W.	0.00
31	30.19	+0.42	46 2	29.0	17.2	36.4	— 2.1	35.2	96	S.S.E.: S.S.W.: Calm	0.00
Feb.											
1	30.20	+0.44	45 5	26.5	19.0	35.0	— 3.6	32.9	92	S.: Calm	0.00
2	30.17	+0.40	47.3	23.3	24.0	35.8	— 2.9	33.3	91	S.W.	0.00
3	30.25	+0.49	44.4	35.6	8.8	40.0	+ 1.2	37.9	93	S.W.	0.01
4	30.16	+0.40	41.0	29.1	14.9	35.8	— 3.1	34.8	96	WSW: S.W.	0.00
Mean	30.15	+0.38	44.0	25.5	18.5	34.7	— 4.0	32.5	92	variable	sum 0.01

Jan. 29.—Fine but gloomy and foggy in morning. Dull rest of day. Dense fog in evening. Fog cleared and sky cloudless at midnight. Painfully cold day.
— 30.—A very fine bright clear day. Bitterly cold in early morning. Quite warm in afternoon. Cold at night. A thaw.
Jan. 31.—A fine bright day, but very cold. Hoar frost in morning. Much fog at times, and more dense in some places than others.
Feb. 1.—Very cold and foggy morning. Sudden rise in temperature. Fine, mild, but damp till night, then cold. Foggy.
— 2.—A fine day. Cold in morning, mild after. Partially cloudy. Overcast at midnight. Some fog.
— 3.—A dull, cloudy day, Mild and damp. A damp mist fell in early morning.
— 4.—A fine day, but partially cloudy and cold. Hoar-frost and some fog in morning. Very dense fog at night.

NOTE.—The long-continued period of high barometer readings has now reached 127 days, viz., 1879, October 1—1880, February 4, inclusive. The mean reading for these 127 days is 30.067 inches, or 0.327 inch above the average. On many days together during this period the mean daily readings were between 0.6 inch and 0.7 inch in excess of their averages.

LONDON: *Barometer.*—During the week ending Saturday, January 31, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.33 inches at the beginning of the week to 30.19 inches by mid-day on the 25th; increased to 30.40 inches by the morning of the 27th, decreased to 30.20 inches by the morning of the 30th, and increased to 30.37 inches by the end of the week. The mean reading for the week at sea level was 30.29 inches, being 0.14 inch below that of the preceding week, and 0.34 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 50¼° on the 30th, and 46¼° on the 31st, to 28° on the 28th, and 30½° on the 29th; the mean value for the week was 36¾°. The lowest temperatures of the air during the week were as follows:—25th, 23°.3; 26th, 17°.5; 27th, 17°.9; 28th, 18°.4; 29th, 15°; 30th, 19°.8; 31st, 29°; the mean value for the week was 20°.1. The mean daily range of temperature in the week was 16¾°; the greatest range in the day being 30½°, on the 30th, and the least 9½°, on the 28th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Jan. 25, 28°.8, — 9°; 26th, 25°.8, — 12°.1; 27th, 25°.6, — 12°.5; 28th, 22°.8, — 15°.4; 29th, 23°.2, — 15°.1; 30th, 36°.4, — 2°; 31st, 36°.4, — 2°.1. The mean temperature of the air for the week was 28°.4, being 9°.7 below the average of sixty years' observations, and 2°.7 below the value for the corresponding week in 1879.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 97° on the 30th, 78¾° on the 26th, and 73¼° on the 27th; on the 28th and 29th the readings did not rise above 48°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 12¾° on the 29th, 13° on the 26th, and 14°. on the 27th. The mean of the seven lowest readings was 17°.

Wind.—The direction of the wind was E. and S.S.E., and its strength almost calm.

The weather during the week (with the exception of Friday and Saturday, on which days it was fine and somewhat mild) was generally dull, with much hoar-frost and painfully cold. Very dense fogs were prevalent, especially on the 27th, 29th, and 31st, on low grounds.

Rain.—No rain or snow fell.

ENGLAND: *Temperature.*—During the week ending Saturday, Jan. 31, the highest temperatures of the air observed by day were above 51° at Bristol, Cambridge, Liverpool, Sheffield and Bradford, and below 44° at Brighton and Wolverhampton; the mean value for the week from all stations was 49¼°. The lowest temperatures of the air observed by night were below 20° at Blackheath (London), Brighton, Bristol, Leicester, Cambridge, Norwich, Wolverhampton, Nottingham, and Liverpool, and above 25° at Truro and Sunderland; the mean value for the week from all places was 19¾°. The extreme range of temperature in the week was above 34° at Blackheath, Cambridge, and Sheffield, and below 25° at both Brighton and Hull; the mean range of temperature from all stations was 29½°.

The mean of the seven high day temperatures was above 41° at Truro, Sheffield, and Sunderland, and below 36° at Wolverhampton and Nottingham; the general mean from all places was 38¾°. The mean of the seven low night temperatures was below 25° at Blackheath, Brighton, Bristol, Cambridge, Wolverhampton, and Nottingham, and above 31° at both Truro and Sunderland; the mean from all stations was 26°. The mean daily range of temperature in the week was above 16° at Blackheath and Cambridge, and below 11° at Wolverhampton and Sunderland; the mean daily range of temperature from all places was 12¾°.

The mean temperature of the air for the week from all stations was 32°, being ¼° higher than the value for the corresponding week in 1879. The mean temperature was above 35¼° at Truro, Sunderland, and Sheffield, and below 29° at Blackheath, Wolverhampton, and Nottingham.

Rain.—Very little rain was measured during the week. At Cambridge 0.02 inch was recorded, and at Plymouth and Nottingham both 0.01 inch. At most other places no rain or snow fell.

The weather during the first five days of the week was painfully cold, with severe frosts and dense fogs. On Friday and Saturday it was somewhat fine and bright, and the maximum temperatures at some places were between 51° and 56°.

SCOTLAND: *Temperature.*—During the week ending Saturday, January 31, the highest temperatures of the air observed by day varied from 50° at Glasgow, Paisley, and Perth, to 47° at Dundee; the mean value from all places was 48¼°. The lowest temperatures of the air observed by night varied from 25° at Leith and 25¼° at Edinburgh, to 34¼° at Paisley; the mean value from all stations was 29¾°. The mean range of temperature for the week from all places was 20°.

The mean temperature of the air for the week from all stations was 40¼°, being 8¾° higher than the value for the corresponding week in 1879, and 8¼° higher than that of England. The mean temperature was the highest at Paisley, 42¾°, and the lowest at Edinburgh and Dundee, both 39½°.

Rain.—Rain or snow fell at Greenock to the amount of 2.70 inch, at Paisley 1.55 inch fell, and at Glasgow 0.99 inch fell, whilst at Aberdeen 0.02 inch only was measured. At Leith no rain or snow was recorded; the average amount over the country was 0.72 inch.

DUBLIN.—The highest temperature of the air was 52½°, the lowest 23°, the extreme range 29½°, the mean 41½°; and the amount of rain and snow 0.13 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

THE MANURING OF VINE BORDERS.—Now that the time for washing and cleaning succession and late vineries has arrived, it would be instructive and interesting to many readers of the *Gardeners' Chronicle* to hear the opinion of some of its able correspondents regarding the manuring of Vine borders. Some successful Grape growers in the South of Scotland use no manure save the half-inch bones, and no liquid manure save frequent applications of guano-water. Now I consider the Vine requires more substantial manure than either of the above to bring to maturity a good crop of Grapes and strong vigorous wood. I think the above subject deserves the attention of some of our eminent English Grape growers. *Subordinate.*

Answers to Correspondents.

APPLE-TWIGS: *E. W. S.* The specks on the young shoots must not be taken as the outward sign of disease. On the contrary, they are natural to a great many varieties, as we should have thought every nurseryman knew.

ASPARAGUS: *Chiswick.* The best way of making Asparagus beds on heavy soil is by the addition of lighter soil to it—or, in fact, making a bed of proper soil on the top of the existing heavy soil.

BOTHY: *H. H. C.* "The Bothy" is the commonly applied name of the apartments in a garden allotted for the residence of under gardeners.

BRAKE OR BRACKEN FERN: *Rochester.* The common Brake or Bracken Fern (Pteris aquilina) is by no means one of the easiest of Ferns to transplant. If you want to cover a good piece of ground, the best plan is to get a few cartloads of the roots from some neighbouring estate, dug up in large pieces, and plant them without breaking them up any more than can be helped.

FUNGUS ON ROSE-LEAVES: *Roseflora.* The name of the fungus is Lecythea Rosæ.

HOLLY: *J. H.* The narrow-leaved Holly, in which entire and spiny leaves are mixed up on the same branch, is the variety known as Ilex Aquifolium doningtonensis.

HOLLY CUTTINGS: *J. S. S.* These are planted in autumn, the ripened wood of the current season being selected for cuttings. The presence of a heel would not be detrimental, but is not necessary.

INSECTS: *I. H., Jamaica.* The white material sent is a mass of minute cocoons of a little Ichneumon (genus Microgaster), the larvæ of which have destroyed the caterpillar of some moth or butterfly, and then burst out of its body and spun for themselves a general silky covering, as well as a separate cocoon of the same material. *I. O. W.—J. G.* The grubs found at the roots of Seakale, received in a dry shrivelled state, belong to two species of two-winged flies (Muscidæ), which it is impossible to identify in this state, and which are usually found (together with the small worms sent with them in some quantity) in decaying, not in healthy, plants. *I. O. W.*

LYCOPODIUM FOR COVERING WALL: *G. H.* Fix galvanised wire netting at a short distance from the wall so that you can pack turfy peat mixed with sphagnum behind it, rather firmly to prevent subsidence, and with support at intervals. In this the Lycopod will grow freely, but not in the cocoa-nut fibre refuse. The Lycopod enclosed is the Selaginella Kraussiana,

commonly miscalled Lycopodium denticulatum in gardens—an old and persistent error.

MINT: *A. B. C.* Mint may of course be cultivated from seeds; but Mint seed is not an article of commerce in the same sense as Parsley, for instance. The almost universal method of propagating the plant is by cuttings or division of the roots. Your friend must be thinking of something else, for Mint seed certainly is not a common article.

NAMES OF PLANTS: *W. K.* 7, Pleopeltis pustulata; 8, Begonia Rex; 9, Amomum Cardamomum; 10, Begonia Richardsiana; 11, Sanchezia nobilis variegata; 12, Begonia heracleifolia nigricans.—*G. W. M.* Both your plants are what you suppose them to be. Billbergia nutans was figured lately in the *Botanical Magazine*, and the authorities at Kew have just received for the first time wild specimens, gathered near Rio Janeiro by Dr. Glaziou.—*C. Sharpe & Co.* A variety of Primula denticulata, probably the one known as erosa.

NEW ZEALAND: *A. B.* Write to the Agent-General for New Zealand—Sir Julius Vogel, 7, Westminster Chambers, London, S.W.

WATERLOO PLUM (see Enquiry, p. 154).—John Scott, in the 2d edition of his *Orchardist*, p. 527, says it is a synonym of Coe's Golden Drop. *W. F. Radclyffe.*—I have found out that the Waterloo Plum, which I alluded to last week, is a sport, or an improved variety of the Bush Plum, an East Kent market variety, which is valuable for its purpose, but of poor quality for the table, though a fair culinary kind. *Geo. Bunyard, Maidstone.*

CATALOGUES RECEIVED:—C. Pocock (Wincanton, Somerset), Catalogue of Seeds.—Messrs. Kerr & Fotheringham (Dumfries), General Catalogue.—Messrs. Drummond Brothers (82, George Street, Edinburgh), Catalogue of Roses, Lilies, Gladioli, Seeds, &c.—Messrs. Laird & Sinclair (Dundee), Catalogue of Vegetable and Flower Seeds.—W. H. Gower (Tooting, London, S.W.), Seed Catalogue.—Messrs. Harrison & Sons (Leicester), Catalogue of Vegetable and Flower Seeds.—F. Gee (Biggleswade, Beds), General Seed Catalogue.—Messrs. Ormiston & Renwick (Melrose, N.B.), Catalogue of Garden and Farm Seeds.—Messrs. G. & W. Yates (28, Market Place, Manchester), Catalogue of Vegetable and Flower Seeds.—Messrs. Gibson & Reid (14, Lower Ormond Quay, Dublin), Catalogue of Seeds, Potatos, Tools, &c.—Mons. Bruant (Poitiers, France), List of New Plants.—John Weeks & Co. (King's Road, Chelsea, S.W.), Illustrated Book of Designs for all kinds of Horticultural Buildings.

COMMUNICATIONS RECEIVED.—J. D.—H. K.—J. C. & Co.—T. B.—J. H. M.—J. R. J.—A. F.—Enquirer.—J. S.—J. V. & S.—W. B. S.—J. C.—A. B.—G. W. Y.—A. E.—Messenger & Co.—D. T.—G. B.—E. A. O.] (next week.)—J. M.—H. C.—C. R. P.—Joseph Lafosse (next week).—G. M.—W. H. F.

DIED, on the 29th ult., at Hawthorn Cottage, Hendon, after a short illness, CHARLES, second son of William Brown, Brent Nurseries, Hendon, N.W., aged eighteen years.

Markets.

COVENT GARDEN, February 5.

Vegetables still remain short, and prices are maintained. The supply of American Apples shows signs of falling off, and well kept home-grown fruit, well sorted, is now asked for. Trade improving. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	12 0–24 0	Ficus elastica, each	2 6–15 0
Azaleas, per dozen	30 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–18 0	Fuchsias, per dozen	12 0–18 0
Bouvardias, per doz.	12 0–24 0	Hyacinths, per doz.	9 0–18 0
Cinerarias, per doz.	12 0–18 0	Myrtles, per doz.	6 0–12 0
Cyclamen, per dozen	12 0–30 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	9 0–18 0
Dracæna terminalis	30 0–60 0	Poinsettia, per dozen	12 0–24 0
— viridis, per doz.	18 0–24 0	Primula, single, per dozen	6 0–12 0
Erica gracilis, per dozen	9 0–18 0	Solanum, per dozen	9 0–24 0
— hyemalis, p. doz.	12 0–30 0	Tulips, 12 pots	8 0–12 0
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6–1 0	Lily of Val., 12 spr.	1 0–4 0
Arum Lilies, per dozen	9 0–18 0	Mignonette, 12 bun.	6 0–9 0
Azalea, 12 sprays	1 0–3 0	Narcissus, Paper-white, 12 spikes	2 6–6 0
Bouvardias, per bun.	1 0–4 0	Pelargoniums, 12 spr.	1 6–3 0
Camellias, per doz.	3 0–12 0	— zonal, 12 sprays	0 9–2 0
Carnations, per dozen	1 0–3 0	Poinsettia, 12 blms.	3 0–9 0
Chrysanthem., large flowers, per doz.	3 0–9 0	Primula, double, per bunch	1 6–3 0
Cyclamen, 12 blms.	0 4–1 0	— single, per bunch	0 9–1 6
Epiphyllum, 12 blms.	0 9–2 0	Roses (indoor), doz.	4 0–12 0
Eucharis, per doz.	6 0–12 0	— Roses, Fr., doz.	2 6–6 0
Euphorbia, 12 sprays	3 0–6 0	Spiræa, 12 sprays	3 0–6 0
Gardenias, 12 blms.	12 0–24 0	Tropæolum, 12 bun.	1 0–3 0
Heliotropes, 12 sp.	0 6–1 0	Tuberoses, per dozen	4 0–6 0
Hyacinths, 12 spikes	6 0–12 0	Tulips, 12 blooms	1 0–3 0
— small	3 0–6 0	Violets, Fr., per bun.	5 0–7 6
— Roman, 12 spikes	2 0–4 0	White Lilac, Fr., per bundle	8 0–12 0

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0–6 0	Lemons, per 100	3 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0–..	Pears, per dozen	3 6–6 0
Grapes, per lb.	2 6–8 0	Pine-apples, per lb.	2 0–3 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0–10 0	Horse Radish, p. bun.	4 0–..
Asparagus, Sprue, per bunde	1 0–..	Lettuces, Cabbage, per doz.	3 0–4 0
— English, p. 100	15 0–..	Mint, green, bunch	2 0–..
— French, per bun.	7 0–..	Onions, per bushel	8 0–..
Beet, per doz.	1 0–2 0	— Spring, per bun.	0 6–..
Brussels Sprouts, lb.	0 6–..	Parsley, per lb.	1 6–..
Cabbages, per doz.	1 0–2 0	Peas, per lb.	1 0–..
Carrots, per bunch	0 8–..	Potatos (new), per lb.	0 3–0 9
— French, per lb.	0 6–..	Rhubarb (Leeds), per bundle	0 9–..
Cauliflowers, per doz.	2 0–5 0	Seakale, per punnet	3 0–..
Celery, per bundle	1 6–4 0	Shallots, per lb.	0 6–..
Chilis, per 100	3 0–..	Spinach, per bushel	5 0–15 0
Cucumbers, each	1 6–3 0	Tomatos, per dozen	3 0–..
Endive, per score	4 6–..	Turnips, new, bunch.	0 6–..
Garlic, per lb.	0 6–..		
Herbs, per bundle	0 2–0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 150*s.*; and Champions, 130*s.* to 150*s.* per ton. German produce is making from 4*s.* to 7*s.* per bag. The supply is stopped now in consequence of the frost.

SEEDS.

LONDON: *Feb.* 4.—Extreme quietness continues to characterise the market for farm seeds, business to-day being quite stopped by a dense fog. Of yearling English red Clover a considerable quantity in the aggregate now offers; but the majority of the samples, being brown and poor in quality, meet with no attention whatever. North American seed is cheaper, and liberal supplies are now coming to hand. From October 1, 1879, to January 23, 1880, the exports of Clover seed from New York to Great Britain were 2219 tons against 783 tons for the corresponding period of last season. There is no quotable variation in white Clover seed. This year Alsike is very cheap relatively. In Trefoils the tendency favours the buyer. Italian and perennial Rye-grasses are steady. Tares meet a ready sale at full prices. The demand for Canary seed is exceedingly slow. Just now there is scarcely anything doing in either Haricots, Lentils, or Peas. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

At Mark Lane on Monday trade was very quiet. English Wheat was very slow of sale, and rates were decidedly easier; foreign Wheat also was cheaper to sell. Barley met with a quiet demand, and prices moved somewhat in buyers' favour. Malt was dull, but without alteration. Oats were in larger supply, and quotations receded to the extent of about 6*d.* per quarter. Maize was dull, with a downward tendency. Beans and Peas moved off quietly on former terms. Flour had a poor sale, and rates were not fully supported.—On Wednesday Wheat, either English or foreign, found very few buyers, and the tone of the market was decidedly heavy. Barley was dull, especially feeding stuffs. Malt was quiet, on former terms. Oats were in limited request, and quotations ruled somewhat in buyers' favour. This last remark applies also to Beans, Peas, and flour.—Average prices of corn for the week ending Jan. 31:—Wheat, 45*s.* 3*d.*; Barley, 36*s.* 4*d.*; Oats, 21*s.* 11*d.* For the corresponding period last year:—Wheat, 38*s.* 4*d.*; Barley, 36*s.* 9*d.*; Oats, 19*s.* 5*d.*

HAY.

Tuesday's Whitechapel Market report states that good hay was in fair demand, but otherwise the market was dull. The supply of Clover was large. Quotations:—Prime Clover, 110*s.* to 126*s.*; inferior, 70*s.* to 100*s.*; prime meadow hay, 80*s.* to 95*s.*; inferior, 30*s.* to 75*s.*; and straw, 30*s.* to 37*s.* per load.—On Thursday there was a moderate supply of hay on sale. The trade continued very dull, and prices without change.—Cumberland Market quotations:—Superior meadow hay, 98*s.* to 105*s.*; inferior, 40*s.* to 84*s.*; superior Clover, 120*s.* to 130*s.*; inferior, 80*s.* to 95*s.*; and straw, 34*s.* to 38*s.* per load.

POTATOS.

The Borough and Spitalfields Markets reports state that there was a fair trade at firm prices. The supplies were rather limited. Scotch Regents, 140*s.* to 165*s.*; do. Champions, 140*s.* to 150*s.*; Lincoln Regents, 140*s.* to 155*s.*; Victorias, 160*s.* to 190*s.* per ton. German reds, 6*s.* to 7*s.* 6*d.*; Belgian kidneys, 6*s.* to 6*s.* 8*d.*; French whites, 4*s.* 9*d.* to 5*s.* per bag.—During last week 6632 bags were received at London from Hamburg, 481 bags from Harlingen, 693 bags from Ghent, 135 bags from Teneuzon, and 572 packages from Malta.

COALS.

The following are the prices current at market during the week:—East Wylam, 16*s.*; Bebside West Hartley, 14*s.* 9*d.*; West Hartley, 14*s.* 9*d.*; Walls End—Hetton, 16*s.*; Hetton Lyons, 15*s.*; Haswell, 16*s.*; Hawthorns, 15*s.* 3*d.*; Lambton, 16*s.*; Original Hartlepool, 16*s.* 6*d.*; Wear, 15*s.*; South Hetton, 16*s.*; Tunstall, 15*s.*; Chilton Tees, 15*s.* 6*d.*; Tees, 15*s.* 9*d.*

Government Stock.—On Monday the closing price of Consols was 98⅛ to 98¼ for delivery and the account. Tuesday's figures for the account were 98 3/16 to 98 5/16—for delivery, 98⅛ to 98¼. The same figures were posted on Wednesday and Thursday at the close of business.

FOR SALE, 2,000,000
TRANSPLANTED FOREST TREES,
ALL FINE CLEAN GROWN PLANTS.

ALDER	2 to 3	feet	17*s.*	per 1000
,,	3 to 4	,,	19*s.*	,,
ASH	1 to 1½	,,	10*s.*	,,
,,	1½ to 2	,,	14*s.*	,,
,,	2 to 3	,,	17*s.*	,,
,,	3 to 4	,,	28*s.*	,,
,, Mountain	3 to 4	,,	22*s.*	,,
,, ,,	4 to 6	,,	30*s.*	,,
BROOM	1½ to 2	,,	14*s.*	,,
,,	2 to 3	,,	17*s.*	,,
BUCKTHORN	12 to 18	inches	10*s.*	per 100
,,	2½ to 4	feet	20*s.*	,,
CHESTNUT, Spanish	1½ to 2	,,	16*s.*	per 1000
,, ,,	2 to 3	,,	25*s.*	,,
,, ,,	3 to 4	,,	30*s.*	,,
ELDER, Scarlet	1 to 2	,,	14*s.*	,,
ELM, Scotch	1 to 2	,,	14*s.*	,,
,, ,,	3 to 5	,,	30*s.*	,,
HOLLY, 2-yr. and 3-yr., mixed			6*s.*	,,
HORNBEAM	4 to 6	,,	28*s.*	,,
LIMES	2 to 3	,,	8*s.*	per 100
,,	3 to 4	,,	12*s.*	,,
,,	4 to 5	,,	17*s.*	,,
,,	5 to 6	,,	40*s.*	,,
MAPLE, English and Norway	3 to 4	,,	30*s.*	,,
OAK, Evergreen, three times transplanted	2 to 3	,,	25*s.*	,,
,, Evergreen, do., do	3 to 4	,,	50*s.*	,,
,, Evergreen, do., do.	4 to 5	,,	100*s.*	,,
POPLARS, Black Italian, Balsam, and Ontario	3 to 4	,,	20*s.*	per 1000
PRIVET, Evergreen	1½ to 2	,,	15*s.*	,,
,, ,,	2 to 3	,,	24*s.*	,,
QUICK	9 to 15	inches	9*s.*	,,
,,	12 to 18	,,	14*s.*	,,
,,	18 to 24	,,	20*s.*	,,
,,	2 to 3	feet	24*s.*	,,
SYCAMORE	2 to 3	,,	16*s.*	,,
,,	3 to 4	,,	25*s.*	,,
,,	4 to 5	,,	40*s.*	,,
THORN, Black	1½ to 2	,,	18*s.*	,,
WHIN or GORSE	18 to 24	inches	15*s.*	,,
,,	2 to 3	feet	20*s.*	,,
WILLOW, Bedford and Huntingdon	3 to 4	,,	20*s.*	,,

SEEDLINGS.

ASH	1-yr.	£6 0 0	per 100,000
SYCAMORE	2-yr.	0 3 6	per 1000
BEECH	2-yr.	0 5 0	,,
AUSTRIAN PINE	2-yr.	12 10 0	per 100,000
CORSICAN PINE	2-yr.	15 0 0	,,
LARCH	1-yr.	6 0 0	,,
,, all fine leading tops	2-yr.	4*s.* to 5*s.*	per 1000
SPRUCE	2-yr.	6 0 0	per 100,000
,,	3-yr.	7 10 0	,,

PETER S. ROBERTSON & CO.,
TRINITY NURSERIES, EDINBURGH.

GARDEN REQUISITES.
COCOA-NUT FIBRE REFUSE,
3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
H. G. SMYTH,
10, Castle Street, Endell Street, Long Acre, London, W.C.

Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per bag.
WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE.—Useful at all seasons. Largest makers in the Kingdom. 1*s.* per bag, 30 bags £1 (bags included), truck 25*s.* free to rail; 5*s.* van-load, at Works, Janet Street, Millwall, E. P.O.O. payable at General Post Office, London. Orders to be addressed to A. FOULON, Fibre Merchant, 32, St. Mary Axe, London, E.C.

COCOA-NUT FIBRE REFUSE at Reduced Prices, as supplied to Messrs. J. Carter & Co., High Holborn, W.C.; at the International Agricultural Exhibition, Kilburn; and all the Principal Nurserymen and Seedsmen in England:—In 4 bushel bags at 1*s.*, bags included; 30 bags, bags included, 20*s.*; or truckload of about 250 bushels, 25*s.* (truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE WASTE, 1*s.* per bag, 30 bags for 20*s.* No charge for bags. Truck-load (loose), free to rail, 25*s.*—BULBECK AND SON, Suffolk Place, Snow's Fields, Bermondsey, S.E.

One Fume effectually destroys the whole family of

APHIDES.

Two Fumes in quick succession will annihilate the

THRIP.

IN IRON, 6s. 6d.

IN COPPER, 21s.

IMPROVED FUMIGATING PAN,

ALSO THE IMPROVED AND ONLY GENUINE

MEDICATED TOBACCO PAPER,

"Ready Cut Up," "Self Consuming,"
"Most Effective," "Perfectly Safe."

This "Special" Article has now been extensively used by Horticulturists for some years, and hundreds can bear testimony to the fact that it is the cheapest, safest, and most efficacious Asphyxiate in the market.

TO BE OBTAINED *ONLY* FROM

JAMES DICKSON & SONS,
108, EASTGATE ST., CHESTER.

Who will be pleased to send, post-free, on application, Circular containing Testimonials and all particulars.

Price, 1s. 8d. per pound.

Carriage Paid on Orders of 28 lb. and upwards.

To Gardeners.

FOR TOBACCO PAPER apply to H. BAILEY, 63, Weston Street, Bolton, Lancashire.

An Important Discovery.

SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1s. 6d., 2s. 6d. and 12s. 6d. each. Special quotations for large quantities.

London Agents: HOOPER AND SONS, Covent Garden, and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

CUPISS'S
CONSTITUTION BALLS.

This justly celebrated Medicine for more than 30 years has proved to be the best and cheapest for

HORSES AND NEAT CATTLE,

Cheaper because required to be given only once a week, and not every second or third day,

PRESERVING HEALTH, VIGOUR AND CONDITION.

Their cost, too, is saved by the food turning to a better account, for it is a fact that Horses will keep up their condition better upon three feeds of Oats daily when a Ball is occasionally given than with four feeds without the Balls.

REARERS OF NEAT CATTLE

Will find the Balls most valuable, not only in case of disease, but in Rearing Young Stock, they will Grow to a Larger Size, come to Perfection Sooner, and to a Greater Weight with the same quantity of food if a Dose (see directions) of the Balls is given occasionally.

Prepared by the Proprietor,

FRANCIS CUPISS, M.R.V.C.S.,
DISS, NORFOLK.

Author of the PRIZE ESSAY on the "Diseases of the Liver of the Horse."

☞ Sold by all Chemists, in Packets at **1s. 9d.** and **3s. 6d.** each; or **7** large Packets for **21s.**, or **7** small for **10s. 6d.**

Gentlemen using the Balls may consult the Proprietor gratuitously.

GAWITH'S FIREFLY CIGARETTE, for destroying Thrip, Greenfly, and other greenhouse Pests. The advantages of fumigation over all other methods of destroying these enemies must be apparent to all horticulturists. However skilfully applied, insect-destroying powders cannot reach every one, whereas by rendering the atmosphere of a house destructive, all are reached. These Cigarettes are clean and effective; one trial is enough to convince the most sceptical that a long-looked-for handy and clean destroyer has at last been found. The Cigarette merely requires suspending by the wire attached, lighting at each end as in ordinary fireworks, and does its own work without further attention.

Price 1s. 6d. each. To be had from Seedsmen, and from JOHN E. GAWITH, Sole Manufacturer, Lowther Street Tobacco Manufactory, Kendal.

ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.

ALFRED GRANT AND CO., Steam Works, 39½, Leather Lane, London, E.C.

WM. PETERS has still some good colour Soft ARCHANGEL MATS, very suitable for tying purposes, also ARCHANGEL and ST. PETERSBURG MATS, for covering.

JUST TO HAND, *ex Duart Castle*, a parcel of RAFFIA, fine quality, good colour, and extra strong.

SEED BAGS and SACKS. Specially prepared Sewing or Tying, White or Tarred TWINE, ROPES, LINES, &c. NETTING and SHADING CANVAS. RICK CLOTHS and WATERPROOF COVERS of all descriptions.

Prices on application to
44, Tenter Street South, Goodman's Fields, E.,
and Well Street Warehouses, London Docks, E.

ANDERSON'S RUSSIA MATS
For COVERING, TYING, and PACKING,

are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

MATS, RAFFIA for TYING,
TRAINING STICKS and LABELS,
Bamboo Canes, Virgin Cork, &c.

C. J. BLACKITH AND CO.,
COX'S QUAY, LOWER THAMES STREET, LONDON.

ARCHANGEL AND PETERSBURG
MAT MERCHANTS and IMPORTERS.

All the usual kinds at reduced rates. SACKS and SEED BAGS, new and second-hand, of every description. RAFFIA FIBRE, NETTING and TIFFANY, TARPAULINS, RICK COVERS, HORSE-CLOTHS, ROPES, LINES and TWINES. Price LIST on application to

J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

PEACH WALL COVERS,
Or GLASS COPINGS,

From 2s. per foot run—Portable or Permanent.

Estimates given by return of post, after receipt of full particulars, for Covering any Length, Height, or Width, either with the simple PAXTON ROOFS, as Lean-to or ¾-Spans, or with a projecting set-off from back wall.

B. W. WARHURST
(Late HEREMAN & MORTON),
43, HIGHGATE ROAD, LONDON, N.W.

Price Lists, with Views of Glasshouses of various forms, free on application. Estimates given for HOT-WATER HEATING of any extent.

IRON CONSERVATORY,
30 feet by 19 feet, for Sale.

Suitable for a Showhouse, with Pipes, Iron Stand, and Flooring complete. Price £80, or Shrubs of that value. Cost £900.

A Photograph will be sent on application to
J. GROVER, Builder, Wilton Works, New North Road, London, N.

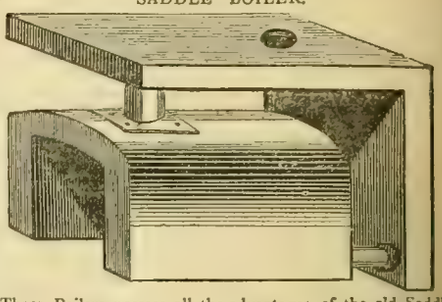
HOT-WATER PIPES AND FITTINGS,

also SINGLE, DOUBLE, TREBLE, or QUADRUPLE COILS, with EXPANSIVE LEAKLESS JOINTS.

ANY LABOURER CAN FIX THEM.

Sole Proprietors and Manufacturers,
C. & F. SANDERSON,
GENERAL IRON and BRASS FOUNDERS,
MANSFIELD, NOTTS.
Catalogues Free on application.

JONES'S PATENT "DOUBLE L"
SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1000	16	0	0
24 ,,	24 ,,	48 ,,	1400	20	0	0
28 ,,	28 ,,	60 ,,	1800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May 29, 1873.*

"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.

JONES & ATTWOOD.

ENGINEERS and IRONFOUNDERS,
STOURBRIDGE.

JONES'S IMPROVED EXPANSION JOINT.

THE BEST HOT-WATER JOINT.

Medal Awarded Horticultural Show, Aston, 1875.

SIMPLE, DURABLE, NEAT, CHEAP.

Specially adapted for CHURCHES, SCHOOLS, MANSIONS, PUBLIC BUILDINGS, &c.

Illustrated CIRCULAR and Price LIST; also Estimates for Heating with the most improved BOILERS, EXPANSION JOINT PIPES, or COILS, on application.

The Boiler of the Day for Amateurs is

WATSON'S PATENT GUINEA SUSPENSION. Price 21s.—Warranted Safe, Substantial, Economical, and Effective, also to do well without attention, and to well work pipe sufficient for a 40-feet house, from Twelve to Sixteen Hours. Apply for prospectus, enclosing stamp, to the Patentee, J. WATSON, The Nurseries, St. Albans.

P.S.—The Boiler is in action at the Nurseries, open to inspection, three minutes from the Midland Railway Station.

X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for
HOT-WATER PIPES and CONNECTIONS.
F. AND J. SILVESTER, Castle Hill Foundry,
Engineering and Boiler Works, Newcastle, Staffordshire.

SADDLE BOILER, a powerful Centre-flue 30-inch. As good as new. Price and full particulars with sketch. Also a 28 by 24 inch GARDEN ROLLER, weight about 5 cwt.; suitable for Lawn or Cricket Ground.

Apply, H. T. A., New Road, Hillingdon Heath.

"ART WITH ECONOMY,"

Applied to Conservatories and Greenhouses.
With Illustrations, Prices, &c.

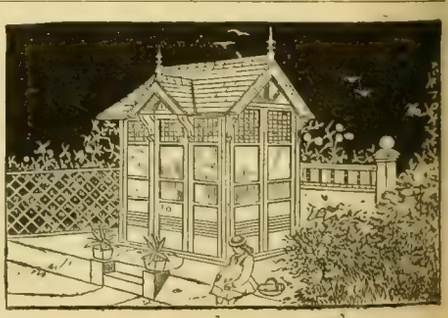
Part I., now ready. Post-free, twelve stamps.

CHEAP ART-SUMMERHOUSES.
Illustrations and Prices Gratis.

T. H. P. DENNIS & CO.,

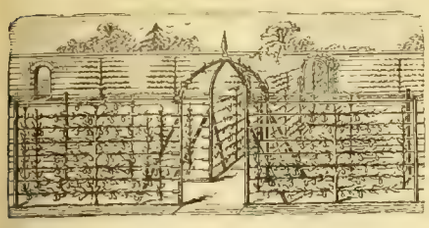
MANSION HOUSE BUILDINGS, LONDON, E.C.

WORKS: CHELMSFORD.



BOULTON & PAUL, NORWICH.

IMPROVED ESPALIER FENCING & WALL TRAINERS.



Estimates given free of charge for Espalier Trainers for Fruit Trees, &c. The Espalier can be easily fixed, wood or stone blocks being unnecessary. In writing for estimates please give exact lengths required, with a rough sketch showing angles, if any.

FITTINGS FOR WIRING FRUIT WALLS.—Having a large stock, orders can be executed on receipt at reduced prices. Experienced workmen sent when required to fix Espaliers and Wall Trainers. Illustrated Lists, with full particulars, free on application.

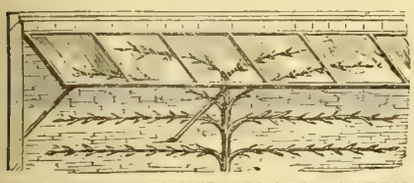
WROUGHT IRON GARDEN ARCHES made to suit any situation—a large stock kept.

BOULTON & PAUL, NORWICH.

GARDEN NETTING for Sale, in small or large quantities, for Protecting Fruit and Wall Trees, and Seed and Strawberry Beds from Birds, Blight, Frost, &c., 2 yards wide, 1*d.* per yard; 4 yards wide, 2*d.* per yard, and any quantity of Netting required will be forwarded on receipt of Post-office Order made payable to

W. A. CURTIS, 31, Jury Street, Great Yarmouth, Norfolk.

A Crop of Fruit in Spite of Frost.



PARHAM'S PATENT GLASS COPING.

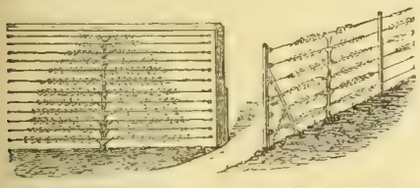
More successful than ever last year. Testimonials and Prospectus free. Price, with 21 oz. glass and painted iron framing, 2 feet wide, 2*s.* 6*d.*; 3 feet wide, 3*s.* 9*d.* per foot run. Orders amounting to £3 carriage paid.

WM. PARHAM, Northgate Works, Bath; London Showrooms, 280, Oxford Street. Specimens on view at either address.

MAIN'S WALL FITTINGS & ESPALIERS.

IMPROVED EYES and HOLDFASTS.

Neater and more easily driven than old patterns.



WALL FITTINGS, 100 yards long and 6 feet high, can be had for 21*s.*	ESPALIER FENCE. Standards free from Welds. Compare Prices and Quality.	
GALVANISED RAIDISSEURS ..		Per dozen 3*s.* 0*d.*
„ Straining SCREWS and HOLDFASTS		„ 4*s.* 0*d.*
„ CLIMAX EYES		„ 0*s.* 4*d.*
„ TERMINAL HOLDFASTS		„ 1*s.* 6*d.*
GALVANISED WIRE, best quality,	No. 14, 1*s.* 6*d.* / No. 13, 2*s.*	per hank of 100 yards.

LISTS OR SAMPLES ON APPLICATION.

A. & J. MAIN & CO.,

108, QUEEN VICTORIA STREET, LONDON, E.C.; and 25, Hope Street, Glasgow.

GARDEN STAKES, LABELS, VIRGIN CORK, MATS, RAFFIA, &c. None cheaper. Prices of WATSON AND SCULL, 90, Lower Thames St., London, E.C.

Greenhouses.

H. FREEMAN AND SONS, HORTICULTURAL BUILDERS and HOT-WATER APPARATUS MANUFACTURERS, Cambridge Heath Bridge, Hackney, E. Good substantially made GREENHOUSES, Glazed, ready for fixing, 42 feet long, 13 feet wide, £50; 21 feet by 13 feet, £28; 12½ feet by 10 feet, £15. Estimates given for wood or iron.

W. H. LASCELLES,

HORTICULTURAL BUILDER,

121, BUNHILL ROW, LONDON, E.C.

LEGION of HONOUR, PARIS EXHIBITION.

ILLUSTRATED SHEETS of Conservatories, Greenhouses, &c., and Prices of Garden Boxes and Lights, sent post-free on application, and Estimates given for all kinds of Horticultural Work, without charge.

The Patent Bent Wood Curved Greenhouses can be erected at the same cost as a Plain Straight one. They are much lighter, better in appearance, and can be glazed with straight Glass. For particulars apply to the Patentee and Manufacturer,

W. H. LASCELLES,

121, BUNHILL ROW, LONDON, E.C.

BOULTON & PAUL, NORWICH.

MELON and CUCUMBER FRAMES always in stock.

1-light FRAME,	6 feet by 4 feet,	£2 0 0;	Packing Cases, 3*s*
2-light „	8 feet by 6 feet,	£3 7 6;	„ „ 4*s.*
3-light „	12 feet by 6 feet,	£4 17 6;	„ „ 4*s.* 6*d.*
4-light „	16 feet by 6 feet,	£6 7 6;	„ „ 5*s.*

Made of the best seasoned red wood deal. Glazed with English 21-oz. Sheet Glass. All painted three times in best oil colour. Iron Handle to each Light, and an Iron Cross Bar.

Carriage Paid to any Railway Station in England and Wales, also to Dublin, Edinburgh and Glasgow.

Lights only—glazed, 16s. each; unglazed, 5s. each.
Orders amounting to 40s. carriage paid.

BOOTE AND MILLSON, LEAD and GLASS MERCHANTS, 64, City Road, E.C., have always ON THE PREMISES a large Stock of all kinds of Horticultural Glass, at lowest market rates.

BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities, of

BETHAM & SON,

9, LOWER THAMES STREET, LONDON, E.C.

B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

Established 150 years.

WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

Inches.	Inches.		Per 100 ft. Box.
15-oz., 6 × 4 to 8 × 6,		10*s.*, 11*s.*, 12*s.*, 13*s.* 6*d.*	
9 × 7 to 12 × 9,		11*s.*, 12*s.*, 13*s.*, 14*s.* 6*d.*	
13 × 9 to 18 × 12,		11*s.*, 12*s.*, 13*s.*, 14*s.* 6*d.*	
20 × 12 to 24 × 16,		11*s.* 6*d.*, 13*s.*, 14*s.* 6*d.*, 15*s.*	
20 × 17 to 24 × 18,		12*s.*, 13*s.* 6*d.*, 15*s.*, 16*s.* 6*d.*	
	Inches.	Inches.	
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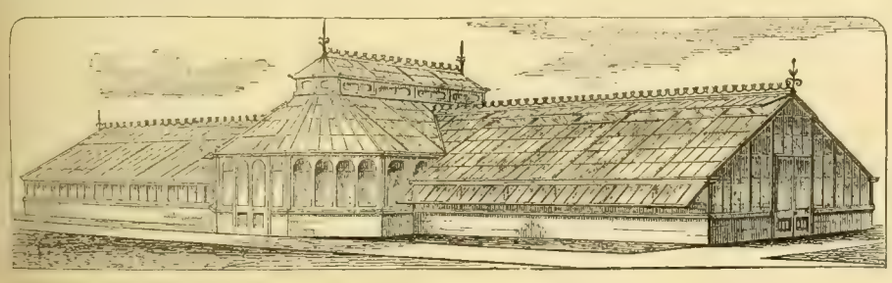

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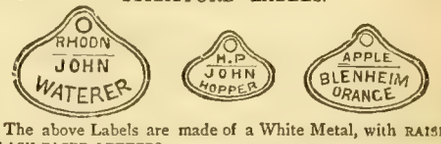

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CUTTINGS, fine, healthy, and well-rooted, perfectly free from disease, of White, Purple, Scarlet and Pink, 6s. per 100; 50s. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8s. Terms cash.

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STOCK PLANTS of VERBENAS.—We have as usual a large stock of the above, which for vigour and freedom from disease cannot be surpassed; they are very bushy, and bear already large quantities of clean healthy cuttings. Trade price, 16s. per 100, or 140s per 1 co.

A List of 50 sorts, also DAHLIAS in Pot-roots, may be had on application to

KEYNES AND CO., Nurserymen, Salisbury.

To Seed Merchants.

PLAIN CRESS.—A few Quarters, of good colour and growth, to be disposed of. Sample and price on application to

WOOD AND INGRAM, Nurserymen, &c., Huntingdon.

Special List of Cheap Ferns.

THE ABOVE SPECIAL LIST of a large number of varieties of FERNS and SELAGINELLAS, offered at very low prices, will be forwarded on application. Ferns being our Speciality, and having an immense stock, we are able to supply them at the most reasonable prices.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

LARGE ORANGE TREES FOR SALE.—A Gentleman who is removing from his present residence wishes to Dispose of FOUR LARGE ORANGE TREES in Pitch Pine Tubs. The Trees are 5 feet 6 inches high, the stems being 18 inches, and the heads are 4 feet across. The tubs are 2 feet 6 inches deep and 1 foot 10 inches square. Apply to

W. STRAPP, Esq., The Grange, Crawley Down, Sussex.

PHŒNIX RECLINATA (true), the finest and hardiest of all table Palms, strong 1-yr. seedlings, in store pots, 24s. per 100, £10 per 1000. Also LATANIA BORBONICA, seedlings, in store pots, 12s. per 100, £4 per 1000. Apply to

JEAN NUYTENS VERSCHAFFELT, Ghent, Belgium.

Nursery Stock, &c.

H. MINCHIN begs to offer the following:—THORN QUICK, 3-yr, strong and well-rooted; OAK, English, 8 to 10 feet; also a few quarts of Laxton's Standard and Carter's Challenger PEAS.

The Nurseries, Hook Norton, Oxon.

SPANISH CHESTNUT, ASH, BIRCH, HAZEL and ALDER, stout, well-rooted, transplanted. Also a large quantity of 1 and 2-yr. Seedling SPANISH CHESTNUT, at 6s. and 8s. per 1000.

GEORGE CHORLEY, Costers' Nursery, Midhurst.

STRONG FOREST TREES.

ALDER, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.

The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to

JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

Important.

RASPBERRY CANES.

MR. R. BATH has now but a few thousand of his highly renowned Fastolf remaining for Disposal. 20s. per 1000; sample 100, 4s. Post-office Order or Cheque with order. No deliveries made in any case without a previous remittance. Crayford, Kent.

To the Trade.

ASPARAGUS, GIANT, 1, 2, 3, and 4-yr. Price on application.

JAMES BIRD, Nurseryman, Downham.

SEED POTATOS.—20,000 bushels of the choicest varieties of Seed Potatos to offer, amongst which are Sutton's Magnum Bonum (true), Fidler's Surprise Ashleaf Kidney, Snowflake, Early Hammersmith, Gloucestershire Kidney, Schoolmaster, Covent Garden Perfection, Paterson's Victorias, Scotch Champions, &c. Send for Catalogue and testimonials, post-free on application, to

C. FIDLER, Grower and Importer, Friar Street, Reading.

To the Trade.

"PRIDE OF ONTARIO" POTATO.

H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.

Seed Growing Establishment, Wisbech.

SALES BY AUCTION.

Exeter.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. Lucombe, Pince & Co., who are giving up their branch Nursery at Exminster, near Exeter, to SELL by AUCTION, on the Premises, on TUESDAY and WEDNESDAY, February 17 and 18, the whole of the valuable NURSERY STOCK, in excellent condition and fit for immediate planting, lotted to suit all purchasers; also an unrivalled Collection of choice named FRUIT TREES, in the usual varied forms of training, at the Home Nurseries.

May now be viewed. Catalogues had at the Exeter Nursery, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, Essex.

Tottenham, N.
(Adjoining the station).

CLEARANCE SALE of STOCK growing on Land required by the Great Eastern Railway in March next for the extension of their line.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION on the Premises, The Hale Farm Nurseries, Tottenham, on TUESDAY, February 24, at 12 o Clock precisely, by order of Mr. Ware, the remaining portion of the NURSERY STOCK growing on the above land, consisting of 3000 Standard and Dwarf Roses, of strong clean growth; a large quantity of Apples and Pears, aud other fruit trees; an assortment of Shrubs for borders; 30,000 strong 3-yr. old Asparagus, Herbaceous Alpine Plants, Bulbs, &c.

May be viewed. Catalogues had on the Premises and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

The Nurseries, Westerham, Kent.

IMPORTANT UNRESERVED SALE, the Land being required for Seed Growing.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, as above, on WEDNESDAY and THURSDAY, February 25 and 26, at 12 o'Clock punctually each day, by order of Mr. J. Cattell, several Acres of very valuable NURSERY STOCK, comprising the usual variety of choice Border Shrubs and Evergreens for effective planting; 2000 Green Hollies, 12,000 Common Laurels, 5000 Privet, 3000 fine English Yews, 3000 Thuja Lobbii, 12,000 Forest Trees, including 6000 Horse Chestnuts, 6 to 12 feet; and large quantities of other stock too numerous to mention.

May now be viewed. Catalogues had at the Nursery, or of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. Vans will meet the morning trains at Sevenoaks and Eden Bridge Stations to convey purchasers to the Sale.

Horsell, near Woking Station, Surrey.
CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. H. & C. Cobbett, to SELL by AUCTION, on the Premises, The Horsell Nursery, Woking, on TUESDAY, March 2, and following days, several Acres of first-class NURSERY STOCK, in excellent condition for removal. Full particulars will appear next week.

Catalogues at the Auctioneers' Offices, 98, Gracechurch Street, E.C., and Leytonstone, E.

Valuable Imported Orchids, from the New Plant AND BULB COMPANY.

MR. J. C. STEVENS will sell by AUCTION, at his great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 16, at half-past 12 o'Clock precisely, a valuable importation of ORCHIDS from Columbia, from the Collectors of the New Plant and Bulb Company, including Cattleya Mendelii, Odontoglossum Pescatorei, O. Phalænopsis, O. triumphans, Anguloa Clowesii, Oncidium cucullatum, &c.; also from the New Plant and Bulb Co. splendid established plants of ODONTOGLOSSUM ALEXANDRÆ, collected in Bogota by Mr. H. Chesterton; Sophronites grandiflora, Ionopsis paniculata, Miltonia cuneata, Aerides cylindricum, Oncidium concolor, Epidendrum vitellinum majus, Trichopilia hymenanthera, &c.; the rare MASDEVALLIA SHUTTLEWORTHII, M. Harryana, M. Veitchii, M. ignea, M. Lindeni, M. Davisii, &c.

On view the morning of Sale, and Catalogues had.

Choice Imported Orchids, from the Philippine ISLANDS and BURMAH.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 18, at half-past 12 o'Clock precisely, by order of Messrs. H. Low & Co., fine IMPORTED PLANTS, in the best possible condition, of the rare and lovely Cypripedium Haynaldianum, many of them very fine masses, and all with green healthy leaves and young growths; Cypripedium Argus, Dendrochilum filiforme, Dendrobium heterocarpum philippense, D. macrophyllum giganteum, D. formosum giganteum, D. cretaceum, D. fimbriatum oculatum, D. albo-sanguinea, D. aggregatum majus, D. infundibulum, Vanda Batemanni, Saccolabium curvifolium, S. Blumei majus var. Dayi, amongst them one mass on native wood 4 feet in length; Cœlogyne Parishii, and other choice ORCHIDS.

At the same time will be offered healthy established plants of Phalænopsis Schilleriana, Cymbidium Lowianum, Cattleya Dowiana, Cypripedium Boxalli, &c.

May be viewed the morning of Sale, and Catalogues had.

Valuable Importations of Orchids.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 19, at half-past 12 o'Clock precisely, a splendid importation of ODONTOGLOSSUM LUTEO-PURPUREUM SCEPTRUM. Prof. Dr. Reichenbach writes, "This variety differs principally from O. luteo-purpureum through its much closer inflorescence and magnificent contrast of dark and light colours." Flowers tigered brown and yellow, lip fringed, yellow barred brown. A large consignment of BATEMANNIA BURTI, the best of the Costa Rica Orchids, sepals and petals lower half pure white, upper half chocolate-brown, flowers 5 inches in diameter; ODONTOGLOSSUM HALLI LEUCOGLOSSUM, the white-lipped variety collected by Mr. Lehmann; a large lot of ANGULOA CLOWESII and LYCASTE GIGANTEA, a grand importation of CATTLEYA TRIANÆ in splendid masses, the rare and magnificent ODONTOGLOSSUM POLYXANTHUM, in large and healthy specimens; O. VEXILLARIUM and ROSSI MAJUS; the new RESTREPIA FALKENBERGI, CATTLEYA MENDELLI, MORMODES PARDINUM, LÆLIA FURFURACEA, ONCIDIUM FUSCATUM, and others.

Flowers and Drawings will be on view.
May be viewed the morning of Sale, and Catalogues had.

Roses, Fruit Trees, Shrubs, &c.

MR. J. C. STEVENS wil, SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 21, at half-past 12 o'Clock precisely, first-class STANDARD ROSES, from well-known English growers, Dwarf-trained and Pyramid FRUIT TREES, Herbaceous PLANTS, SHRUBS, GLADIOLI, LILIUMS, SPIRÆAS, LILY of the VALLEY, RUSTIC GARDEN-WORK, &c.

On view the morning of Sale, and Catalogues had.

4000 Lilium auratum from Japan, and other choice LILIES, PLANTS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 23, at half-past 12 o'Clock precisely, 4000 very fine bulbs of LILIUM AURATUM, just arrived from Japan in the best possible condition; also an importation from Japan of gigantic bulbs of LILIUM LANCIFOLIUM ALBUM and RUBRUM, L. KRAMERI, and various other choice LILIES; an importation of Japanese ORCHIDS; SARRACENIAS from New Jersey; some fine roots of TIGRIDIA GRANDIFLORA and CONCHIFLORA; 600 bulbs of PANCRATIUM AMŒNUM; an importation of AMARYLLIS BELLADONNA; 2000 fine roots of American TUBEROSES; English grown LILIES, choice GLADIOLI, SPIRÆAS, LILY of the VALLEY, &c.

May be viewed the morning of Sale, and Catalogues had.

Extensive Nursery Clearance Sale at Dalkeith.

MR. DAVID MITCHELL, HORTICULTURAL AUCTIONEER, VALUATOR, and ESTATE AGENT, has received instructions from Messrs. Ballantyne & Son (who are retiring from the nursery business) to DISPOSE OF, by PUBLIC AUCTION, at their Nurseries, Dalkeith, on THURSDAY and FRIDAY, February 19 and 20, at 11 o'Clock in the Forenoon of each day prompt, the whole of the valuable NURSERY STOCK, consisting of choice Ornamental, Deciduous, Coniferous, and Evergreen Trees, Shrubs, and Plants, many of them of rare excellence and even unique in character; also a fine lot of Specimen, Hybrid, named, and other Rhododendrons of leading kinds; Hardy Ericas, Herbaceous and other Plants; a most extensive stock of well-grown and well-rooted Forest Trees; together with a splendid lot of Laurels, comprising Colchic, Caucasian, Common, and Portugal; and other things too numerous to mention in an Advertisement.

N.B. The Auctioneer would beg to draw the attention of those intending to plant to this most important Sale. The Messrs. Ballantyne & Son's Nurseries have always been famous for well-grown and well-rooted Shrubs and Trees.

Catalogues in preparation.
6, Comely Bank, Edinburgh, February 4, 1880.

To Florists.

THE GOODWILL of a FLORIST'S BUSINESS in Piccadilly can be obtained, with immediate possession of the Shop, on taking Trade Fixtures at Valuation, owing to the Advertiser's retirement through ill-health. Apply to
Mr. REARDEN, 92, Piccadilly, W.

Surrey.

TO BE LET, an old-established NURSERY, with an excellent connection, of about 16 Acres, with Dwelling-house and Cottages, very advantageously situate in a neighbourhood renowned for the Nursery Business, and only about 1 mile from the Addlestone Station, and 2 miles from the Woking Station on the South-Western Railway.

For further particulars apply to Messrs. R. & J. WATERER AND SON, Auctioneers and Valuers, Chertsey.

TO LET, ROSEHILL GARDENS, NORTON, and may be entered upon at the November Term—the above Gardens comprising about 7 acres of first-class Garden ground, with the Dwelling-house, Vineries, &c. Now in the occupation of Mr. T. Oliver as Tenant.

For particulars apply to J. J. FENNY, Stockton-on-Tees.

To Gardeners, Florists, &c., Wishing to Commence BUSINESS.

TO BE LET, with Immediate Possession, a handsome large GREENHOUSE, SHOWHOUSE, LIGHTS, &c., with a large Piece of Ground. Within 3 miles of Covent Garden. Incoming by valuation (about £85). Rent low. Address, X. Y., *Gardeners' Chronicle* Office, W.C.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

BRIER STOCKS.—For Sale, 2300 good Briers, from 3 to 4 feet high, all carefully laid in. Price per 100, 10*s*.; per 1000, £4, on rail, for cash on receipt of goods. Apply
G. WOOBERRY, Dunsfold, Godalming, Surrey.

FRESH SPHAGNUM MOSS for ORCHIDS.—Sample bushel, 1*s*. 6*d*.; 5 bushels, 10*s*. 6*d*.; 10 bushels, 20*s*., for cash. Common and decorative, any quantity on application.
THOS. BEAUCHAMP, Woodfalls Cross, Downton, Salisbury.

QUICKS, fine, 4-yr. transplanted, 16*s*. per 1000. Scotch FIR, 2 feet, good, 16*s*. per 1000. FRUIT TREE STOCKS, strong, all kinds, 30*s*. per 1000. Strong Maiden Lord Suffield APPLES, 40*s*. per 100.—W. JACKSON, Blakedown, Kidderminster.

Special Cash Offer.—A Bargain.

SCOTCH FIR.—A few hundred thousand true Native Highland, 2-yr. Seedlings, fine stuff, at 11 guineas per 100,000, packing free, for cash on receipt. Post samples on application.
WM. WISEMAN, Nurseryman, Nairn, N.B.

PEACHES and NECTARINES. — Extra sized Dwarf-trained—(the Trade supplied)—are offered by GEORGE SMITH, The Dell Nursery, Rock Ferry, Cheshire.

Montbretia Pottsii.
See Illustration in the *Garden* of January 24.

THE LAWSON SEED and NURSERY CO. (Limited), Edinburgh and London, are now Booking Orders for Flowering Bulbs of the above named Hardy Cape Bulb, having secured the stock from Mr. Potts, the introducer of it. Price 2*s*. 6*d*. each, or 24*s*. per dozen; the usual discount to the Trade.

Special Offer to Farmers, Gardeners, and Others.
GEE'S SUPERIOR BEDFORDSHIRE GROWN SEED POTATOS, CABBAGE, and SAVOY PLANTS, &c.

F. GEE has fine stocks of the above, which have been grown carefully on new land, fine samples, free from disease, and such that he can highly recommend to all who require a change of seed. They can be supplied in almost any quantities (if unsold) as follows (put on G.N. rails.) for cash with orders:—

	Per Peck of 14 lb.	Per Bush. of 56 lb.	Per Cwt. of 112 lb.	Per Ton.
	s. d.	s. d.	s. d.	£ s.
EARLY ASHLEAF KIDNEY	2 6	8 0	14 0	12 0
EARLY ROSE and CLIMAX.—Fine quality and productive sorts .. .. / LATE ROSE and PEERLESS ..	2 0	7 0	12 0	10 0
NEW BEAUTY of HEBRON.—Splendid quality, very handsome, wonderfully productive, and one of the finest disease-resisting varieties. Very promising ..	2 6	9 0	16 0	15 0
NEW BURBANK SEEDLING and THE WASHINGTON. — Two new American kidneys of great promise, wonderfully productive, and very handsome, and good disease-resisters	3 0	10 0	19 0	18 0
NEW MAGNUM BONUM. — Sutton's true. Splendid sample, fine quality, and very productive, and the finest disease-resister..	2 6	8 0	15 0	14 0
NEW SCOTCH CHAMPION.—True. Fine sample, extraordinarily productive, and marvellous disease-resister	2 0	7 0	13 0	12 0
PORTER'S EXCELSIOR.—Fine quality, good cropper	2 6	8 0	15 0	14 0

Good Peck Bags charged 3*d*. each, Bushels 6*d*., and Common Sacks, to hold 1½ Cwt., 8*d*. each.

Superior CABBAGE and SAVOY PLANTS, from F. GEE' noted stocks. The past severe winter has been very disastrous to the above; many crops are destroyed. Good plants are scarce and dear. F. GEE can supply a large quantity of fine stuff, and CATALOGUES and lowest prices also of FARM and GARDEN SEEDS, on application to
F. GEE, Biggleswade, Beds.

LILIES, Superior, of English growth. BULBOUS PLANTS of all kinds.
HARDY ORCHIDS, and ORCHIDS for Cool-house culture.
Before Purchasing, see CATALOGUE of the NEW PLANT AND BULB CO., Colchester. Post-free on application.
Dr. Wallace's "Notes on Lilies," Illustrated, post-free 5*s*. 6*d*.

LILIUM AURATUM.—Splendid Bulbs of this fine Lily at Reduced Prices, 6*d*., 9*d*., 1*s*. and 1*s*. 6*d*. each. For other new Lilies, rare and cheap Orchids, apply for CATALOGUE to
WM. GORDON, Bulb and Plant Importer, 10, Cullum Street, London, E.C.
Liberal discount to the Trade.

QUICK, 100,000 fine strong and extra strong; also strong LARCH, Austrian PINE, fine specimens, 6 to 9 feet; strong PURPLE BEECH, &c.
W. GROVE, Tupsley, Hereford.

CYCLAMEN PERSICUM, showing large quantities of bloom, 30*s*. per 100; sample dozen, 5*s*.
WHITE VESUVIUS, 20*s*. per 100; 3*s*. per dozen.
GLOXINIA BULBS (finest), 6*s*. per dozen. All package free.
GEORGE GUMMOW, 114, Loughborough Road, Brixton, S.W.

LARCH and SPRUCE FIR, splendid, 2 to 3 feet. See advertisement in *Gardeners' Chronicle*, first page, February 7.
W. JACKSON AND CO., Bedale.

MAGNUM BONUM POTATOS. — A splendid sample of the above, grown from Seed, direct from the raiser (Mr. Clarke), price 7*s*. 6*d*. per bushel of 56 lb., free on rail, sacks included. Also about 10,000 strong HAZEL, at 15*s*. per 1000.
H. T. BATH, Seedsman, &c., 80, High Street, Lymington.

PRIMULA NIVALIS TURKESTANICA.—By far the handsomest Primrose of Central Asia. This will be hailed with delight as a long-desired addition to our hardy alpine plants. Flowers an inch in diameter, finely shaped, and of a bright violet colour. 1*s*. 7*d*. per packet, with directions. Cash with order.—W. J. MARSH, Woodbridge, Suffolk.

CENTAUREAS for PRESENT POTTING.—Centaurea candidissima and C. ragusina compacta, 9*s*. per 100; C. gymnocarpa, 10*s*. 6*d*. per 100; all summer-sown plants from stores. Fifty and upwards sent free for cash.
STOCKS, East Lothian Intermediate, strong plants from frames, in three colours, 1*s*. 6*d*. per dozen, 8*s*. per 100.
J. J. MARRIOTT, Highfield Nurseries, Matlock, Derbyshire.

To the Trade and Others.

S. BIDE has to offer a very fine lot of 2-yr. Seedling SCOTCH FIR (very scarce this season), sample and price of which will be forwarded on application to
S. BIDE, Alma Nursery, Farnham, Surrey.

Quicks—Quicks.

THORN QUICKS.—About 60,000 good strong, 3-yr., cut back and transplanted last Spring, to be sold at 12*s*. per 1000. Apply to
WM. BRAY, Nurseryman, Okehampton.

To the Trade.

JOHN NELSON, Thorn Bank Nursery, Catcliffe, near Rotherham, has the following to offer:—
CHERRIES, strong Standard sorts, good heads, 75*s*. per 100.
" " " May Dukes, Maidens, 50*s*. per 100.
" " " Dwarf-trained sorts, 80*s*. per 100.
HOLLIES, 1 to 1½ foot, 16*s*. per 100; 1½ to 2 feet, 30*s*. per 100; 2 to 3 feet, 45*s*. per 100.
POTATOS, Myatt's Kidney, £10 10*s*. per ton.

To the Trade and Large Buyers.

B. HURST begs to offer, cheap:—
2000 extra fine Red Dutch and Grape CURRANTS.
500 extra fine Warrington Red GOOSEBERRIES.
300 extra fine GOOSEBERRIES of sorts.
All on good stems, of clean and most healthy growth. Samples and prices on application.
The Nurseries, Burbage, Hinckley.

WALNUT TREES.—For Sale, some unusually fine trees, from 6 to 10 feet; will shift well. Apply, Mr. COOPER, Calcot Gardens, Reading.

Webb's Prize Cob Nut Trees.
CALCOT GARDENS, NEAR READING, BERKS.

MR. COOPER, having succeeded to these Gardens, and being about to make considerable alterations, is desirous of reducing the valuable stock of PRIZE COB FILBERT TREES, for the cultivation of which the late Mr. Webb was so justly celebrated.

Mr. COOPER desires to caution the public in purchasing Nut Trees advertised as WEBB'S PRIZE COB FILBERT TREES, as no one is authorised by him to sell them.

Early applications should be made, addressed
Mr. COOPER, Calcot Gardens, near Reading, Berks.

SEED POTATOS.—

Snowflake	Paterson's Victoria
Early Rose	Regent
Myatt's Prolific	Dalmahoy
Fortyfold	Fluke
Bresee's Prolific	Champion (Scotch)
Early Shaw	Redskin Flourball

And other leading varieties. Prices on application to
JOSIAH H. BATH, York Street, Borough Market, S.E.

Immense Quantities of Young

FOREST TREES, CONIFEROUS, ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, and 3-yr. QUICKS, very cheap.

CATALOGUES will be sent free on application.

LEVAVASSEUR AND SON, Nurserymen, Ussy, Calvados, France.

Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, London, E.C.

Avenue and Park Planting.

WM. MAULE AND SONS offer:—WELLINGTONIAS, 6 to 8 feet; DEODARAS, 8 to 10 feet and upwards; ARAUCARIAS, 5 to 6 feet, at 10s. 6d. each, in equal proportions, and will deliver any quantity—not less than one dozen—carriage free to any railway station in direct communication, within a hundred miles.

☞ Terms: cash, or good reference.
The Nurseries, Bristol.

Planting for Immediate Effect.

THE EXECUTORS of the late T. STANSFIELD have to offer a large stock of clean, well-grown, and well-rooted FOREST and ORNAMENTAL TREES, at exceptionally low prices. The following may be specially mentioned:—

LABURNUMS, 8 to 14 feet, strong, clean, and shapely, 3s. to 24s. per dozen.
BEECH, 6 to 9 feet, 12s. to 15s. per 100.
POPLARS, Ontario, 15 feet, 10s. per 100.
SYCAMORES, 6 to 15 feet, 6s. to 40s. per 100.
HORSE CHESTNUTS, 5 to 12 feet, 6s. to 30s. per 100.
LIMES, 6 to 15 feet, 15s. to £5 per 100.
ALDER, 16 feet, a few large } 1s. each.
BIRCH, 16 feet, " " }
ELMS, English and other, 4s. per dozen.
YEWS, English, 3 feet, 20s. per 100.
LONICERA LEDEBOURII, 6s. per 100.
CUPRESSUS LAWSONIANA, perfectly shaped, well-furnished, healthy plants, 5 to 8 feet, 9s. to 15s. per dozen.

The Limes, Laburnums, and Sycamores are particularly recommended for avenues and for planting as specimens in conspicuous situations. LIST on application.
Tanshelf Nursery, Pontefract.

POTATOS FOR PLANTING.—The undersigned begs to inform the Trade that he planted over 300 Acres last season, and can offer at low prices, for cash, the following sorts, viz.:—

Beauty of Hebron, imported	Lapstone Kidney
" English grown	Magnum Bonum
Old Ashtop	Paterson's Victoria
Mona's Pride Ashtop	Scotch Champion
Myatt's Prolific	Regents, and
Early Rose Snowflake	Red-skinned Flourball.

Price LIST on receipt of Trade Card.
CHRISTMAS QUINCEY, Potato Importer, Exporter and Merchant, Peterborough.

Stock Plants.

GERANIUMS.—Stock Plants of New and valuable Geraniums with cuttings, for cash.

The magnificent new Silver-edged Geraniums, with grand flowers of all colours, strong plants 4s. 6d. per dozen, 25s. per 100, packed and put on rail. Strong rooted cuttings of all the best sorts 3s. per dozen, or 18s. per 100, by post. Cuttings 10s. 6d. per 100, post-free.

LISTS free on application. P.O.O. payable to
CHARLES BURLEY, Nurseries, &c., Brentwood, Essex.

QUICKS.—Whitethorn, extra strong, well-rooted, 1½ to 3 feet, 3-yr., at 14s. per 1000 (nett): about 300,000.

P.S. Price LISTS of Herbaceous and Alpine Plants, Fruit Trees, &c.; also CATALOGUES of Kitchen Garden, Flower, and Agricultural Seeds, at very moderate prices, post-free on application.

W. BALL AND CO., Seed Growers and Nurserymen, Bedford Road, Northampton.

New Cucumber, Sir Garnet Wolseley.

JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, post-free for 30 stamps.

"The points in which Cucumber Sir Garnet Wolseley surpasses all other long-fruited varieties are the symmetry of its fruit, and the abundance with which they are produced; there being no shank or handle to Sir Garnet."—*Gardeners' Chronicle*, September 27, 1879.

Green and Variegated Ivies of Sorts,
Large and small-leaved, in eight kinds.

ROBERT PARKER, having a Surplus Stock of fine Plants in pots of the above-named, will be pleased to dispose of them in quantities at very low prices. Names, sizes, and prices per dozen, 100, or 1000, will be given on application.

Exotic Nursery, Tooting, Surrey, S.W.

Gold Medal Begonias.

LAING'S CHOICE HYBRIDISED SEED, superior to all others, harvested from their unequalled collection, was again awarded the Royal Horticultural Society's Medal in August. Sealed packets, free by post, 1s. and 2s. 6d. each. The Trade supplied. Now is the time to sow.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

MANGEL SEED.

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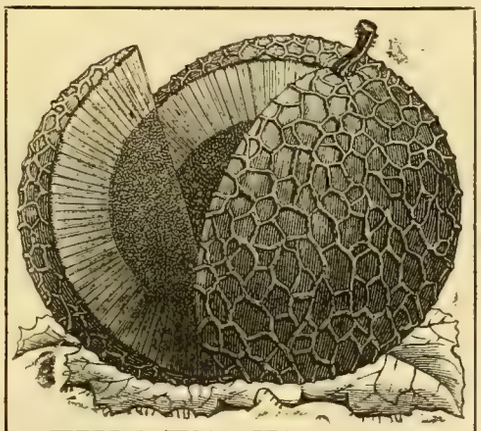

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THE
Gardeners' Chronicle.
SATURDAY, FEBRUARY 14, 1880.

CHILHAM CASTLE.

IN the Valley of the Stour, five miles from Canterbury, stands Chilham Castle, on a site approved by Romans, Saxons, Normans, and modern English, each in their turn. The picturesque little village of Chilham covers, with the Castle at whose gate it stands, a spur of the chalk down which lifts it high above the valley. The Roman fortress stood on the same site as the present castle, and its commanding situation rendered it a place of great importance. After the departure of the Romans the place was occupied by the Saxon kings of Kent.

The present Norman castle was erected at the same time as Dover Castle. Immediately after the Norman Conquest, John de Fienes was appointed Constable of Dover Castle, and commissioned by William to replace the recently erected Saxon stronghold by a Norman castle. It was by far the noblest Norman castle ever built in England. Lands and lordships were granted to De Fienes to defray the cost, and a number of confederate knights assisted him in his undertaking. Each received land and knights' fees, held on feudal tenure, and each built a portion of the surrounding wall and a tower. The materials used were the "everlasting flints" gathered from the chalk hills around, and in proof of the excellence of the workmanship, the Constable's great gateway on the Deal road, and the tower built by Fulbert de Dover of Chilham, are still sound and strong. Fulbert Lord de Dover's land consisted of ten knights' fees in all, and two of these were at Chilham, which was the head of his barony. He lived here among his military tenants during that part of the year when his personal services were not required at Dover, and he built here the castle whose keep still crowns the hill. It is a most convenient and delightful site. A thick shubbery hides the castle ditch, Lime trees and Yews half conceal the ancient building, and the railway from Ashford to Margate winds gracefully through the valley. One of the three heronries of Kent has been long established among the beeches of Chilham Park.

The history of the succession of the Chilham property is curious, inasmuch as a reverse of fortune has overtaken many successive owners. In 1292 Isabel de Dover, descendant of Fulbert de Dover, and wife of the Earl of Athole, died here without an heir—her son, the Earl of Athole, having been executed. The castle and manor therefore reverted to the Crown, and was shortly afterwards granted to an extensive landowner named Bedlesmere, the proprietor of Leeds Castle, near Maidstone. He, too, was beheaded by Edward I. for shutting his gates in the face of Queen Isabel. The Earl of Athole, grandson of Isabel de Dover, came next into possession and died. By favour of the Crown a son of the aforenamed Bedlesmere followed, and left, at his death, no

heir to his ancient name, but only daughters. His house, therefore, became extinct, and Chilham passed to Lord Roos, his son-in-law, who soon suffered the misfortune of attainder. Once more Chilham passed to the Crown, and at the death of Sir John Scott, to whom it was granted, it again reverted to the Crown. This was in 1485, and a new era in regard to the ownership of land had commenced. Chilham was granted by Henry VIII. to Thomas Manners, Lord Roos, who was created Earl of Rutland. It passed once more to the king, but this time by sale. It was then granted to Sir Thomas Cheney, who pulled down the whole of the building except the keep, and used the materials for the completion of his house at Shurland. Numerous owners have intervened between the Cheneys and the Hardys, including the Herons, not the family in possession of the beeches in the park, but an ancient family of Northumberland, who bore for their arms, *Gules, three herons, argent.*

A singular custom prevailed here during many years. By a will of Sir Dudley Digges, dated 1638, £20 were left as prizes in a race, which was held annually until lately, between two young men and two maidens, at a spot called Old Wives' Lees. The winning couple were entitled to £10 each, man and maid. The money is now awarded in prizes to the children of the National School.

The word Chilham, called in Saxon Cyleham, signifies, says Hasted in his *History of Kent*, the cold place.

Chilham Castle is now the property and residence of Mr. Hardy, in succession to Sir Dudley Digges, who built the fine old English mansion near the keep, in which the owners of the property have since resided. *H. E.*

New Garden Plants.

NEPENTHES BICALCARATA, *J. D. Hook.**

This is a very remarkable Pitcher-plant, new to gardens but described by Sir Joseph Hooker some few years ago from dried specimens collected in Borneo by Low and others. To Mr. Burbidge, however, belongs the credit of introducing the plant in a living state to Messrs. Veitch's nurseries. It was exhibited before the Royal Horticultural Society on Tuesday last, side by side with the dried specimens. Even in the relatively small state as shown it is a Pitcher-plant of very marked characteristics, and imply justified the award of a First-class Certificate made to it. The leaves are of a peculiar dark green; the bag-shaped pitchers are covered, when young, with a fluffy rust-covered down, and are, when fully developed, provided with two sharply-toothed wings. The neck of the pitcher is thrown into ridges with intervening furrows, and is prolonged at the back into an erect, or slightly incurved process, terminating in the two recurved spurs, like the fangs of a snake with its head uplifted to strike. These formidable looking spurs are nothing but enlargements of the ordinary ridges surrounding the mouth. A smaller spur, or conical spine, is met with in some cases on the under surface of the lid, while from the back of the prolonged neck of the pitcher projects a blunt hook covered with hairs. The spurs would seem calculated to serve, as a rat-trap might do, to imprison vagrant insects. What the hook at the back means we cannot guess in the absence of sufficiently young specimens—nor can we guess its purpose, if it have any, unless it be as a means of support. The specimens at South Kensington were also remarkable for the presence of small scattered conical prickles on the stalk of the pitcher, which are shown in Mr. W. G. Smith's illustration, but are not mentioned in the original description. In the illustration (fig. 36) the shaded pitcher is from the living plant; the outline figure serves to show the size of the dried specimens.

We strongly suspect that Mr. S. Le M. Moore's N. Dyak, figured in the *Journal of Botany* for January, 1880, will turn out to be an immature state of the present plant. *M. T. M.*

POTHOS CELATOCAULIS, *N. E. Br.*

The plant to which I apply the above provisional name was introduced from N.W. Borneo by Mr. Burbidge into Messrs. Veitch's nursery. It is a handsome and interesting climber, lying perfectly flat upon the surface it climbs over, being held in position by its numerous adventitious roots, and as it is a rapid grower, it is admirably adapted for covering walls, trunks of Tree Ferns, &c. In general appearance it at present has much the look of the barren shoots of another curious Arad, figured in this journal, vol. viii., n.s., p. 13, fig. 2, as Marcgraavia paradoxa, and which, by the way, is probably a species of Monstera. The stems are flat on the under side, convex on the upper side, and give out from the under side at every node a tuft of, and along the internodes a few, adventitious roots. Leaves oblique, sessile, with a short clasping sheath, prolonged a little beyond the insertion of the blade; in outline the leaf is broadly elliptic, very obtuse at apex, and cordate at base; from near the base of the midrib on each side are given off about four strong ascending curved primary veins; the upper surface is of a rich dark green with a slight velvety sheen, the under surface is pale green and minutely crystalline. Each leaf overlaps the base of the one above it in such a manner that the stem is entirely concealed, hence the specific name. There is little doubt that the present condition of this plant, to which the above description applies, is quite different from the flowering state, and it is just possible that when it flowers it may prove to be an already described plant, but as there is nothing in the Kew Herbarium with which I can unite it, and Borneo is by no means exhausted of its novelties, I venture to give it the above provisional name. *N. E. Brown, Kew.*

TILLANDSIA (PLATYSTACHYS) DISTACHYA, *Baker, n. sp.**

This is a new species of the large section Platystachys, closely allied to T. polystachya, Linn., and T. fasciculata, Swartz. It was sent by Mr. Gabb from British Honduras to the Kew collection, and flowered here in January, 1880.

Whole plant about a foot high, epiphytic. Leaves twelve to fifteen in a sessile rosette, lanceolate acuminate, about a foot long, the dilated base 1 inch, the middle of the lamina ½ inch broad, the face pale green, concave, glabrous upwards, finely thinly lepidote towards the base, the convex back thinly lepidote throughout. Peduncle erect, half a foot long, hidden by its linear acuminate falcate leaves. Spikes 2, distichous, ½ inch broad, 6—12-flowered, the end one 1½ to 2 inches long. Flower-bracts green, glabrous, oblong-lanceolate, about 1 inch long. Calyx ¾ inch long, falling a little short of its enveloping bract; its lanceolate glabrous sepals free to the base. Corolla white, more than twice as long as the calyx; sepals oblanceolate, with a long claw, not scaled, ¼ inch broad. Stamens and style protruded, the longest stamens reaching about ¼ inch beyond the tip of the petals; anthers minute, yellow; style 1½ inch long; stigma spirally twisted. *J. G. Baker.*

ODONTOGLOSSUM ROSSII (*Lindl.*) PALLEUS, *n. var.*

Though I have written some time ago about the variations of this very well known plant, I have now to add a new thing. Mr. W. Bull sends me a variety with very pallid ochre-coloured flowers, the callus of the lip having but very few very light brown spots inside. *H. G. Rchb. f.*

MASDEVALLIA PULVINARIS, *n. sp.*†

This is a very curious thing. The leaf is remarkably coriaceous, spathulate, oblong-ligulate acute, with a sharp keel in the middle line underneath, nearly 2 inches broad, nearly a span long. The very strong peduncle is covered with warts and a few sheaths. The raceme is lax, eight-flowered in the good specimen at hand, flowers two-ranked. There are two open flowers, two buds projecting beyond the bracts, the remaining buds inclosed in the triangular sharp keeled deep green bracts. Odd sepal triangular cucullate, prolonged into a tail that surpasses its length; it is olive-green, with three nerves, the blotches and tail of a purple tint. The tip of the tail is highly curious, quite blunt, with a small curved point just like a cat's claw. The equal sepals are connate for two-thirds of their length, and have two purple tails much shorter than the blade, which is olive-green, with dark brown nerves, and two large, fleshy, oblong, contiguous cushions, which suggested the name. Petals, column, and the curious quasi-bipandurate lip yellowish-white with very dark and lighter spots. I obtained this curious plant from Mr. Joseph Calvert, 2, Brook Road, Wood Green, London. *H. G. Rchb. f.*

ODONTOGLOSSUM ROSSII MUSAICUM, *n. var.*

I thought I had seen all the varieties of the species, yet the importations by many hundreds would appear to indicate an unexhausted store. This is a lovely variety. It belongs to the rubescens set, having a rather violet column, and a light violet blade to the lip. The violet petals have the lower halves covered by a large and beautiful blotch, green and yellow, and with splendid Horse Chestnut-brown lobes, streaked and dotted. The sepals have a multitude of spots and lobes, and streaks of Horse Chestnut-brown, all with green margins, and the whole nested on a lighter yellowish ground. What a dreadful object for a painter! Neither Mr. Fitch nor Mr. W. G. Smith might have patience to paint this object. It might have been done by the Brothers Bauer, who used to spend weeks in drawing objects which are done now-a-days in hours. (Thus I was informed by R. Brown himself, and that may be known by those who say our artists are no longer Bauers. Pay them by time, and they may by-and-bye get accustomed to such ancient work.) I obtained this gay novelty from Mr. Bull. *H. G. Rchb. f.*

CYPRIPEDIUM STENOPHYLLUM, *Rchb. f.*

This is a very strong plant when fully developed. Mr. Bull just sent me an inflorescence, with fine branches, showing vestiges of thirty-eight flowers. The hairs appears to be much stiffer than in C. Sedeni. The lower parts of the inflorescence are naked. I am informed this hybrid was raised by Mr. Bowring, and the specimen just flowered by that gentleman. See also our columns, 1876, April 8, p. 461. *H. G. Rchb. f.*

GARDENING FOR LADIES.

SELF HELP.—In the present day, when so much is said and so much is arranged with regard to the instruction of ladies by lectures and classes in various branches of science, the idea suggests itself whether, with regard to horticulture and allied subjects, something might not be said in favour of what can be done at home in the way of self-tuition from the many excellent books now easily procurable, and also of self-help from the many sources of practical instruction which—at least in the rural districts—lie always open to use from the workers of the neighbourhood.

The subject of natural history teaching to ladies appears at present to be often divided into two parts, acting in direct opposition to each other. Doubtless, all properly available instruction is most desirable, and especially such as may be made serviceable for home use; but why in many cases does this instruction begin so late?

The young lady student often comes to the lecture without a grain of the preliminary acquaintance with practical gardening, or of the commonest knowledge of how plants grow, which would enable her at once to grasp the further teachings of the lecturer; and which might with a little encouragement have been picked up gradually in the home garden, with nothing but pleasant work for mind and body. In the same family, where the elders amongst the young people are studying botany or gardening in form, the younger ones are often painfully checked or thwarted in their practical attempts, if not by the scientific aspirant, yet frequently by all others about them, for damage to clothes, &c., all too well known to those who try to foster the simple tastes of the rising generation.

At present there appears to be a further move in contemplation towards teaching the ordinary details of management of garden, poultry-yard, and the lighter matters of forestry or farming sometimes coming under a lady's management in country life by a species of collegiate teaching, and it may be well worth while to consider whether, not only as a matter of education generally, as well as from the limited view of instruction on the special subject, all this might not, with a little encouragement, be much better learnt at home.

From the time that a child can stand firmly enough to use a light tool she may begin to gain knowledge of gardening, and gradually and imperceptibly the

* *Nepenthes bicalcarata*, J. D. Hook., in *DC. Prod.* xvii. 97 (1873).—Caule cylindraceo glaberrimo; foliis membranaceis elongato vel obovato-lanceolatis glabris, nervis longitudinalibus numerosis, petiolo elongato amplexicauli; ascidiis brevibus turgidis, peristomio creberrime costato secus collum elongatum in cristam pectinatam apice longe valide 2-calcaratam producto, operculo reniformi. In Borneo, Low; Sarawak, Beccari, Hook. *l.c.* [Lazas River, Burbidge!]

* *Tillandsia* (*Platystachys*) *distachya*, Baker, n. sp.—Acaulis, foliis 12—15 lanceolatis longe acuminatis subpedalibus facie concavis deorsum tenuiter lepidotis dorso convexis ubique magis lepidotis, pedunculo semipedali; foliis pluribus linearibus acuminatis bracteato; spicis 2 distichis densis 6—12 floris; bracteis floralibus oblongo-lanceolatis navicularibus glabris arcte imbricatis; calyce bractea paulo breviore sepalis lanceolatis; petalis albis calyce duplo longioribus oblanceolatis haud squamatis; genitalibus breviter exsertis.

† *Masdevallia pulvinaris*, n. sp.—Aff. Masdevallæ ochthodi: folio cuneato oblongo-ligulato acuto firmo ultra spithamæo; pedunculo ulnari densissime verrucoso, distanter vaginato; racemo laxo paucifloro disticho; ovariis pedicellatis sigmoideis, bracteas acutas bene excedentibus; sepalo impari triangulo cum cauda longiori apice clavato breviter falcato unguiculifera; sepalis paribus connatis oblongis brevi bicaudatis, inapicilari dimidio ante caudas pulvinatis; pulvinari carnoso oblongo profunde fisso; tepalis oblongis acutis obliquis, denticulo in margine superiori; labello oblongo-ligulato, utrinque bis emarginato, hinc simavis bipandurato, antice limbo serrulato, carinis serrulatis geminis in disco; columnæ alis rhombeis.—Sepala olivacea purpureo-brunneo striata, caudis purpureis. Pulvinar olivaceum. Tepala flava maculis purpureis. Labellum albo-flaveolum maculis atropurpureis. Columna flavida maculis utrinque flavis ad alas.—Flos quam ille Masdevalliæ ochthodis bene major. *H. G. Rchb. f.*

FIG. 36.—NEPENTHES BICALCARATA. (SEE P. 200.)

great problems of vegetable action, the depth suitable for germination of seeds or for the growth of bulbs, the action of light and moisture, the treatment of the plants by pruning, &c.—subjects on which information is acquired with tedium and difficulty by theoretical instruction in advanced youth, are fairly impressed, sufficiently for common garden purposes, on the young heads which have been allowed to use their hands from childhood in the home garden.

And who shall say that this is not scientific knowledge? The young folks may be quite unaware of it, but they are taking in by imitation the results of long years of study and endless experiments, and even if they cannot tell in scientific terms the reasons of the success or failure of their work, they are gaining a mass of information solidly and truly based.

Amongst the high-minded ladies of our own country there are many, we know, who lay the seeds of future good growths by encouraging domestic study, not under this name, but practically it is study of the best kind, and it is greatly to be wished their example were more followed, in all possible encouragement to the children to indulge in rational amusement and occupation of this kind. In the country household, under her mother's eye, the girl will gain the best kind of insight into garden, poultry-yard, dairy, and other domestic matters, which ultimately it will be very desirable she should be able to direct, and will probably retain the knowledge through life, with power to add to the foundation laid. Any amount of useful information is desirable on these subjects, and those who wish to see their children well trained in them will do well to begin early. We might hope then to find that, instead of there being any call for associations to be set on foot for the instruction of young ladies in domestic matters, the proposed pupils were for all practical purposes prepared for their work.

In many cases the study of botany, and of the principles of gardening is taken up by those who have no wish and no means for carrying on the practical application of the knowledge—in such cases the information is useful and improving simply for its own sake; but in the large amount of instances where practical knowledge would come, it may be said, almost of itself, by simply taking advantage of the opportunities around, it is earnestly to be desired that they should be fully utilised. *O.*

LONDON MARKET PLANTS.

(*Continued from p.* 181)

Fine-foliaged Plants.

Ficus elastica (India-rubber plant), which is so much in favour for London, thriving where little else will do, is at Messrs. Beckwith's grown in quantity; 10,000 of it are yearly propagated, grown on, and sold: and about 1000 Aspidistra lurida variegata, quite equal to the last for keeping long in good presentable condition where few things can live at all. It is a plant always in demand in the market, but does not propagate so quickly as some things. Five thousand of the elegant Fern-like Grevillea robusta are annually raised from seed, and grown on to a height of about 15 or 18 inches before being sent to market. Of Ferns Adiantum cuneatum is the principal kind cultivated, and of this some 10,000 good-sized plants are kept to cut from—managed in the way that best suits buyers, by growing it in a manner to keep the pinnules small, so as not to hide too much the flowers with which it is arranged A very large house is filled with Crotons and Dracænas: the leading kinds are C. Weismanni and C. undulatus—beautiful, well-furnished, highly coloured plants in small pots; the Dracænas are mostly confined to a few kinds, of which D. terminalis and D. terminalis stricta, amongst the coloured-leaved kinds, are the principal, and D. rubra, a plant that can scarcely be surpassed for general decorative purposes. About 2000 examples of the variegated Cyperus alternifolius are yearly got through. A very large house is filled with Palms of a useful size for ordinary use, some 5000 of these are the yearly complement; the main sorts grown are Areca sapida, A. Baueri, the different species of Kentia, Latania borbonica, and Rhapis flabelliformis.

Chrysanthemums.

In Chrysanthemums for cut flowers 16,000 pots, three plants in each pot, of the white Japanese variety Elaine alone are grown; and 20,000 pots, also three plants in each, of other sorts, the principal of which are Mrs. George Rundle, white; and the two sports it has produced, George Glenny, primrose; and Mrs. Dixon, yellow; also Madame Martha, white. These are grown very strong and in large pots, so as to produce a plentiful crop of bloom.

Bulbs, etc.

The number of bulbs forced could hardly be credited by those who have not an opportunity of seeing the quantities that are got through in the market and the vast number of shops where flowers and plants are sold in London and its suburbs. Tulips head the list with 100,000; the rose and the scarlet varieties of Van Thol, for cutting, are forced in boxes. The flowers are up and ready to sell in a fortnight after the bulbs are put in heat; mats are kept on the roofs of the houses where they are forced, to draw the stalks out sufficiently. These two varieties are the first in. Others grown consist of White Pottebakker, Rose Grisdeline, Molière, and Tournesol.

Twenty thousand Roman Hyacinths and forty thousand large-flowered kinds are annually disposed of, the former giving a supply up to the end of the old year, and the large-bloomed ones meeting them at the beginning of the new. The sorts grown are all single flowers, except one, La Tour d'Auvergne, white. They comprise Homerus, red; Lord Macaulay, red; Amy, red; Grande Vedette, white; Charles Dickens, blue; Grand Lilas, blue; Alba superbissima, white; Mimosa, purple, &c. They are mostly grown one bulb in a pot, and when well rooted are placed in heat, with a small handful of cocoa-nut fibre on the top of each, put so as to cover the blanched crown, which, growing through the material, thus becomes inured to the light. Sixteen thousand paper-white Narcissus are required. The space that such a number of bulbs occupy in boxes and pots needs to be seen to be fully understood. Six men do nothing else for two months but keep on potting and forcing, and when all plunged out-of-doors in their bed of cocoa-nut fibre, the extent is equal to that of a good-sized paddock. Ten thousand bulbs of Lilium longiflorum and its variety eximium, the latter much the best, are yearly flowered.

Five thousand Hoteias are forced; 4000 Genista fragrans were just moved into their blooming-pots—choice bushy stock, that will make beautiful plants by the end of summer. This is a subject for which there is always a good demand.

Manure-water.

As might naturally be supposed, manure-water is largely employed here, as in all the market gardens. Without its aid it would not be possible to produce the comparatively large, fully-furnished plants, that are grown in the very small pots; the stimulant most used by Messrs. Beckwith is urine from the cowsheds; to obtain this, they arrange with some half-dozen dairymen in the neighbourhood to have it in an undiluted state, for which purpose a cesspool is made inside the sheds, the contents of which are removed once a week. For most things it is used at the strength of about a pint to 2 gallons of clean water; gross feeders, like Chrysanthemums, will bear it as strong as one part to six of water. I can speak confidently of this being the most effective of all liquid-manures, not only for soft-wooded plants, but also for all hard-wooded stove subjects and such of the cooler or greenhouse section as grow moderately fast. Its effects are almost magical, and have been found to be so by the many whom I have advised to try it; but it should be got in its pure state, not mixed with soakings from the manure-heap. What I have particularly noticed in connection with its use is that plants to which it is applied, either hard or soft-wooded, do not run to excess of leaf as they do when most other liquid stimulants are given, but have a disposition to flower almost in excess of the growth they make, although the latter is of the stoutest possible description. Neither do the plants show any inclination to stop after a time where it has been used, as is often noticed to be the case when other things of a highly stimulating nature have been given. Like everything else employed for a similar purpose, it needs to be used with care and discrimination so as not to give it disproportionately strong to the kind of plant it is applied to, and, what is of almost as much importance, its use must be regulated by giving more or less according to the particular stage of growth the plant is in. It is by attentive observation as to the treatment which particular varieties of plants require or can be made to conform to that the market grower's success more than that of the general cultivator depends, and it is frequently found that some one or two out of hundreds of varieties of the same species are all that will bear such usage as will make their cultivation of any use for market purposes. *T. Baines.*

(*To be continued.*)

PLANT THIRST AND ROOT REST.

Nothing is more perplexing to young gardeners than the directions they receive as to the watering and the "rest" of plants. They are arts which cannot well be defined by set rule; like tailoring, as set forth by *Mr. Punch*, they have not as yet become exact sciences. There are many facts connected with Nature's way of watering and of resting which deserve more attentive notice than they usually obtain. For example, the herbaceous plants, bulbs, tubers, and deciduous trees of the fields and hedges are bounteously supplied with root moisture during the coldest part of the year. Earth Orchids, Scilla nutans, Ornithogalums, and Fritillarias, commonly supposed to be at rest, are deluged with rain or melting snow; the vernal Crocus, so abundant in the Trent meads near Nottingham, is frequently under water for months together. In a similar manner the large-flowered Cape Disa is not unfrequently submerged, and M. Roezl dug some of his American Lilies from the bed of a stream where at times they must have been entirely flooded.

In Europe we have noticed that many plants, although common to the breezy down or open meadow, yet attain their stateliest and best proportions of leaf and blossom when growing in swampy ground beside a brook or ditch, or in wet woods. Shade, shelter, and leaf-mould may do somewhat towards luxuriance in the woods, still it is remarkable that a liberal supply of root moisture, even in shady places, does much towards increase of vigour. On sewage farms results are attributed to manurial stimulants without due allowance being made for the extra water supply also used on them. In temperate countries Nature never "dries off" her bulbs and tubers in winter, but in the summer and autumn, just as their growth ends in blossom and in seed. So in the tropics, plants grow most during the coolest and wettest part of the year—the spring and summer of the equator; but during the hottest and driest portion of the year—the autumn and winter of the tropics—they rest, although it should be observed that all over the world of Nature plants really rest far less than is generally supposed. The plants which really cease growing in leafage and root at the same time are comparatively small in number. Decrease of temperature rather than decrease of root moisture is her plan of inducing leaf rest in cool countries, as Water Lilies and other aquatics bear witness. Root rest is induced by heat and drought. Thus in the equatorial tropics root rest is induced by the heat and drought of the hot monsoon, but leaf rest is only partial, nearly all plants there being evergreen, a state of things rendered possible by the copious dews of night. In temperate countries cold and drought may have a similar effect, in so far as the temporary arrest of root-growth is concerned, but it is very slight, and that it is so slight is owing to the moisture in the earth during winter.

One important fact for gardeners is that the epochs of leaf-growth and of root-growth are, in a way, distinct. Thus in the case of hardy bulbs and herbaceous plants we find the roots active all through the mild weather of winter. We repotted some bulbs of Lilium speciosum two months ago just as the leaves fell from the old flower-stems, and to-day, January 23, the new soil is full of thick white roots. We have followed Nature in keeping the earth wet, and the results gained are thus far the same; for we referred to some bulbs growing in the open border, and find that they likewise had long ago begun their work. That the epoch of root-growth should also be of much longer duration than that of leaf-growth is also instructive, and especially to those who have been taught to "dry off" bulbs or other herbaceous plants in pots as soon as the leaves fall off. This practice, often spoken of as "resting" plants, too often means a course of starvation. As a rule, plants may be best "rested" by a cool temperature rather than by drought at the root. Thus, when Orchids are "rested" in a high temperature, and dryness at the root induces shrivelling of the pseudo-bulbs, we know that instead of the plants being "rested" they are actually being starved.

Again, if bulbs are rested by "drying off" let it be done only at the juncture when the old roots naturally decay and before the young roots are visible, and even then let coolness and moisture rather than heat and aridity be employed. Loss of weight and substance, as represented by shrivelling, must be put down as the result of too much heat and dryness. It is singular to observe how little drought is feared by those who are nervous about low temperatures, and "Jack Frost" is far more often blamed for lowering the thermometer rather than for his rabid moisture-licking propensity. We shall do well to consider whether the drought induced by frost is not more fatal to hardy plants than any degree of abstract cold. Eastern Nelumbiums and aquatic plants from South Africa are hardy at Paris and elsewhere in France, although the frost is there more severe than in England. It has been pointed out that a very slight covering will "turn" many degrees of frost, not so much by sheltering plants from the frosty air directly, as by preventing radiation or heat and moisture leaving the ground. Moisture and frost are to a certain extent antagonistic, and we have saved many tender bulbs and alpines from injury during sharp weather by the simple practice of soaking the ground around them with water, and then giving them a covering of wet leaves or a hand-light, and this as a protection from drought rather than against cold.

We read quite recently of an Orange orchard in California having been saved from frost by an accidental irrigation of the soil; surrounding orchards on dry land perished completely, root and branch. We all know that irrigated meadows produce twice as much grass as others not so plenteously watered, and some of our most successful Peach and Grape growers are among those who realise the magic of heavy waterings. It has been said that, "all other things being equal, the man who uses most water is the best gardener"—a saying in which there is much, if not the whole, truth. Good potting, ample drainage, &c., are of course here presupposed. In our practice of gardening we are still much too empirical. The thermometer is to a certain extent employed—we do measure our heat, however rudely—but the hygrometer is rarely to be seen, so that atmospheric moisture is to most of us a matter of "rule-of-thumb" or chance. The third factor, light, is still more rudely handled; nothing sufficiently simple and efficient has yet been devised to measure its intensity for us, so that its effect in practice may be said to be unregistered, indeed almost unknown, on any particular plant. That some Ferns become of a deeper green hue, and Grapes of a better colour, when heavily shaded, and that some flowers become much brighter in tint when fully exposed, seems to point to its having varied phases of action. There is here an unworked field, and we await with something akin to impatience for our Crooks or Edisons to devise an instrument which will measure the intensity of light as readily as the thermometer and hygrometer measure our heat and moisture. *F. W. Burbidge.*

MALAYAN FRUIT.

The illustration of a collection of Malayan fruit, which we give on p. 209 (fig. 38) was engraved from a photograph kindly furnished by Mr. A. T. Sibbald, who sends the following notes relating to them.

The Durian.

Two fruits, one entire, the other separated into its constituent valves, are shown in the background of the illustration. There are several varieties of the Durian, only differing from each other by the shape and size of the fruit. The fruit is well known from the description of travellers. It is about the size of a man's head; outside is a thick prickly husk, in the inside chambers of which lie the sections of the fruit, consisting of a number of seeds of about the size of a Walnut, surrounded by a soft, pulpy substance, like custard in appearance, which is the only edible part.

The taste of the fruit it is impossible to describe, but the smell of it, from which the flavour may be judged, is such that no gentleman in England would care about having one in his house. The Malays and natives generally are passionately fond of it.

With Europeans the liking for it is, I think, in all cases acquired; the first venture is generally made in bravado, and so singular is the fascination it possesses that if the new arrival can overcome the repugnance sufficiently to swallow the coating of one or two seeds, he will in all probability become strongly attached to it.

From Rumpf's account we learn that in order to try whether a Durian fruit be ripe for eating the connoisseurs usually tread upon it with their foot; if ripe it gives way in five places by as many natural fissures, which exhibit five cell-compartments. The Durian, of which there are two crops a year from the same tree, are mostly plentiful in June and July, and in December and January.

The Mangoostan, or Mangis.

Sion House is the only place in England where the Mangoostan has ripened and borne flowers. The tree is a native of the Moluccas, and its cultivation has extended to the Malay Archipelago, beyond which it would appear that all attempts to grow the tree well, and mature the fruit, have been hitherto unsuccessful. From the earliest accounts we have of this charming tree and delicious fruit, we learn that the innumerable attempts hitherto made to familiarise it to other countries (than the Malay peninsula and islands eastward to the Bay of Bengal) have proved unsuccessful. Two entire fruits are shown in front of the spiny Durian, and others cut open are shown in various places. It is of the size of a small Orange, is when young of a reddish-green hue, when ripe of a reddish-brown, and when old of a chestnut-brown colour. Its succulent rind is nearly the fourth of an inch in thickness. It contains a very powerful astringent juice, and in wet weather exudes a yellow gum which is a variety of gamboge. On removing the rind its esculent substance appears in the form of a juicy pulp, having the whiteness and solubility of snow, and a refreshing delicate delicious flavour.

From its perfect wholesomeness it may be eaten in any quantity, and as it possesses no luscious qualities it does not soon cloy the palate. It is not a little singular that a plant nearly allied to the Gamboge should yet yield so wholesome a fruit. The Mangoostan is most plentiful in December, January, and February; but it can, together with the Durian and Rambutan, be obtained in any month of the year. So great is the uniformity of the temperature and the climate of the Straits of Malacca that even Nature there neglects to mark the passing year by the usual distribution of her gifts.

The Rambutan.

The fruit of Nephelium lappaceum—the name being derived from "rumbut," which means in Malay the hair of the head, in allusion to its villous covering on the outer skin; it is in appearance not unlike the fruit of the Arbutus, but larger, and of a bright red, and covered with a coarser hair or soft spines. It is shown in the foreground of the illustration. The part eaten is a gelatinous and almost transparent pulp surrounding the kernel of a rich and pleasant acid.

The Custard-apple.

The Siri Kaya, or Custard-apple (Anona squamosa), derives its name from the likeness which the white and rich pulp bears to custard. The Nona, as it is called by the natives (Anona reticulata), is another species of the same fruit, but not so grateful to the taste.

PLANT PORTRAITS.

Apples, *Herefordshire Pomona*, part ii.—The following varieties are beautifully illustrated:—t. vii., Blenheim Orange; t. viii. and xi., various cider Apples; t. x., Pott's Seedling, Tower of Glamis, Gloria Mundi, Winter Hawthornden, Nelson's Codlin; t. xii., Emperor Alexander, Cox's Pomona, Cellini, Beauty of Kent; t. xiv., Scarlet Pearmain, Adams' Pearmain, Hereford Pearmain, Lamb Abbey Pearmain, Mannington's Pearmain, and Winter Pearmain, or Duck's-bill.

Azalea Duke of Connaught, *Floral Mag.*, t. 378.—Flowers, hose-in-hose, bright rosy-cerise, a cross between A. amœna and one of the finest of the garden varieties. A pretty and useful novelty. Mr. B. S. Williams.

Begonia J. H. Laing, *Floral Magazine*, t. 375.—Flowers large and stout, orange-scarlet, good form. Laing & Co.

Begonia Schmidtiana, Regel, *Gartenflora*, t. 990.—A Brazilian species, with obliquely cordate, ovate acute leaves, dark green above, vinous-red beneath, with nerves depressed above, prominent beneath; flowers small, white, in loose drooping panicles.

Begonia Teuscheri, Hort. Linden, *Illust. Horticole*, t. 358.—A supposed species from the Dutch Indies, with cordate ovate acute leaves, olive-green above, and marked with spots and blotches varying greatly in size and arrangement in different seedlings, the under surface rich claret-coloured. The flowers are not yet known.

Bollea cœlestis, Rchb. f., *Bot. Mag.*, t. 6458: see *Gard. Chron.* 1876, p. 756, and 1877, p. 366.

Brownea Ariza, Benth., *Bot. Mag.*, t. 6469.—A splendid stove shrub, with large heads of brilliant scarlet flowers. Native of New Granada. The specimen figured flowered at Glasnevin.

Carludovica Wallisii, Regel, *Gartenflora*, t. 992.—A glabrous dwarf species, with broad ovate leaves, acute at the base, and with two acute lobes at the apex.

Chorispora Greigi, Regel, *Gartenflora*, t. 984.

Clove Susan Askey, *Floral Mag.*, t. 380.—A most desirable variety, flowers large, good in shape, rich in perfume, pure white in colour.

Coleus tricolor, *Floral Magazine*, t. 376.—Leaves with a maroon ground, spotted and margined with green, disc and veins carmine.

Enkyanthus himalaicus, Hook. f. and Thoms., *Bot. Mag.*, t. 6460.—Flowers in terminal umbels, pedicels reflexed, corollas ½ inch long, bell-shaped, five-lobed, five-angled, yellowish-red with reddish streaks. Bhotan, Sikkim. Bot. Gard., Edinburgh.

Eranthemum Andersoni, *Floral Mag.*, t. 377: see *Gard. Chron.* 1869, p. 139.

Gentiana Kurroo, Royle, *Bot. Mag.*, t. 6470.—A beautiful dwarf Himalayan Gentian, with large funnel-shaped azure blossoms sprinkled with pearly-white. Flowered by Mr. Bull. One of the most beautiful of rock plants.

Haberlea rhodopensis, Frivaldsky, *Gartenflora*, t. 992.—A singular and beautiful dwarf Gesnerad, the only European representative of that family, and one of a group including Ramondia, Wulfenia, &c., very remarkable, as we have before had occasion to note, in their geographical distribution.

Masdevallia ignea, var. Boddærtii, *Illust. Horticole*, t. 357.—A variety with rose-coloured sepals spotted with white, and with a yellow throat. M. Linden.

Narcissus pallidulus, N. Graellsii, N. rupicola, *Bot. Mag.*, t. 6473.—The first-named is the N. triandrus of Baker, *Gard. Chron.* 1869, partly. It has pendulous, greenish flowers, with deep cup-shaped corona and reflexed segments. N. Graellsii has sulphur-yellow flowers, with large, whitish, funnel-shaped corona, and small deltoid lanceolate segments. N. rupicola has small flowers with ovate lemon-yellow segments, and a shallow orange-yellow corona of six spreading lobes.

Pachystoma Thomsonianum, Rchb. f., *Bot. Mag.*, t. 6471.—A very remarkable West African Orchid, figured and described in *Gard. Chron.* 1879, ii., 582.

Pears, *Herefordshire Pomona*, part ii.—The following varieties are beautifully illustrated:—t. ix., Forelle, Louise Bonne, Williams' Bon Chrétien, Beurré d'Amanlis, Flemish Beauty; t. xiii., Pitmaston Duchess, Beurré Hardy, Doyenné du Comice.

Picotees, *Floral Magazine*, t. 374.—The varieties figured are—1, Mrs. Payne; 2, Queen of Summer; 3, Mrs. Chancellor. C. Turner.

Polygonum affine, Don, *Bot. Mag.*, t. 6472.—A pretty Polygonum of the Bistort section, closely allied to P. vacciniifolium, and commonly known as P. Brunonis. Native of Himalayan valleys.

Primula Steinii ×, Obrist, *Gartenflora*, t. 991.—A dwarf tufted species, with spathulate, toothed leaves, and rosy-lilac flowers. It is supposed to be a natural hybrid between P. hirsuta and P. minima. Native of the Tyrolese Alps.

Rose Bouquet d'Or, Ducher, *Belgique Horticole*, 1879, t. xv.—A Noisette of great beauty, habit good, like that of Gloire de Dijon; flowers large, open yellow, with various shades of orange.

Rose Duke of Teck, H.P., *Floral Mag.*, t. 379.—A fine seedling from Duke of Edinburgh. Flowers bright crimson-scarlet. Messrs. Paul & Son.

Solanum Torreyi, Gray, *Bot. Mag.*, t. 6461.—A very handsome hardy Solanum, more or less prickly; leaves reddish on the under surface; the flowers are large, purple, rotate. Kew.

Tulipa triphylla, Regel, *Bot. Mag.*, t. 6459.—One of Dr. Albert Regel's discoveries in Central Asia. The flowers are small and yellow, like those of T. sylvestris. Kew.

HANDCROSS PARK.

Handcross Park, the seat of J. Warren, Esq., is situated not far from the pretty village of Crawley, in Sussex. Of late years much has been done here in gardening and the general improvement of the property. The surrounding country is somewhat flat and wanting in the effect present where hill and dale exist with their ever-varying relief, which affords such advantages to the judicious planter. Yet the grounds within themselves present considerable inequality of surface, which has been turned to the best account. I believe that from the time Mr. Warren acquired the property it had been his fixed intention to lay out the grounds, which included the making of a new garden, with the necessary accompanying glasshouses, as well as a homestead to meet the requirements of a moderate sized farm, stables, &c. The works connected with these various objects have been carried out during the last four or five years, and I understand that the new mansion that is to take the place of the present house is now to be commenced.

Before speaking of the garden it will be well to say a few words about an important portion of the grounds, some 150 acres in extent, to which a good amount of work has been done, but which nevertheless remains much in the state that Nature has left it, with groups of self-sown Scotch Pine and Silver Birch scattered at intervals over the Gorse and Heather-clad surface. The land, although clothed with this kind of vegetation, where not already dry enough has been made sufficiently so; broad, well made grass walks some miles in length have been introduced, yet so arranged that they have not an unmeaning appearance or one calculated to destroy the individual character of the whole. The soil is evidently suited to the growth of Coniferous and Taxaceous trees, and thousands of all the best species and varieties of these have been planted, the majority of them selected examples of their respective kinds. The most suitable positions have been chosen for the disposal of these trees, round the outer portion of the space, in groups and masses, so as not to interfere too much with the natural character, which it is intended to preserve. In the inner portion of the grounds on the sides of the walks, where admissible, quantities of the best evergreen trees of recent introduction have been planted, mostly in pairs, to match, and which, when time has enabled them to exhibit their natural forms, will constitute an important feature of the place. All the best Hollies have alike been employed, and large masses of the best sorts of Rhododendrons have been brought into requisition, which are thriving, as might be expected, in the virgin peat. A stream of water which winds its way through the lower part of the grounds has been taken advantage of. The natural kinds of Heath growing here have been supplemented by the best hardy cultivated varieties.

In the park are some exceptionally fine trees, mostly Beech, with thick gnarled old trunks and immense heads. The largest measures some 21 feet round at 4 feet from the ground, the spread of its branches being 95 feet; another is 18 feet in girth, and several others are but a little less: some of them have been pollarded at an earlier period of their existence, and they are now as healthy and vigorous as could be desired. It is not easy to account for these trees having attained the size they have, as, so far as I have had an opportunity of judging of timber in this part of the county of Sussex, trees of any considerable size are more the exception than the rule.

The new garden was begun some five years ago. It is of medium size, and enclosed by excellent walls 12 feet high, with buttresses at intervals of about 28 feet. Each buttress is carried up to a point some 2 feet above the top of the wall, they thus give relief to the otherwise continuous straight line. These walls have full projecting coping, and are planted with Peaches, Nectarines, Figs, Cherries, Plums, and Pears. On the south, east, and west sides of the garden is a slip with a 15 feet fruit border next the wall, at the foot of which is a broad walk; on the opposite side of it is a border, down the centre of which is a row of dwarf fruit trees, the whole enclosed by a handsome Holly hedge kept low enough not to intercept light and air. We often hear people objecting to plant this, the best—as well as the best looking—of hedge plants, on the plea that it takes long to make a fence; but if proof be wanted that with the use of good, well-prepared plants, the ground properly prepared, and the after attention equal, it does not take long to get up a Holly hedge sufficient as a fence to turn cattle if it were in a position to be required to do so.

The inner portion of the garden is well stocked with fruit trees on the margins of the intersecting walks just coming into a nice bearing state. There is a range of five houses, four hip-roofed, the central one dome-shaped, in the inside of this garden, facing south. The first is filled with Peaches, strong trees, in very good condition; the second is almost wholly occupied by Crotons, which plants Mr. Warren is very fond of, and here may be seen what we doubt not to be the most complete collection of fine established specimens of this favourite group in existence. Amongst them are examples of C. majesticus, 5 feet by 5 feet; C. interruptus, 7 feet by 7 feet; C. Youngii, 6 feet by 5 feet; C. Andreanus, 5 feet by 5 feet, large leaves, very finely coloured; C. Hendersoni, 4 feet by 4 feet; C. trilobus, 5 feet by 4½ feet; C. Weismanni, 5 feet by 7 feet; C. Williamsii, 3 feet by 2½ feet, one of the best of the large-leaved varieties; C. princeps, 2½ feet by 2½ feet, one of the best of the newer kinds, intense crimson covering two-thirds of the leaf; C. picturatus, 2 feet by 1½ foot; C. triumphans, 2 feet by 1½ foot; C. Challenger, 3 feet to 1½ foot—immense leaves, 18 inches long by 4 inches wide, vivid crimson midrib, about half the surface yellow, turning when older to crimson; C. chrysophyllus, 2½ feet by 2½ feet, one of the neatest for table decoration, in small plants with single stems; C. Queen Victoria, 2 feet by 1½ foot, leaves intermediate in both form and size between C. Weismanni and the old C. variegatus—four-fifths of each leaf is of the brightest golden-yellow, changing when older to red with vivid crimson midrib; C. Prince of Wales, 3 feet by 2½ feet, very large, long drooping leaves, 20 inches in length and 2 inches wide, half the surface of the leaves yellow; C. volutus, 4 feet by 4 feet; C. Cooperi, 4 feet by 3 feet, a distinct large-leaved kind; C. angustifolius, 5 feet by 5 feet; C. undulatus, 6 feet by 5 feet. There are other varieties in addition to the above associated with them, but they are either inferior to those I have named, or have not arrived at a condition such as to show what they are likely to be, but altogether they are a very handsome and interesting house of plants.

The centre house in this range has a dome-shaped roof, and is filled principally with Palms and Tree Ferns, the most noticeable of which are Pritchardia pacifica, Areca sapida, Latania borbonica, Kentia australis, K. Belmoreana, Areca Bauerii, Phœnix sylvestris, P. tenuis, Chamærops tomentosa, C. gracilis, C. humilis, with a clean stem 8 feet high; Cycas revoluta, 12 feet in diameter. The whole of the above plants are large and in grand condition, several of them having often done good service in helping Mr. Rann to take the first prizes at the principal London and other exhibitions, where of late years he has been so successful. The adjoining two houses are occupied by Agaves, Bonaparteas, and other succulent plants, quaint in their appearance, but always interesting to those who can see something in plants beyond the mere colouring of their flowers. Here was a fine example of the scarce glaucous variety of Dasylirion, bearing a flower-spike 10 feet high (see fig. 37)—a singular production, in form not unlike a gigantic spike of Celosia pyramidalis, but less feathery, of an indescribable silvery-grey colour; the inflorescence when fully developed has a most remarkable appearance, conveying an idea of transparency such as occurs in the Ice-plant (Mesembryanthemum crystallinum).

The first in another range of very good span-roofed houses is almost filled with specimen and half-specimen Azaleas, including most of the best sorts. The plants are in excellent health, densely clothed with healthy leaves which show by their green state that they have not suffered from their insidious enemies, thrips and red-spider. The centre of the next house is devoted to Camellias, and a wide front stage is occupied with a selection of Ericas and other hard-wooded flowering plants, consisting of Aphelexis, Boronias, Statices, Hedaromas, &c.

The adjoining division in this range is similar in size to those already mentioned, and is principally occupied by Ferns, including a number of large specimen Gleichenias not by any means strangers in the winning groups of Ferns at the principal shows. Amongst them are beautiful specimens of G. rupestris glaucescens, G. speluncæ, G. microphylla, and G. Mendelli, ranging from 4 to 7 feet in diameter. The last house in this range is used as a stove, in which are fine specimen plants of Zamia Lehmanni, Cycas circinalis, Ixoras, Dipladenias, Clerodendrons, Bougainvilleas, and a splendid specimen of Anthurium Scherzerianum. In these low hip-roofed houses is located a collection of Dracænas, comprising the best of these handsome fine-leaved plants, and a small select collection of Orchids.

The kitchen garden bears evidence of the great difference that soil and situation exert over certain crops. In many places do what you may it is impossible to keep Peas from mildewing after August is out, but here they go on bearing until killed by frost. Last year Mr. Rann was able to gather Peas up to November 25, and when I saw them in the last week in October several long rows of Williams' Emperor of the Marrows were as green and full of pods and bloom as we usually meet with them at midsummer.

The place, both outside as well as the plants in the various houses, is in excellent keeping, and reflects favourably upon Mr. Rann's care and abilities. One of the great wants felt in many places is a sufficient supply of water. To meet this Mr. Warren has made such provision as has incurred a large expenditure by sinking a deep well, with a steam-engine to pump, and a tower 80 feet high, built of red brick, with white York stone dressings, with tank at the top, which holds 10,000 gallons. The building is of a decidedly decorative character, combining use and ornament, and is a very commanding object, with plenty of room all the way up to do something more than simply supply water. The principal apartment on the basement story is fitted with a circular saw, for cutting up timber; the next above contains a corn-crushing mill and root-pulper; then come two excellent store-rooms, one over the other; and above them the tank, covered in and surrounded with a turreted wall, from within which a fine view of the surrounding country is to be had, the whole being reached by a handsome winding staircase.

The farm buildings, enclosing a square of considerable size, are of the most complete description, substantially built, with everything that could be suggested for convenience, yet there is an absence of the useless that is often seen in what are looked upon as model arrangements of this kind for farm purposes. It is no uncommon occurrence to see every provision made for the health and well-being of the quadruped portion of an establishment, with so little done for the bipeds that have to look after them that they would seem to be all but out of the calculation: this is not the case at Handcross Park. Mr. Rann's house, built when the new works were commenced, is one of the best, as well as best looking, gardener's houses I have seen; others are about completion for the men employed on the farm, and one for the young men in the garden, all of which are not only much more attractive in their exterior, but have such conveniences for the occupants as are rarely met with.

A considerable portion from the uncultivated land was reclaimed about five years ago, and is now arable. At the time of my visit in the autumn part of it was bearing, for the season, an excellent crop of roots, in the cultivation of which Mr. Rann, who, in addition to the garden, has charge of the farm, is very successful, having taken several cups at the district agricultural show. *T. Baines.*

Florists' Flowers.

Seasonable Notes on Greenhouse Florists' Flowers: Azaleas.—The forcing of these to keep up a display of beautiful flowers from March onwards till July is comparatively easy when proper appliances are provided, that is, forcing houses where the plants can be specially treated as regards heat, moisture, &c. Usually the only available space is to be found in vineries or other forcing houses. Under such circumstances it is quite necessary to have the plants quite free from thrips; very often they get from the Azaleas to the Vines, and do much damage before they can be destroyed. Fumigate well before the plants start to make new growth. See that they do not want for water at the roots, and syringe overhead once every day at least.

Bouvardias.

These ought certainly to be placed into heat now, if this has not been already done. Water freely at the roots, and syringe to cause a good "break."

When the plants were placed into heat about January 1 or earlier cuttings can now be obtained. They should be taken off as soon as they are ready and be potted in 4 or 5-inch pots, about nine or twelve in each, using fine sandy loam on the surface. Place the pots containing the cuttings in a nice bottom-heat, with a temperature in the atmosphere of 55°. Old plants may be shaken out of their pots, reducing the ball of earth considerably, and repotting n a size smaller pots. These old plants will do well on a shelf near the glass in the same temperature as the cuttings.

CALCEOLARIAS.

If the plants intended to flower for exhibition purposes in June have not yet been potted into their flowering pots, no time should now be lost in doing so. After this the plants commence to make very rapid growth, and none more quickly show the effects of any check. The plants are very impatient of the lack of water at the roots, and more so when the pots are well filled with them. Some of the old growers used to syringe overhead, but I never allow water to fall upon the leaves at any time. The difficulty has been in such a winter as this to keep a moist genial atmosphere, owing to the excessive use of the heating apparatus. It has been necessary to wash the outside of the glass many times this season; as I write it the coating of deposit left by the fogs of the last days of January is thicker than any that has preceded it, and we are again busy washing the glass.

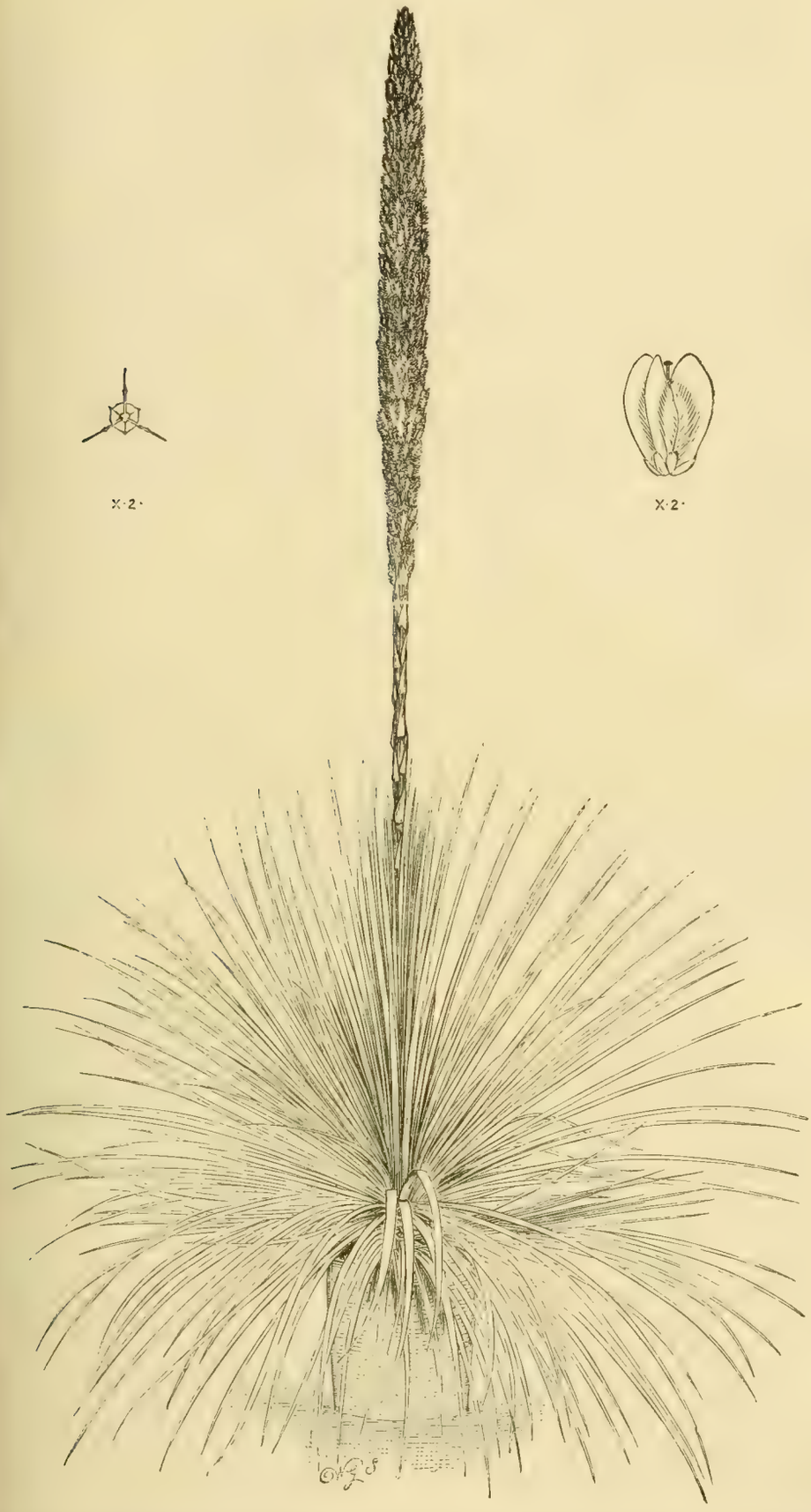

FIG. 37.—DASYLIRION GLAUCUM, MUCH REDUCED. FLOWER, AND SECTION THROUGH OVARY, MAGN. (SEE P. 204.)

CINERARIAS.

We have no more valuable plants than these to place into the greenhouse as soon as the Chrysanthemums are over. Plants that were in flower at Christmas are still in full beauty; indeed, they have improved since these others are rapidly succeeding them. All these early flowering plants succeed quite well in 6-inch pots. Fumigate occasionally to destroy greenfly, which will persist in establishing itself amongst the yet unopened flower-buds. It is not too late yet to repot the latest flowering specimens; the largest plants should be grown in 8-inch pots. Continue to tie out the young shoots as they require it, and manage so that the plants are dwarf and the leaves hanging well over the sides of the pots.

CYCLAMENS.

If seeds of these were sown as recommended early in January, and the pots or pans placed in a temperature of say 55°, the plants will now be coming through the ground. They do not appear with two seed-leaves opposite each other, like many other plants; a single leaf is pushed up, and as soon as a second one is seen the plant may be taken out with a pointed stick and potted in fine soil, using a thumb-pot for each plant. Let the pots be placed on a shelf near the glass in the same house. Such plants, if well attended to and potted on as they require it, will produce from twelve to twenty-four flowers within twelve months.

HYACINTHS.

We do not care to get these too early into flower, but those that were placed in the forcing-house early in January are now making good growth, and the spikes are good. They require to be supplied with weak liquid-manure at each alternate watering. Those intended for exhibition are now on shelves near the glass in a heated pit. They will require more forcing this year than usual, as they are not so far advanced now as they have sometimes been at the same date in January. The bulbs have formed very few roots; this, too, is owing to the low temperature of the material in which they had been plunged. It is very desirable to use tepid water for the supply of the roots. Keep the plants near the glass, and admit air freely in the early stages of their growth.

LARGE-FLOWERED PELARGONIUMS.

The large specimen plants intended for exhibition will require looking over almost daily. Tying out the young growths must be seen to as they become crowded, and no plant must suffer for want of water. The early flowering plants will now have filled with roots the pots in which they are blossoming, and will take up more and more water as the days lengthen. See that each plant has a thorough watering when it requires it. Give enough to moisten every part of the ball of roots. The Pelargonium Society gives prizes for plants in 6-inch pots, and it is highly desirable that these should be encouraged. When the plants are well managed it is astonishing what an excellent effect can be produced by their being arranged in the greenhouse; and the flowers from young plants are produced in succession, giving an abundant supply to cut from. The latest flowering plants may yet be potted, the operation to be performed as previously advised. Still fumigate to destroy greenfly: the importance of keeping the plants free from insect pests can scarcely be over-estimated.

FANCY PELARGONIUMS.

This very pretty section of the great Pelargonium family has been too much neglected lately. The craving is for some new thing; and if it were not for a few enthusiasts who cling to their old loves "through December's snow and July's pride," many choice plants would be lost. The large bushes of the above I do not like so well as neat little specimens in 5 or 6-inch pots; they are quite charming placed close to the front of the stage in the greenhouse

or conservatory. The treatment is the same as that given last month.

Zonal Pelargoniums.

Plants produced from cuttings put in last autumn have now made good growth in a house where the temperature has been about 45° during the winter. They are now in 3-inch pots, and as these are well filled with roots the plants will be at once repotted, the largest into 6-inch, and the smaller sizes into 5-inch pots. I do not approve of over-rich soil; good turfy loam six parts, one part of leaf-mould, and one part rotten stable-manure. When the proper compost has been obtained it is well to keep to that, as it is easy enough to make it too rich, which will produce a gross watery growth. Better to have the soil too poor than too rich, as the quality of the flowers can be improved by liberal supplies of manure-water. Large specimen plants require a more liberal diet than small ones.

Petunias.

If cuttings were put in as advised last month, they will now have formed roots, and may be potted off at once into small pots. This is a rapid growing plant, and is very easily injured if it receives any check to its growth. An over-dry state of the roots means a number of the old leaves becoming yellow and requiring to be removed: I would not place the young plants in quite a cool house, but they may be placed there when well established. The plants require careful handling, as the glutinous leaves very readily snap off. The points must be pinched out of the young plants as soon as they begin to grow.

Verbenas.

These are very liable to be attacked by insects, and the spores of mildew find a congenial resting-place on the leaves. Fumigating and dusting with sulphur must be persevered in until the plants are made quite clean. Early struck cuttings produce the best plants, and the treatment of them is exactly the same as for Petunias. Both like rich rather light soil and plenty of light and air. *J. Douglas, Loxford Hall.*

Garden Operations.

KITCHEN GARDEN.

Winter Greens.—The consequences which follow in the wake of extraordinary seasons like the one from which we are now escaping, should not be permitted to pass away without its lessons being turned to profitable account. In the vegetable department it may in this way be applied to the subjects in question, inasmuch as these naturally have to endure the full force of the frosts without any protection whatever, and the consequences are this season so plainly manifest, that it needs but little discrimination to decide which are the best kinds of winter stuff, and that it is on Brussels Sprouts, Cottagers' Kale, and the Savoy class that we must mainly depend for our supplies, when the season proves to be more severe than ordinary. For this reason we take advantage of existing circumstances to inculcate the real necessity to cultivate in every garden every year a proportionate quantity of these special subjects, as a means of meeting a similar and possible contingency. In singling out these kinds from the rest we by no means wish to imply that these alone are to be cultivated, because there are others possessing merits which should cause them to be grown likewise, although they are liable to be almost, if not quite annihilated occasionally. These include that old and invaluable subject, Purple Sprouting Broccoli, which in point of excellence is not surpassed. Chou de Milan is also another useful kind of greens, commendable on account of its coming in late, and so forming a connecting link between the kinds already mentioned, and the early crop of Cabbage. Scotch Kale is also to be recommended for late use, and for this purpose it should occupy a north border; while for garnishing or eatable purposes Melville's Variegated Kale yields a diversity of beautiful forms of this character.

The cultivation of the whole of this section of Winter Greens is similar in regard to details; they all require really good ground to do them creditably, and to occupy open spaces, with fair distances between the plants. These are the means to employ to build up a robust and hardy constitution, and qualify it also to endure the effects of frost and the inclement conditions, which in due course it will most assuredly have to meet.

Of the subjects mentioned we consider that Brussels Sprouts occupy the first place as to importance and general usefulness; because they scarcely can fail to produce an abundance of sprouts, since they grow for a longer period than any of their contemporaries; and for this reason we usually plant "comparatively" a double quantity of it. In the first instance we sow the first week in February, and on this occasion we form a bed on a south or east border, margining it with a single row of bricks, the size being proportioned to the sashes we intend to employ to cover the space on which the seed is to be sown. When this is done, it is properly covered in and watered; if necessary the lights are laid on and kept closed until such time as the seed germinates, when air is given as required, and coverings at night applied when necessary. As soon as the plants are fit they are pricked out in a similar place until they are ready for the final remove to where they are to remain. We also sow at the same time, and under the same conditions, enough seed to obtain a supply of plants of Cottagers' Kale for the early breadth of planting, as this is undoubtedly the best of all the curled sorts of winter greens. The next or general sowing of the same kinds and all others of this section which we propose to grow, is made in the first week of March, on an open space of ground out-of-doors. In the case of the Savoy class we make subsequent sowings about the middle of April, and again at the commencement of June, this for the purpose of ensuring a successional supply in a perfect state, both as regards the condition and also the quality of the head.

The propitious change in the weather will be welcomed for out-of-door operations, as many of these, owing to unfavourable conditions, are much in arrear. At the earliest date possible sow Brussels Sprouts and Cottagers' Kale in the manner above described; also Cabbage, Cauliflower, Leek, and Lettuce seed, in the same way, or otherwise in very sheltered places in the open ground. Sow Parsley, as well as Peas and Beans, to succeed former sowings. In order to guard against the depredations of birds and insects, frequent attention will be needed as a means of protection to early Peas; we find Hornbeam or Beech twigs with the leaves adhering most useful. Any preparations which are not completed, which will be necessary on plots of ground intended for Onions, Carrots, Parsnips, &c., should be attended to as soon as the soil will admit, so that whenever a favourable opportunity happens the seeds can be got in expeditiously: the same remark is also applicable to ground intended for early Cauliflower and Cabbage plants. The Cauliflower plants, such as we referred to in a former Calendar, p. 58, are already planted in the places then described, and Cabbage plants which were pricked out into beds last autumn are likewise removed to the plots provided for them. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

Pines.—When fermenting beds are employed as a medium of giving warmth at the roots of these plants, it is a usual practice to replant and make up such beds just prior to the approach of winter, and to incorporate the materials employed in a manner so as to make the heat which is generated by them as steady and as durable as possible. In the ordinary course these beds will again require attention in this way, and should be renewed or refreshed by new material as soon as circumstances will permit. These matters can in some instances be carried out under any conditions, but as a rule they can generally be done most expeditiously when these are most favourable, and therefore advantage should be taken of such opportunities. At about the end of the current month we periodically start a batch of suckers, and give the requisite attention which is usual in this department to any other plant which requires it, as repotting or otherwise, shifting into larger pots any which may require it; for these requirements timely preparation should be made by having the soil and other requisites which are necessary in a fit state by the time they are wanted. Much of this kind of work can be accelerated at times when other work cannot be proceeded with. It is of the highest importance in potting these plants to have the compost in a proper state, and especially so when loam of a tenacious nature, such as we employ, is to be used. The help which we gain from more light and sunshine will speedily tell on the plants by exciting growth in them more quickly. When this is apparent a slight rise in the existing artificial temperatures may be tolerated. Where fruiting plants and others just coming up are located, strive to secure an invigorating state, not only by giving every attention to the moisture that is needful, but also by taking advantage of every gleam of sunshine that exists to keep the temperature in such places up to the maximum point, 90° or 95°; and also by closing up the house early in the day whenever the sun's influences can be made instrumental for the same purpose. *G. T. Miles, Wycombe Abbey.*

Vines.

When all the Grapes on early pot-Vines have been properly thinned, the laterals behind the bunches will require moderately close stopping, while those in advance of the fruit may be allowed more freedom, providing there is plenty of room for tying them down to the trellis. It will be necessary to guard against over-cropping, as quality is always of more importance than quantity, and this can only be attained by erring on the safe side in the removal of surplus bunches. If on solid stands, with a sharp heat below and fermenting material placed loosely round the pots, liberal supplies of stimulating liquid may be more frequently given than when they are tightly plunged up to the rims. Top-dress with rich soil and rotten manure confined within temporary rims of zinc or lead 4 inches deep, placed on the tops of the pots as a means of insuring the downward passage of the water through the balls. In all cases where the pots are to remain undisturbed until the Grapes are ripe, the roots may be allowed to follow the liquid through the hollow brick pedestals, or into the plunging material, when the fruit will be fine in proportion to the number of feeders which have gained their liberty. Give close attention to stopping, tying and thinning in the early house, and observe great firmness and determination in the removal of superfluous bunches before they have time to rob the Vine, bearing in mind that a reasonable reduction in the number of bunches does not always represent a corresponding reduction in weight when the Grapes are ripe. Many good Grape growers have regretted when too late having left too many bunches on their Vines, but I never heard one say he was sorry for having given them the benefit of a doubt. The earliest Muscats, now approaching the flowering stage, assuming that they have an efficiently heated house to themselves, will require a night temperature of 65° to 70°, with a corresponding rise of 10° to 15° by day, and in the event of a return to bright weather the house may be closed at 80° to 85°. When they come into flower it will be necessary to fertilise every bunch with great care, either with their own or Hamburgh pollen: I always give preference to the latter, as two birds are killed by one stone—first in the collection, which improves the Hamburghs, and afterwards in its application to the Muscats, which invariably set well. In the successful management of these early Muscats something more than impregnation is wanted: the wood should be thoroughly ripe and the roots should have the benefit of a well drained warm internal border, which has been well mulched and fed through the past growing season, for the twofold purpose of forming and keeping an abundance of healthy roots at home, instead of driving them downward or outward in search of these important elements. Assuming that late Grapes were removed from the Vines early in January, houses containing Lady Downe's and other winter kinds should be closed by the end of the month and well watered with water at a temperature of 90°. The rods will require copious syringing two or three times a day, and if sufficient fire-heat, aided by the use of fermenting material, be applied to the maintenance of 55° at night to 65° by day, a gradual advance will be secured, with every chance of the Grapes becoming ripe and fit for keeping up to the end of May, 1881. In fine seasons late Vines will break and ripen their fruit under the influence of solar heat, but in cold situations the past year has taught the wisdom and economy of giving a little help in the spring instead of having to drive the fires in the autumn, when the Vines should be going to rest. *W. Coleman, Eastnor.*

Orchard-house.

Those of us who live within the limits of the London fogs have had enough to do this winter season. If the glass had been kept anything like clean, it ought to have been washed after every thick fog, and it was necessary to do this where plants were subjected to a growing temperature. The cool orchard-house was not touched until now, so that the glass was covered with the successive fog deposits of the last three months, and it was quite as opaque as if it had been smoked over a burning tallow candle. It has now been thoroughly washed, and as the blossom-buds are swelling it will not do to allow any more deposit to remain on the glass. If the trees have not been looked over, it will now be necessary to do so; the brown scale may not be noticed by the inexperienced, but if left on it is a troublesome parasite, and increases rapidly with increasing warmth. It may now be found in the form of reddish-brown cases attached to the smaller branches of the trees like limpets to the rocks: these are full of rudimentary scales; they should be removed with the finger-nails, and be carefully conveyed out of the house—the wood where they were attached to be washed clean with soapy water. The Peach aphis will be found on the young wood amongst the expanding flower-buds, clinging to and sadly crippling them. It is quite right to wash them off with soapy water, but I

never trust altogether to this and generally fumigate the house until the aphides are destroyed. While looking over the trees it may be well to thin out the branches where they are too crowded. Strong vigorous shoots that are sparely or not at all furnished with flower-buds should be cut back, or perhaps cut out altogether.

Pear and Plum trees also require attention in this respect: these, owing to summer pinching for many seasons, are frequently over-crowded with spurs and blossom-buds; under such circumstances a judicious use of the knife becomes a necessity. Strawberry plants on the shelves near the glass are looking very well, and those that have been taken out of the house and placed in forcing-houses show blossoms very freely. Last year was one of the worst known to me for ripening the crowns of Strawberry plants, and I attribute the good show of blossoms to the method of treating the plants during the summer and autumn. As soon as the plants are well rooted into the large 60-sized pots into which they are layered they are repotted into 6-inch pots, and each pot is placed on a brick that has been laid quite level on the ground. The position selected is one well exposed to the sun, and last season ours were, in addition to this, sheltered by a brick wall from the north and east. See that none of the plants suffer for want of water at the roots, but water them before the soil in the pots is anything like quite dry.

In the forcing orchard-house, where the trees are in flower or well advanced towards it, supposing the roots have been proportionately active, a minimum temperature of 55° ought to be maintained. The trees ought also to be further stimulated with tepid water. If there is no other convenience it is a good plan to place several potsful over the hot-water pipes. At this season the trees ought to be syringed on the mornings of fine days. Syringing must be discontinued when the trees are in flower—at that critical period the temperature ought to be kept up to not less than 55° at night with an increase by day; the top and bottom ventilators must be opened to cause a circulation of air by day, but not so much as to lower the temperature too much. See p. 143 for further information. *J. Douglas, Loxford.*

ORANGE-HOUSE.

As the season advances it will be easier to keep up the temperature; even in our house, efficiently heated to grow Pines, the pipes have been often much warmer than we cared to have them. There are occasionally days of sunshine, and it is wise to shut up the house about 2 P.M., and thus retain the heat, which is more congenial than that from hot-water pipes. The temperature may now be advanced from 55° or 60° to 65° at night, and by shutting up with sun heat, even this may be increased to 70° for a considerable portion of the night. The cultural directions given at p. 143 still apply. *J. Douglas, Loxford.*

PLANT HOUSES.

ORCHIDS.—The blinds or shadings used on the houses containing these plants should be at once fixed in their places, ready for use at any moment. It may happen that for days after there will be no need to use them, but the chances are after the middle of February that we shall speedily find the sun getting too powerful for some Orchids, especially if it shines forth in the middle hours of the day. In the cool-house, the temperature under the sun's influence will be rising above what is found necessary to grow the inmates to the highest point of perfection. This will certainly be the case on clear, bright, cold days, when the external air being perhaps several degrees below 40° is unsuitable to be admitted with sufficient freedom to keep down the temperature. At such times use the blinds. With the external air congenial, that is above 45° and moist, give abundance of air and shade less. The blinds on the Cattleya, intermediate and East Indian-houses, will only have to be let down for an hour or so over those roofs which fully face the sun. No system of shading these houses has ever answered so satisfactorily as the old one of canvas and roller blinds. Fixed shadings of any sort must have been all through last summer a mockery to the plants, seeing that there was nothing to shade them from. The blinds for the first three named houses should when down be 4 or 5 inches above the glass. This is best done by fixing strips of wood to run the rollers on above the roof from top to bottom. By this plan abundance of light and air passes up between the canvas and glass, the benefit of which, as regards the growing of Orchids, cannot be over-estimated. The canvas on the East Indian-house may touch the glass, as a maximum of sunheat without scorching is the thing required in this division. The Mexican-house should either have a thin blind or be lightly stippled so soon as the sun gets really strong; it will take no harm for the present. Besides the ordinary shading, the glass near to the shade-loving Bolleas, Pescatoreas, Batemannias, and Huntleyas, should be painted over with "summer cloud." For two seasons we have for this purpose used the green kind, and the plants have grown fast and well. It is now time to take the whole of these from their winter quarters in the East India-house to a quiet position in the intermediate house. By quiet I mean the very opposite to an airy exposed position. Give these plants frequent waterings at the roots, and keep the atmosphere well charged with moisture. The imported pieces of Bollea cœlestis, Pescatorea Klabochiana and P. cerina received last autumn will now be making both shoots and roots, and will require a thin layer of peat and sphagnum for the latter to run in. The present is an excellent time to break up old plants or to give more root-room to Odontoglossum vexillarium, O. Roezlii, O. Warscewiczii, O. nævium majus, O. blandum, Masdevallia tovarense, M. bella, M. Chimæra Wallisii, M. Backhousiana, and M. nycterina. The four last-named should in every case be grown in baskets, and as their flowers are produced Stanhopea-like, from descending stems, no crocks must be used; a moderate quantity of peat and sphagnum not too compressed will grow them to perfection. For the other plants mentioned the pots should be two-thirds full of drainage, and the compost should consist of two-thirds sphagnum to one of fibry peat. In potting throw in here and there a handful of small broken crocks and charcoal, which will greatly assist towards keeping the whole mass sweet. With the exception of O. Roezlii the whole of these plants will in a few weeks' time have to be moved into the cool-house; between now and then they will have time to establish themselves if potted at once. O. Roezlii should be grown with its foliage almost touching the roof glass at the coolest end of the East Indian-house. It will take more water but less root-room than O. vexillarium. An interesting Orchid now flowering is Epidendrum Parkinsonianum, a plant with very small bulbs, but with such large fleshy leaves that at a short distance it might easily be taken for one of the smaller growing Aloes. Owing to the weight of the leaves the plant grows in a downward direction, hanging, in fact, by its roots. The flowers, which are produced from the base of the leaf, are in size and colour much like those of Brassavola glauca, the lip is a good white, and in shape resembles a butterfly. Like E. ciliare and Angræcum sesquipedale this plant emits a powerful perfume during the night. Give it block treatment, and grow it in an exposed position in the Mexican-house with very little water at any time. The change in the weather is a very beneficial one for Orchids, and I hope it will last long enough to give us all a "breather." Gradually increase the ventilation in every department when the air is calm and mild; at the same time bear in mind that plants after twelve weeks' almost close confinement do not appreciate large volumes of fresh air. Their breathing organs are indeed almost as sensitive to changes of atmosphere as those of a human being just recovered from an attack of bronchitis. The following night temperatures must be maintained:—Cool-house, 50°; Cattleya and intermediate-house, 58°; Dendrobium-house, 62°; East Indian-house, 65°. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

The long continuance of cold weather we have experienced has very much retarded all outdoor gardening; and now that the weather has broken we shall have to be extra brisk in pushing forward all alterations of shrubberies, lawns, walks, &c., that are intended to be done. Walks and lawns should be well rolled after the frost. The time has now arrived when the arrangements for the summer bedding display should be made. The first question that arises is, "What design shall I have on this bed, and how shall I arrange that border?" Now I think the arrangement greatly depends upon the taste of the employer whom you have to please. To suit the general public, so far as my experience goes, there is nothing like a bed, or border, arranged with the brightest of colours. For instance, a bed planted with Alternanthera amœna and Golden Feather, or a border planted with the brightest scarlet Pelargonium and yellow Calceolaria, would suit them far better than all the mosaic or artistic table beds that could be arranged of succulents and foliage plants. For my own part I would rather see it a little more quiet, and I presume that the gardening fraternity will generally agree with me. Whether you are going to have a carpet, mosaic, or artistic table bed or otherwise, a plan should be made out in the first place, in pencil, so as to give an idea of the manner in which it is intended to be carried out, and a calculation made of the quantities required for each respective bed or border, so as to give time to make up the required quantities which are found deficient. Previous to planting, the final plan should be made, inked, and if lightly coloured, showing the colour of the plants in each row, panel, or ring, this will greatly facilitate the work of planting when that commences. There is nothing that tends to forward the work more than to know what you are going to do when you begin, and there is nothing that retards it more than to have to take up a row, panel, or ring of plants for want of not knowing beforehand whether you have sufficient to carry out the work. When once a bed is arranged so it ought to remain, for if you have to make alterations in it when once the planting is commenced, you often have to arrange the whole bed afresh; and this can only be avoided by deciding on the arrangement previously. In fact, to tread on any flower bed or border too much makes the soil heavy, and the plants never do so well in it. In preparing the ground for a carpet, mosaic or artistic table bed, the first thing to be done is to make up the edging, which I consider is half the battle; it may seem to a non-practical person a very easy task, and so it is to those who know how to do it, but you find very few men that can do it well—they either set it up too hard or not hard enough; if it is set up too hard many of the plants will not grow in it, and if it is not set up hard enough, it crumbles by the drought before the summer is over, or it gets washed down with wet. If two rows of Echeveria secunda glauca are to be planted on the slope, which will take a 6-inch slope, the soil in the first place should be laid close up to the grass, in a rough form, and trodden down moderately firm, then with the back of the spade pressed firmly back in a sloping position (the angle of 45° perhaps is best), cutting off the soil on the top of the slope down to the required level. In making up the interior slopes or cornices of beds the same rule holds good. The groundwork is the grand object; that, well done, is half the battle. I have mentioned the Echeveria, for this is the best plant I know for forming the edging and groundwork of the above-mentioned beds. I might have added, the plants should be planted triangular-fashion, not opposite. Carpet beds should be levelled from edging to edging, and when once level they should not be trodden upon. I find the best plan is to have a 15 or 20 feet 3-inch plank (as required), set on a large flower-pot on either side of the bed, or on wooden trestles on three legs, for the planter to stand or kneel upon while inserting the plants. Levels should be put in and sections cut on the ground previous to the formation of the bed. *William Gibson, Royal Hospital Gardens, Chelsea, S.W.*

SUMMARY OF METEOROLOGICAL OBSERVATIONS IN 1879.

By J. GLAISHER, Esq., F.R.S.

TAKEN AT BLACKHEATH, KENT S.E.

1879. Months.	Barometer. Mean.	Barometer. Departure from Average: 38 Years.	Temperature of the Air. Highest.	Temperature of the Air. Lowest.	Temperature of the Air. Extreme Range.	Temperature of the Air. Mean of all the Highest.	Temperature of the Air. Mean of all the Lowest.	Temperature of the Air. Mean Daily Range.	Mean Temperature. Of the Air.	Mean Temperature. Departure from Average of Sixty Years.	Mean Temperature. Of the Dew Point.	Wind. Estimated Strength.	Wind. Relative Proportion of N.	Wind. Relative Proportion of E.	Wind. Relative Proportion of S.	Wind. Relative Proportion of W.	Mean Amount of Cloud.	Rain. Number of Days it Fell.	Rain. Amount Collected.
	In.	In.	°	°	°	°	°	°	°	°	°								In.
January ..	29.852	+0.098	50.2	20.0	30.2	35.1	27.5	7.6	31.7	−5.4	28.4	0.5	7	13	6	5	8.1	10	2.47
February ..	29.358	−0.443	52.2	22.7	29.5	42.4	33.2	9.2	37.9	−1.1	35.2	0.8	6	8	6	8	8.5	21	3.95
March ..	29.800	+0.060	64.9	25.8	38.1	48.8	34.3	14.5	41.0	−0.5	36.3	1.0	6	9	7	9	6.6	14	0.70
April ..	29.517	−0.244	60.6	28.1	32.5	51.5	35.9	15.6	42.5	−4.1	37.6	0.6	9	9	7	5	7.7	18	2.64
May.. ..	29.825	+0.044	69.3	29.6	39.7	57.5	39.6	17.9	47.5	−5.4	40.3	0.8	9	7	5	10	6.0	17	3.37
June ..	29.617	−0.175	75.8	39.8	36.0	66.0	49.2	16.8	55.9	−3.2	50.1	1.1	6	2	7	15	6.7	18	4.16
July	29.624	−0.181	80.4	45.0	35.4	66.0	51.1	14.9	57.2	−4.9	52.0	1.0	3	4	8	16	7.3	18	3.62
August ..	29.668	−0.118	77.8	46.8	31.0	68.2	53.6	14.6	59.8	−1.5	52.7	1.3	1	3	12	15	6.1	19	5.12
September ..	29.801	−0.004	75.1	38.8	36.3	65.4	49.2	16.2	56.6	−0.8	50.6	0.7	6	7	8	9	6.1	14	2.88
October ..	29.949	+0.250	68.1	33.1	35.0	55.6	43.4	12.2	49.2	−0.9	44.6	0.9	5	10	4	12	7.1	11	0.84
November ..	30.029	+0.290	54.2	23.6	31.2	43.3	33.6	9.7	38.5	−4.5	33.8	0.9	12	7	3	8	7.2	11	1.00
December ..	30.135	+0.319	52.0	14.7	37.3	37.1	26.3	10.8	32.5	−7.4	29.1	0.7	6	8	7	10	7.8	8	0.64
Means ..	29.766	−0.006	65.1	30.7	34.4	53.1	39.7	13.4	45.8	−3.3	40.9	0.9	76 Sum	87 Sum	80 Sum	122 Sum	7.1 Mean	179 Sum	31.39 Sum

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	Feb. 16	Sale of Imported Orchids, at Stevens' Rooms (New Plant and Bulb Co.)
Tuesday,	Feb. 17	Sale of the Stock at the Hill Side Nursery, Exminster, by Protheroe & Morris (two days).
Wednesday,	Feb. 18	Sale of Imported Orchids, at Stevens' Rooms (Messrs H Low & Co)
Thursday,	Feb 19	Meeting of the Linnean Society, at 8 P M. Sale of Imported Orchids, at Stevens' Rooms (Mr. F. Sander).
Saturday,	Feb. 21	Sale of Roses, Fruit Trees, Shrubs, Bulbs, &c., at Stevens' Rooms.

THE annual meeting of the Royal Horticultural Society, which was held on Tuesday last, presented a great contrast to that of some former years, and not wholly for the better. It was not lively. It was gloomy. Fog settled down over the region of South Kensington about the time the meeting began. Yellow flickering gas essayed to cast a brilliancy on the scene, but it hissed at its own mockery. The dismal surroundings took effect alike upon Council Fellows. Their depressing effects were heightened by the nature of the report, which was "taken as read," having been circulated some time previously—a procedure for which, by the way, the Fellows should be grateful. The prevailing objective gloom and the innate subjective depression told on the eloquence of the President. He halted as he spoke of the Chancery suit—he bemoaned the state of the balance-sheet—he recommended economy as he might have urged a Lenten discipline—he told the Fellows that they were no longer justified in running risks—he told them, what was substantially true, that last year the stars in their courses had fought against the Society—that the Council had sown, but that they had not reaped—that the Chancery suit was entered into in defence of the rights of the debenture-holders, and that there was a reasonable chance of its being decided in the course of this month. Whatever might be the result he did not think that the connection between Her Majesty's Commissioners and the Society would be necessarily severed.

Such is the gist of the President's remarks, omitting more detailed allusion to the financial state of the Society and the balance-sheet. The latter document was as edifying as the balance-sheets of public bodies usually are. A special course of training should be entered upon by all those who wish to understand balance-sheets, but it must be stated in fairness that it was circulated some days before the meeting—a practice we heartily commend.

Mr. Guedalla, who rose to propose a vote of thanks to the President, Council, and officers, endeavoured, as he said, to pour oil on the subject—though why he wanted to do so was, under the circumstances, not very apparent—there were no angry waves to be smoothed over, no turbulent manifestations to receive a *quietus*. Substantially, he commended the Council for their action, and stated that if the suit were abandoned on the part of the Commissioners, the debenture-holders, of whom he was one, would be disposed to meet the Commissioners upon more equitable terms than those previously proposed. Mr. Guedalla regretted the falling through of the proposal to hold an International Exhibition this year, as advocated by a "most excellent horticulturist;" suggested that each of the neighbouring houses should be taxed to the extent of £20 a year for the support of the Gardens, and ended with a reference to peace and honour—which was very infelicitous considering the condition of the Society.

Mr. Kellock called attention to the misleading item in the accounts relating to the life compositions. All those who know the history of the Society know that the composition fund was most improperly spent some years ago. If, as we are annually assured, the inclusion of this item is a necessary formality of no real significance, it would be better to put an explanatory foot-note to the balance-sheet, and so avoid the appearance even of misleading.

Mr. Liggins desired to strengthen the hands of the Council by proposing a special vote of thanks to them for their "noble conduct" in maintaining the rights of the debenture-holders, and this was carried.

Such, in brief, and with the omission of certain matters of detail, was the general impression conveyed by the meeting. The President, though, as we have said, clearly depressed by the fog or by the nature of the work he had to do, still showed much of his adroitness in gliding skilfully over thin ice, and in maintaining reserve upon points that might arouse contention. To give one instance, not a word was said in the report nor in the speech from the chair as to the Preston *fiasco*.

So far then, we have alluded simply to the cloudy side of affairs, and in so doing we have only followed the course sketched out by the President. But it would be very unfair not to admit that there is another view of the matter, and a much brighter one. The President was, we think, ill-coached, or at any rate ill supported, by those who know what useful horticultural work the Society has done and is still doing in the face of much depression and discouragement. The work of the Committees is on the whole well done, and is most serviceable to horticulture. The evil times which have fallen on the Society seem to have no direct effect at any rate on the varied utility of these meetings. On the very day of the annual meeting a paper was read by Mr. George Maw on the structure and geographical distribution of various species of Crocus, elsewhere alluded to, illustrated by specimens and a whole series of admirable drawings. We allude to the paper in this connection, because it was one which would have conferred honour on any learned society in the kingdom, as the Fellows will be able to judge for themselves when the paper comes to be published in the *Journal* of the Society. The work at Chiswick, too, hampered as it is by adverse circumstances, is very creditable to all concerned, and even on financial grounds may be commended as a "paying" concern, whatever we may think as to the appropriateness of a learned Society selling market produce.

Those who look gloomily on the Society's prospects should avert their gaze from what we may call local politics, which are but vanity and vexation, and direct it to the real horticultural work of the Society. They would then find that the old spirit was still alive and at work, and not the blighting influence of South Kensington, nor the terrors of a Chancery suit, nor an impoverished exchequer will be able to quench it.

The Council deserve well of the Society, and if they, perhaps not unnaturally, seemed dull and depressed when they met their constituents the other day, they may seek relief in the knowledge that they have the sympathy of the horticulturists, and in the cheering prospect that considering all the adverse circumstances the horticultural work of the Society is still efficiently carried on. The more work done in this direction the sooner will the Society emerge from its depressed state, the more it will rise in the estimation of the public.

—— Seed Potatos for Ireland.—In the House of Commons on Tuesday last Major Nolan, M.P. for Co. Galway, moved the second reading of his "Seed Potatos (Ireland) Bill," which has for its object the authorisation of the guardians of any union in Ireland, with the consent of the Poor Law Commissioners, to borrow money from the Commissioners of Public Works with a view to purchasing seed Potatos and supplying the same to distressed tenants. If the Bill was passed these advances would be charged upon the poor-rates, and the entire amount advanced to any union would not be allowed to exceed one-fourth of the sum at which all lands within the union are rated. No interest would be paid by the guardians, but the principal would be repaid within a year of the advance. The seed Potatos purchased with these moneys the guardians would sell to tenants of land within the union, who would undertake to plant them; but no one occupier would be able to buy more than £5 worth. These sales would be made at cost price or under, either on credit or not, and either with or without security, as the guardians might think fit. The price of the seed Potatos would be recoverable by the guardians at petty sessions. Finally, the Treasury would be empowered to issue out of the growing produce of the Consolidated Fund half a million, if required, for the purposes of the measure. The period named for the operation of the Bill is "a year after the passing thereof and thence to the end of the next session of Parliament." The Chancellor of the Exchequer said that the object of the Bill was one which the Government to a certain extent entirely approved. They approved the method which the hon. and gallant gentleman proposed to adopt, but the Bill in many particulars required amendment. In the first place they did not think the Bill ought to be confined to Potatos. The Government also thought that the time which the hon. and gallant gentleman proposed for repayment was rather short. There were other points, too, as to which in quiet consultation an agreement might be come to that amendments would be desirable. Therefore the course he proposed was, that they should agree to the second reading on the understanding that the hon. and gallant gentleman would take the committee *pro formâ*, and then that the Bill should be carefully considered before going regularly through committee. The Bill was then read a second time.

—— General Munro's Bequests.—We understand that the late General Munro has bequeathed to the Kew Herbarium his collection of grasses, his manuscripts, and such of his books as are wanting in the library.

—— The Vine Louse at the Cape.—The Cape Vine-growers are, it appears, under the influence of fright as regards the invasion of the Phylloxera. We by no means regard their apprehensions as unjustifiable, but we think they require to keep their heads cool and not to give way to panic. In the first place Mr. Roland Trimen, a competent entomologist, has reported that there was no Phylloxera on the living specimen submitted to him on the spot; the specimens sent to England have also been pronounced free from the pest. So far so good—there is no evidence of the existence of the pest in South Africa yet. Naturally the colonists are very desirous to keep it out, and the authorities have, if we are not misinformed, proposed to their Government to enact a law prohibiting the importation of all plants whatsoever. We have not seen the official statement, but merely a telegraphic report. Assuming it to be correct, we must say that such an enactment would be stupid and futile. No such law, however vigorously carried out, would suffice to prevent the entry of the insect. It may indeed be wise and judicious to exclude Vines. To import them from infected countries would be to court the evil they seek to avoid, but to extend the interdict to any other plants than Vines would be worse than ridiculous, it would be suicidal. It is ridiculous because the plan cannot be effectual—the Phylloxera is not likely to be introduced except on or about Vines (thought it might be so), but if so it would pay no heed to such obstacles to its progress; it is suicidal, because such a law would fetter commerce and prevent the introduction of other plants likely to be of commercial or economic importance. Careful supervision, with the assistance of a competent entomologist, and the power to destroy immediately all the Vines within a given area when proved to be infected, are the means most likely to be effectual in checking the progress of the insect. Because one industry is threatened, surely it is not wise to throw obstacles in the way of others, which might compensate for the losses occasioned by the failure of the wine crop.

—— Plants of the Kurrum Valley.—There is, it seems, a hope that our "scientific frontier" may, after all, be productive of some scientific benefit. Among the many beautiful specimens brought from Afghanistan by Dr. Aitcheson are a fine new Clematis with large primrose-yellow flowers, and a yellow Rose. It may be hoped that these, with other treasures, will be secured to our gardens. Dr. Aitcheson, we believe, is about to return to the front, but proposes at an early meeting of the Linnean Society to give some account of the botany of the region in question.

—— Daphne collina is a fine old-fashioned shrub, not often seen now. Its oblong-lanceolate leaves are a deep shining green above, white and downy beneath. The pinkish flowers are in tufts at the ends of the branches, and are very fragrant. It is quite hardy, as witness some specimens recently sent us by Mr. Boscawen in bloom, in spite of the severe weather to which even in Cornwall it has been exposed.

—— The Commelynaceæ.—At the Linnean Society, April 5, Mr. C. B. Clarke gave an oral exposition of the Commelynaceæ, which order he had lately worked out for a forthcoming volume of De Candolle's Monographs. He defined the order by the position of the embryo. An important auxiliary character is that the three segments of the calyx are always imbricated, so that one is entirely outside the two others. Mr. Clarke divides the Commelynaceæ into three tribes, as follows:—(1.) *Pollieæ*, fruit indehiscent; (2.) *Commelyneæ*, capsule loculicidal, fertile stamens 3—2; (3.) *Tradescantieæ*, capsule loculicidal, fertile stamens 6—5. He drew attention, moreover, to the manifest and important change of colour in the petals of several of the species, Aneilema versicolor to wit, where from a bright yellow when fresh they become of a deep blue when dry.

—— Continental Vegetables.—Those who may be desirous of testing the merits of such vegetables as are served at Continental *tables d'hôte* with the sorts grown in England have now an excellent opportunity for doing so by obtaining Messrs. James Carter & Co.'s newly introduced "Continental Collection of Vegetable Seeds." The collection includes eighteen well selected varieties of Dutch, German, and French nationality. Aubergines and Virtous Cabbages should be no novelties after this season.

—— A Heavy Kohl-rabi.—At a recent meeting of the Berlin Horticultural Society a fresh specimen of Kohl-rabi was exhibited, which weighed nearly 8 lb. English.

—— Bean-cake Manure in China.—"H. K." writes:—"I distinctly remember boarding junks laden with cakes of artificial manure upon the coast of China, but had supposed that it was of another description to the Bean-cake, the refuse of the Bean-curd, which is so commonly sold in China. If so, the manufacture of a palatable food, which leaves so valuable a refuse, is one which might be adopted with advantage in this country." Can Mr. Fortune enlighten us?

—— The Severe Frosts in France.—The *Société Centrale d'Horticulture de France* has appointed a commission to ascertain the effects of the frost in December, 1879, and to report thereon.

—— Acacia homalophylla.—A series of the pods of this plant was shown by Mr. R. Irwin Lynch at the meeting of the Linnean Society on February 5, wherein each seed was attached by a very long and bright red funicle, which is doubly folded on the sides of the seed. Mr. Lynch offers the supposition that the funicle, always detached with the seed, from its brilliant colour, serves as an attraction to birds, and in this way assists in the dissemination of the plant.

—— Fruit Prospects.—A survey of the hardy fruit trees is not productive of a reassuring effect. We may have a most genial spring and a glorious summer, and out of such blessings we may well hope to gather in abundance the fruits of the earth, but how if the "fruits," not metaphorically, but literally, are few and far between? All hardy fruits, but specially all hardy tree fruits, are contingent for their proper production upon two favourable seasons—one to ripen the season's wood and swell the bloom-buds, the other to set the fruit and bring it to maturity. But of these two seasons perhaps the first is the most important, because unless its functions are well per-

Fig. 38.—Fruits of the Malay Peninsula. (see p. 203.)

formed those of the other will be but in small request. The fruit trees may have all the wood, not of the last but of the preceding year ripe and matured; that is the case without doubt, but the spurs or bloom-buds, even though fairly abundant, lack substance and plumpness; they do not indicate strength and maturity, and out of such comparative incompleteness we wonder whence is to come health and vigorous bloom. There are never wanting excuses for an unfruitful season, when that common event takes place—it is either immature wood or spring frosts, or, as last spring, excessive rains washing out the pollen; and all are plausible, and sometimes exact. Next season, unless an immense change is evolved in the course of the spring, we shall have to record the imperfect state of the fruit-buds caused by lack of sunshine. All these things indicate the enormous risks incidental to fruit culture in this country, and show that it is not lack of trees, as is so commonly imagined by ignorant people, but rather lack of crops on the trees we have, that is the cause of the scarcity of fruits for the million, so often complained of. Unfortunately a sunless summer does not confine its mischief to that season only, but extends its disastrous effects over several successive ones.

—— THE POTATO FAMINE IN IRELAND.—In the House of Commons on Tuesday last, on the motion of Major NOLAN, a select committee was ordered to be appointed to inquire into the best means of diminishing the frequency and extent of failures in the Potato crop.

—— OUR JANUARY WEATHER.—The year 1880 began with a cold and foggy month, but it will bear comparison with recent precedents. The presence and duration of bright sunshine were recorded as follows at the Royal Observatory, Greenwich, by CAMPBELL'S registering sundial, in January, 1878, 1879, and 1880:—

	1878.	1879.	1880.
Days with sunshine.. ..	17	8	14
Hours of sunshine	35.0	14.8	42.3

On January 30, 1880, the sun shone brightly for 7.6 hours, a period of sunshine not approached on any day in January, 1878 or 1879. The above record is of "bright sunshine," and it may be well to bear in mind that when fogs are about the sun may at times be visible, and yet not have sufficient power to make any impression on the sun recorder. The lowest night temperature recorded at Greenwich Observatory in January in the three years was as follows:—25°.7 in January, 1878; 19°.4 in January, 1879; and 17°.2 in January, 1880, this last occurring on January 27; but in none of the three years did the greatest cold of the season occur in January. The mean daily temperature of the air was below freezing point on only one day in January, 1878; on nineteen days in January, 1879; and on thirteen days in January, 1880. The rainfall was only 0.87 inch in January, 1878, but was 2.60 inches in January, 1879, and only 0.27 inch in January, 1880. All the above results are obtained from observations at Greenwich, but, this being a suburb of London and within the registration division denominated "London," the Registrar-General has done well in giving the means of comparing the return with a weekly one for Glynde Place, near Lewes. In the five weeks ending January 31, 1880, there were 44.7 hours of bright sunshine at Greenwich Observatory, and 60.8 hours at Glynde Place—that is to say, about three hours at Greenwich to four hours in Sussex. *Times.*

—— PAISLEY HORTICULTURAL SOCIETY.—This Society will hold a spring exhibition on Friday, March 26, and an autumn show on September 10.

—— BRITISH BEE-KEEPERS' ASSOCIATION.—The annual general meeting of the members of this Association will be held in the Board-room of the National Chamber of Trade, 446, Strand, London, on Wednesday next, at 4 o'clock P.M., under the presidency of the Baroness BURDETT COUTTS, the President of the Association.

—— THE HORTICULTURAL SOCIETY OF FRANCE.—The officers elected to serve during the present year on the Council of the Horticultural Society of France are:—President, M. Alphonse Lavallée; First Vice-President, M. Hardy; Vice-Presidents, MM. Baillon, Burelle, Teston, Arnould-Baltard; Secretary, M. Duvivier; Assistant-Secretary, M. B. Verlot; Treasurer, M. Moras; Assistant-Treasurer, M. Lecoq-Dumesnil; Librarian, M. Wauthier; Assistant-Librarian, M. Courcier; Secretary-Editor, P. Duchartre; Secretaries, MM. Leperè, Chargneraud, Lavialle, Curé. We are glad to see that M. LAVALLÉE has been elected to the office of President, for, besides being an eminent amateur and writer, he has taken great interest in the horticultural affairs of the Society, differing in that respect from his predecessor, the Duc DECAZES, who, while in office, was never seen at any of the meetings of the Society or at its shows. M. HARDY, the First Vice-President, is the well-known Director of the School of Horticulture at Versailles, and was at the head of the horticultural department in the International Exhibition of Paris in 1878.

—— THE YORK GALA.—The committee have this year made some alterations in their schedule, which now includes "groups of plants arranged for effect," each competitor being confined to a space not exceeding 200 square feet. These competitions are undoubtedly in the right direction, as they are educational in their character, and there is much room for improvement in this way. It is no uncommon occurrence to see ability to grow plants fairly well where there is little taste evinced in their grouping, or in the disposal of them to the best advantage. Plants at the present day are so much in demand on festive occasions for grouping in halls and similar places, that it is part of the gardener's duty to be able to do this in an artistic and effective manner, very different from the massing and crowding together, frequently met with, of a number of fine-leaved and flowering specimens, many of them perhaps unsuitable for the purpose employed. In many of the provincial shows where prizes have been offered for groups of this kind, the mistake is frequently apparent of the competitors over-doing their arrangement by using too great a number of large specimens, evidently under the impression that these will carry weight individually, but in all competitions of this description it should be borne in mind that it is the collective taste displayed in the whole assemblage that must bear the palm. A light, elegant habit of growth in the larger plants employed is generally most effective. There are as well the usual classes for flowering stove and greenhouse plants — fine-leaved subjects, Ferns, pot Roses, and the numerous divisions of Pelargoniums which are seen here in such force as nowhere else in the kingdom at the present day. A liberal amount is offered for cut Roses; also for fruit, in which there are three classes of collections, consisting of four, six, and ten varieties, the prizes for the latter being £10, £7, and £5. Altogether the schedule, comprising over eighty classes, offers plenty of room for exhibitors, and we have no doubt it will, as hitherto, bring out a spirited competition.

—— FRUIT FORCING AT FERRIÈRES.—The first ripe Strawberries of the season were gathered at Ferrières on January 22. They were of the Marguerite variety, of large size, but rather pale, and not over-sweet.

—— BASKET ACHIMENES AT CHATSWORTH.—Those who have visited Chatsworth at the end of the summer must have admired—as who can help admiring?—the very fine hanging baskets of Achimenes seen in the Victoria regia house and the large tropical conservatory. When at their best these baskets are from 5 to 6 feet in depth and width, and they represent huge balls of blossom, the profusion of which is represented by hundreds. The flowers are of great size and richly coloured. The baskets are formed of wire, and are of globular shape; the centre is filled with moss, and between the moss and wires there is a thick layer of rich soil. The corms are started into growth in heat, and then planted all over the globes, so that the small plants point their shoots in every case outward, and as they grow form a dense mass of foliage, which in due course puts forth numberless flowers. What hanging baskets they make! They are of such stupendous size that, if seen at a large exhibition, they would be looked upon as floricultural wonders; but how to get them there is a matter of much difficulty. What can be so well done on a large, can also be managed on a small scale; and gardeners not in the habit of using Achimenes in this way as decorative plants can now be made aware what fine subjects they are for this purpose. A good stock of plants is necessary, but there is little difficulty in securing this in two or three years. The most suitable varieties are Baumanni hirsuta, Carl Wolfarth, Ambroise Verschaffelt, longiflora, longiflora major, Margarettæ, Dazzle, Mauve Queen, Mauve Perfection, and Harry Williams.

—— SONERILA MARGARITACEA.—It is something like thirty years since this pretty and interesting plant was introduced by Messrs. VEITCH & SONS, and it is to be feared it has now fallen so far away from general cultivation as to have a place among neglected plants. There are, however, some gardeners who do not relinquish their appreciation of its beauty and usefulness, and it is occasionally met with as large specimens, well grown and charmingly flowered: a thing of beauty for many days in a stove-house. It is a variegated-leaved, dwarf-branching, sub-shrubby perennial, with foliage of a peculiarly pleasing character, which was once not inappropriately described as looking as if sown with pearls. Then the flowers are very pretty, and produced in bunches; they are of a gay rose colour, enlivened in a remarkable manner by the large prominent yellow anthers. There are its varieties alba and superba; and in addition S. Hendersoni, and Hendersoni argentea. Well managed plants will grow into a large size—some have been met with fully 2 feet in diameter.

—— HOW A BOTANIC GARDEN IS FORMED IN JAPAN.—The following extract from a report from Hakodate, in Southern Yesso, will indicate the aptness of those intelligent people, the Japanese, to seize a new idea. "An inkling," it is stated, "was given to three of the principal native storekeepers by a lady resident to start a botanical garden. The idea was jumped at, as this was the very thing they had always desired to have, the Japanese being so very fond of flowers, and more especially foreign flowers; but the individuals in question, who are brothers, did not know how to set about it, and what seeds to order, and when they had them what to do with them. Accordingly a plan for a garden was drawn up, and some one having an idea of gardening was engaged, after which a spot of ground was selected most suitable for a flower garden, but when application was made for it the Kaitakushi took the matter in hand, and has now started a public garden, the foreign directress still being consulted on all matters. In order to give it the character of a public undertaking, every ward of the town was induced in succession to work there one whole day, besides the regular coolies paid by the Kaitakushi. When the whole town had thus contributed its quota of labour, all the singing girls of the tea-houses, with the other inmates of these establishments, dressed up in gay colours, were engaged there one whole day in smoothing down the paths with a stone fastened to ropes handled by about a dozen girls each, singing and dancing all the time; and, to crown all, one Sunday all the officials, from the highest to the lowest, dressed in labourers' working clothes, were engaged in finishing the "fusiyama," of the garden, without which no Japanese garden is complete."

—— SCHIZÆA PUSILLA AND LITTORELLA LACUSTRIS IN NOVA SCOTIA.—On the authority of Dr. ASA GRAY and Professor EATON, we learn from American serials that both of these plants have been recently discovered in Nova Scotia, by Miss ELIZABETH G. KNIGHT. The interesting and rare little Fern, Schizæa pusilla, was only known with absolute certainty to occur in the State of New Jersey, though Dr. GRAY says he has seen specimens of it in LA PYLAIE'S herbarium at Paris, collected sixty years ago, which are labelled as having been collected in Newfoundland. Littorella was discovered by a Mr. PRINGLE at the northern end of Lake Champlain only a short time before Miss KNIGHT found it in Nova Scotia, but it had not previously been found in America. Indeed until these discoveries Littorella lacustris, unlike most aquatic plants, had apparently a very restricted range of distribution, being confined to Central and Northern Europe.

—— WINTER GREENS.—A gardener writing recently said, "The hard weather has left my garden for green crops almost a wilderness, what must the market gardens be like?" Well a survey of market gardens just now is not a pleasant one, neither does it give any evidence of prosperity. What breadths of

greens of any kind there may be found are now fast disappearing, whilst the hard frost has already made a clean sweep of all white Broccolis. Green stuff is selling just now fairly well, and thus it is being somewhat rapidly cleared off. Savoys, usually one of the most substantial of the winter Brassicas, are very small, and a large extent of ground is cleared to make a market-load. Brussels Sprouts have long since been cleared off, and these as a rule were small and soon stripped. The best of the family for all late general purposes is the hardy Purple Sprouting Broccoli, which where not strong, as that is a rare case; it has stood well and will presently give some good cuttings, but being the last of the standing winter crops will soon be finished up. When this is gone there will be a comparative dearth of green stuff, as the autumn-planted Cabbages are in poor condition, and will most probably run off to seed rather than turn-in with decent heads. The summer of the past year was so bad that it has produced great distress amongst market growers; such seasons produce losses that even those most concerned do not care to calculate. The hard winter has added to the general disaster by the damage it has wrought amongst the green crops, and now that the season for seed sowing has arrived the growers find with alarm that such things as Peas, of which some need very large quantities, are being offered to them at from 50 to 60 per cent. advance in price. These things show somewhat forcibly how many are the troubles and disasters incidental to trade gardening, and how far it is from being always a source of wealth and prosperity.

—— Then and Now.—The modern growth of catalogues is illustrated in a remarkable manner by a contrast of the new with the old. There is lying before us a copy of a seed catalogue issued by James Carter, seedsman and florist, 238, High Holborn, London, and represented to be a "Catalogue for 1842 of a Choice Collection of Floricultural, Vegetable, and Agricultural Seeds," a thin pamphlet of some thirty-two pages, of about the size of a page of the *Gardeners' Year-Book*—a plain, unpretentious book, as unlike the finely illustrated list published by that old firm this year, as the worst form of railway carriage of twenty years ago is to the splendid saloon cars now in use. The list of Peas of that day was about one-fourth in number of the varieties now catalogued. It was the time when there were but very few wrinkled Marrows, when Sangster's No. 1, Champion of England, Prizetaker, Ne Plus Ultra, British Queen, and others, were unknown. The leading early Peas were then Early Racehorse, Warwick, single-blossomed Frame, double-blossomed ditto, Nimble, and Charlton; the main crop varieties the dwarf and tall white and green Marrows, Woodford Green Marrow, Royal Victoria Marrow, Knight's Marrows in variety—the forerunners of our fine wrinkled varieties—the Prussian Blue and the Scimitar. We have made some progress since then, and would fain hope it has been a healthy one all along the line.

—— Alpine Plant Culture.—At the meeting of the Manchester Botanical and Horticultural Society held on the 4th inst., Mr. Bruce Findlay presiding, Mr. Stansfield, of Kersal Moor, read a short paper on the subject of alpine plant culture. He said that to the advantage of warmth which alpine plants enjoy in consequence of the greater length of their spring-day must be added that of longer and more protracted influence of light. Alpine plants, like those of northern latitudes, are true children of the sun, for where there is shade the plants are poor and suffer, whilst on sunny slopes and peaks Flora is at home. The higher one ascends a mountain, as a rule, the lower will be the stalk or stem and the larger the flowers. The intense light and the long spring in the alpine regions, and in all polar countries, shortens the course of metamorphosis of plants. Inside the reproductive sphere a livelier action leads to quicker forms of flowers and fruit, and gives to the flowers an increased size and deeper colour. A vote of thanks having been accorded to Mr. Stansfield for his paper, he stated in reply that he would, when an opportunity offered, again come forward and continue the subject, which was almost inexhaustible. Mr. Findlay said they had last week had under consideration Orchids, the plants of hot regions, and that evening a distinct and opposite tribe, the natives of cold climates. He thought this an advantageous opportunity of uttering a word of caution against the narrow spirit which characterised some botanists and gardeners. One said, "I am for Orchids and Ferns;" another, "I am for Carnations and Auriculas, and make nought of Orchids;" a third despised great Palms and stove plants, and went in for alpines. But however Art may reduce the productions of Nature to isolated groups, and divide them into separate sections, they are not absolutely separable. However diverse the distant members may appear, they are all intimately connected and essential to each other, and form in their respective subordinations but integral parts of one majestic and harmonious whole.

—— The Production of Camphor and Vegetable Wax in Japan.—In some notes from Japan on the products of Hioga and Osaka, we are told that the value of camphor has increased considerably of late. Though the production is very large, it could easily be very much increased were better appliances adopted in its preparation. The method in practice is of the rudest possible nature, and very wasteful. It is suggested that the Government might fairly take the question up, as large tracts of country are being denuded of valuable trees which yield a comparatively poor return. The export of vegetable wax, on the other hand, continues to diminish, being at the present time less than one-fourth of the quantity taken in 1876. Although the damage done to the trees during the civil war in the south may have contributed towards its scarcity, it must be remarked that the almost universal use of kerosine oil must have at the same time greatly checked the native consumption of wax. Unless the production can be increased so as to admit of the article being sold at lower prices, there is some reason to fear that the trade may become wholly extinct, as manufacturers in Europe are already abandoning its employment in favour of cheaper substitutes, and the consumption is rapidly falling off.

—— New Chinese Primulas.—We have been favoured with the opportunity of examining some interesting new Chinese Primroses from Messrs. Stuart & Co., of Nice. They show considerable variation, and include some desirable novelties. One is a blush-white, freckled and occasionally striped with crimson, and with a bright yellow eye occupying half the diameter of the flower: this is very striking. Then there are two forms with the usual yellowish-green eye, exterior to which is a broad ring, occupying half the diameter of the flower, of a bright bronzy hue, the margin being in one case bright crimson, aud in the other rosy-crimson. Neither of these three are very perfect as to outline and smoothness of surface, but they are large and bold flowers, and the other desired qualities will no doubt in due time be forthcoming. There is also a large, well-formed, smooth, deep rosy-lilac variety, in which the exterior margins show a white line. Two semi-doubles, a carmine-rose and a majenta-rose, are interesting, but these semi-doubles do not seem to be held in much favour by growers. Besides these are good strains of the ordinary colours, white, carmine, majenta, and blush-striped. They present altogether a very interesting selection.

—— The Manufacture of Brick Tea in China.—In a recent report on the trade of Kiu Kiang some interesting facts are given on the manufacture of and traffic in brick-tea. Regarding the quantity of this kind of tea exported from Kiu Kiang the total amount in one year showed as much as 681,333 lb. There are three kinds of brick-tea made at the above-named place. The first or largest kind is a cake of coarse green tea which weighs when thoroughly dried about 3½ lb., and is about 1 foot long by 7 inches wide. These cakes are made in a wooden mould while wet, and compressed by means of a lever press, and afterwards dried. This is all done by hand labour, and affords employment to a large number of coolies. When dried each cake is wrapped in paper and packed in strong baskets; each basket of this coarse tea contains thirty-six cakes. The cost of this tea per basket is about £1 7*s*. sterling, and the annual exportation amounts to from 15,000 to 20,000 baskets. The tea is sent from Kiu Kiang to Tientsin, from whence it goes overland through Mongolia for consumption among the inhabitants of West and North-west Siberia, in the province of Kazan, on the Volga, and by the Kirgis and other Seutas tribes. A cake of tea of the same form, but of a much commoner quality, costing about £1 1*s*. sterling, made by the Chinese at Yang-lon-tung, in Hupeh, is largely consumed in Mongolia. There being no copper currency in that country, the Chinese bankers in Mongolia keep stores of this brick-tea and issue it as a monetary medium. The second kind of brick-tea is of a finer quality, each cake weighing 1½ lb., and it is 8¼ inches long by 5¼ inches wide. It is packed in baskets, each containing eighty or ninety, and costs about £1 13*s*. per basket. This kind is consumed in West and South-west Siberia, at Kazan, and on the Amoor. The third kind of brick-tea is made of black tea dust; each cake weighs 2¼ lb., and is 8½ inches long by 6 inches wide. It is packed in baskets containing sixty-four cakes each, and costs about £1 16*s*. per basket. It is consumed throughout Siberia and in Eastern European Russia by the peasantry. It is made into cakes at Foochow, Kiu Kiang, and Hangkow. The yearly exportation from the three places is about 100,000 baskets. It is stated that at Hankow there are now four brick-tea factories, two of which employ steam-power. The employment of steam instead of hand-presses will ultimately cheapen the cost of production, and at the same time a more satisfactory article will be placed on the market. Brick-tea made in the old manner was not pressed sufficiently hard to enable it to successfully resist the rough treatment it received *en route*, and frequently reached its destination in a broken and crumbling condition which detracted from its value, buyers laying considerable stress on the hardness and perfection of the brick.

—— The Meteorological Society.—At the ordinary meeting of this Society, to be held at 25, Great George Street, Westminster, on Wednesday, the 18th inst., at 7 P.M., the following papers will be read:—"On Typhoons in China, 1877 and 1878;" by Lieutenant Alfred Carpenter, R.N., F.M.S. "Note on the Reports of Wind Force and Velocity during the Tay Bridge Storm, December 28, 1879;" by Robert H. Scott, F.R.S., F.M.S. "On the Frost of December, 1879, over the British Isles;" by William Marriott, F.M.S. "Thermometric Observations on Board the Cunard R.M.S.S. *Algeria*;" by Captain William Watson, F.M.S.

—— Institution of Surveyors.—The next meeting will be held on Monday evening, February 16, when the adjourned discussion on the paper by Mr. W. L. Huskinson, entitled, "The Present Depression in English Agriculture; its real and assumed causes," will be resumed. The chair to be taken at 8 o'clock.

—— The Weather.—General remarks on the weather during the week ending February 9, issued by the Meteorological Office, London:—The weather during this period has been in an unsettled changeable condition. During the first three days it was dull and rather rainy in Ireland, fair over Scotland and the greater part of England, and dry but very foggy at our south-eastern stations. By the evening of the 6th, however, the unsettled weather noticed in the west had extended to all parts of our islands, and, with temporary clearances, continued till the close of the week. The temperature was about the mean for the time of year in "England, E. and S.," but a few degrees above in all other districts. The highest of the maximum readings, 57° at Leith and 58° at Dublin, occurred on the 4th. No very striking minima were registered, but sharp night frosts were experienced at many of our eastern and south-eastern stations until the 6th or 7th. The wind was generally south-westerly all over the country, but veering to north-west or north for a short time in Ireland on the 5th, and again on the 9th. In force it was moderate to fresh on most days, but blew a whole gale from the south on our west and north-west coasts on the 6th, and a very hard south-westerly gale in the Channel, and south and south-west of England, on the 9th. The rainfall was slightly more than the mean in all districts except "Ireland, N.," and the "Midland Counties," where the fall just equalled the mean.

—— Gardening Appointments.—Mr. Robert Stott, late Foreman to Lord Elphinstone, Carberry Tower, Musselburgh, has been appointed gardener to Mrs. Baird, Stichell House, Kelso, Roxburghshire.—Mr. Richard Middleton, plant foreman to Mr. Gilbert, at Burghley, has been engaged as head gardener to Col. Wright, Watcomb Park, Torquay.

JAPANESE CONIFERS.—VII.

(*Continued from p.* 115.)

PICEA (Abies, Hort. Angl.) ALCOCKIANA.*—Two, if not three, different Spruces are grown in nurseries under this name. The complications which have arisen with reference to it have already been alluded to when treating of P. ajanensis, p. 115. It is necessary for clearness sake to advert to them again, in order that our own standpoint may the better be understood.

The name Alcockiana was first applied in a letter from the late Mr. J. G. Veitch, published with a description in our columns in 1861, p. 23.

In that description the leaves are described as "planis obtusis," and again—"very small leaves, glaucous on the under side, blunt or emarginate not mucronate, and flat not 4-sided." The cone-scales are also described as obtusely rhomboid denticulate.

Murray, in his *Pines and Firs of Japan* cites the Latin diagnosis of Lindley and Veitch, and gives a full description in English with illustrative figures, drawn up apparently from specimens of Mr. Veitch. Without being able definitely to assert so much, we strongly suspect that, by some confusion, Murray described and figured the leaves of one species and the cone of another.

Carrière apparently arrived at the same conclusion that we have done, as his description coincides with our own observations. He does not say, however, that he has seen original specimens.

Next comes Gordon, who, though he does not say so, probably saw the type specimens, and he tells us (in his second edition) that the "leaves are curved, rigid, tetragone, mucronate . . . and that the cone-scales are . . . obtuse rhomboid and denticulated on the upper margins."

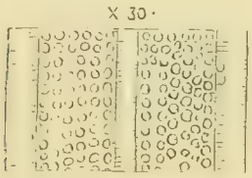

FIG. 39.—UNDER SURFACE OF LEAF OF P. AJANENSIS, MAGN.

Passing over numerous writers who merely copied from their predecessors, we come now to Parlatore, who in his monograph intimates, by the use of the sign !, that he has seen the original specimens; and this is what he says in reference to the two points above mentioned: "Leaves slightly curved, rigid, tetragonal, mucronate, spine-tipped (pungentibus) . . . . cone-scales obovate, or oval orbicular . . erose denticulate at the margins, and with a small bract linear at the base, expanding above into an ovate acuminate blade, which is dentate and fimbriate at the margins."

Here are certain discrepancies to be reconciled or explained. Which of the above botanists was right? Were they all right? Taking the last question first, we may remark that there is only one way in which they could all be right, and that is by the supposition that we have a variable plant to deal with, so that Murray saw one variety of it, Gordon and Parlatore another. But, although almost any amount of variation, according to age, locality, &c., would not surprise us, we must say that in this case there is no evidence whatever in support of such an explanation. It is, of course, possible that flat leaves and four-sided leaves might be found on the same tree, and that the cone-scales might present differences of form, but the proof that it is so in this particular case is wanting. Moreover, as we have pointed out under P. ajanensis, and shall have again to mention here, there are several points of form and internal structure which lead us to the conclusion independently of documentary evidence, that we have to do with two species and not with one variable one.

We dismiss, then, the hypothesis that all were right, and have to ascertain which were right. To gain a reply to this question we had recourse to Mr. Veitch's type specimens. The evidence they afforded tallied in

FIG. 40.—PORTION OF SHOOT AND LEAVES OF P. AJANENSIS.

the main with the descriptions of Gordon and Parlatore, but not with the original description in these pages from Veitch himself, nor with Murray's descriptions. Now this is a particularly perplexing state of things, for it involves the necessity of ascertaining, or at least of endeavouring to ascertain, what the discoverer and describer really meant. It is evident that two different things have got confused by misplacement of labels, or by some mischance or other such as

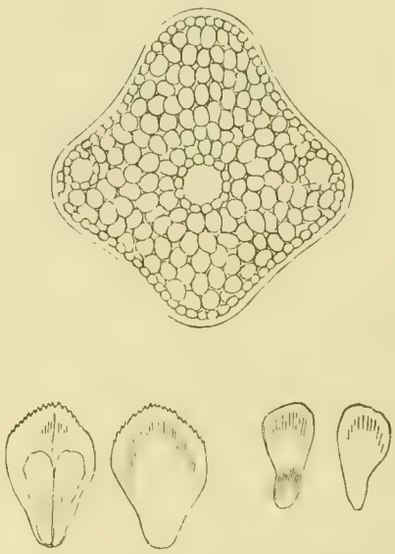

FIG. 41.—P. ALCOCKIANA: TRANSVERSE SECTION OF LEAF, MAGN.; SCALES AND SEEDS FROM THE TYPE.

might so readily occur under the circumstances. Moreover, Mr. Veitch had no opportunity of putting the matter right, he being in Japan at the time the description was published, and, to the sorrow of all who knew him, no means are available for ascertaining directly which Japanese Spruce he intended to bear the name of Sir Rutherford Alcock unless we take as authoritative the specimen above-mentioned.

Botanical precedence affords a way out of this dilemma. Assuming that we are right in our opinion that we have to do with two distinct species, then it is clear, as we have endeavoured to show (see *ante*, p. 115), that one of those two is the P. ajanensis described in 1856, and the other may therefore be called P. Alcockiana, the latter specific name dating from 1861.

Hence, if our lamented friend really intended that the flat-leaved species should be called P. Alcockiana, his intention would have been rendered null and void by the fact that that species had been already duly named and registered four or five years previously. This would of itself lead to the application of the name Alcockiana to the second species—that with four-sided leaves.

Apart from this circumstance Maximowicz (whose bicolor represents the species with the four-sided leaves), Oldham (see his specimens), and Maries (as we learn from himself), all of whom have seen the tree in its native country, identify the tree as P. Alcockiana.

For these reasons, then, we apply the name Alcockiana to the Japanese Spruce with four-sided leaves, whose characteristics we proceed to detail.

Habit.—A lofty tree, with the habit of growth of the common Spruce.

Branches stout, rough, reddish-yellow, young shoots villosulous, cushions or "pulvini" tumid, oblong-obovate, twisted and projecting at the apex. Leaf scars rhomboid.

Bud-scales persistent, ovate-orbicular, convex, light brown, often with a slightly fringed edge of a darker colour.

Leaves on the leader shoots appressed, those on the laternal shoots given off on all sides all rigid, more or less curved, linear-oblong, 4-sided, deltoid or rhomboid, and flattened at the tips, green on the convex, glaucous on the concave surface, with several rows of stomata on the two lower surfaces, none on the two upper ones. On transverse section (fig. 41) the outline is more or less Pear-shaped and the hypoderm fibres are seen to be disposed evenly all round the

FIG. 42.—TRANSVERSE SECTION OF LEAF OF P. AJANENSIS, MAGN.

leaf. The resin canals are two in number, one on each side, just beneath the epidermis. There are no palisade cells, but the cells of the central portions of the leaf have a sinuous outline and radiate from the central vascular bundle, which latter is enclosed within a well marked sheath. (See fig. 41).

Stamens (in Maximowicz's specimen) connective, erect, suborbicular, concave, downy, denticulate.

Cones deflexed or sometimes ascending (?), 2—3 inches in length, oblong, tapering to both ends. Scales shining, brown beneath, paler above, oblong-ovate, striated, cuneate at the base, slightly rounded on the free border, and minutely toothed or subentire. Bracts in ripe cone obsolete.

Seed.—Wing linear-oblong, obovate, pale brown, slightly wrapping round the seed on one side.

Hab.—According to Mr. Maries this fine timber tree occurs not only on Fusi Yama, but also in the southern parts of Japan; and if A. Glehnii be referable to the same species, it grows also in Sachalin.

From P. ajanensis the present species (figs. 41, 43) differs entirely in the form and structure of the leaves, and in the more rounded and less deeply toothed cone-scales. From P. obovata P. Alcockiana differs in its larger cones, striated erose denticulate cone-scale, and possibly in the bract. It is highly probable that the Japanese plant is but a variety of obovata, but for garden purposes they are quite distinct.

The plant grown in many nurseries under the name acicularis, shown in fig. 43, from a plant grown at Combe Wood, belongs apparently to this species, and is indeed identified with it by Mr. Maries, but the plants at present are young, and appear less robust and more slender than the native specimens. The young shoots are glabrous, creamy-white or brownish. The leaves have the same form and structure as those of the native specimens of Alcockiana, but are more slender on the lateral shoots. The side leaves are given off at an angle of about 70°, those on the upper surface being nearly parallel to the long axis of the shoot. The bracts, which are not visible in the larger dried specimens of Alcockiana, correspond to those of obovata.

PICEA ALCOCKIANA, Carrière, Conif., ed. 2. p. 343.

1861. Abies Alcocquiana, J. G. Veitch in Gard. Chron., p. 23, 1861; Gordon, Pinetum, ed. 2, p. 4 (1875)!

? Murray, Pines and Firs of Japan (1863), p. 60.

? Koch, Dendrologie, vol ii, p. 245 (1873).

Pinus Alcoquiana, Parlatore in DC. Prod. xvi., ii., p. 417 (1868).

Picea bicolor, Maximowicz, Mel. Biolog., t. 6 (1866), p. 24, in Bull. Acad. Petrop., t. x.

? Abies excelsa acicularis, hort.

A. obovata, var. japonica. Maxim. Index Sem Petrop. 1866.

? A. Glehnii—ubi?

Hab. Amur, Ussur, Maximowicz!; ins. Sachalin, Glehn; in ins. Nippon alpibus, in declivi montis Fudsi-Yama, J. G. Veitch! Maximowicz! Oldham, 980! Maries!

P. obovatæ proxima ejusdem forsan varietas.

According to information received from Mr. Syme, P. Alcockiana is the last of all the Spruces to begin growth in spring, being about two weeks later in this particular than P. ajanensis, so that it is probable the two plants grow at different elevations on the mountain.

For the sake of comparison we add figures of the flat leaves of P. ajanensis (figs. 39, 40, 42), and a magnified portion of the same, together with a transverse section of the leaf showing the curious position of the resin canals, as referred to at p. 115. The contrast with the 4-sided leaves of P. Alcockiana (figs. 41, 43) is well marked. *M. T. M.*

Home Correspondence.

Roses and the Frost.—The question is often asked at the present time, "How do your Rose trees look?" and "How have they come out of the terrible ordeal they have had to encounter this winter?" To this I answer that I am afraid we shall find Jack Frost has committed fearful ravages amongst our pets—at least it is the case with mine (living as I do in the East of England), and especially is it so amongst the standards. I have lost all the following on standards:—Countess of Oxford, Annie Wood, Louis Van Houtte, Horace Vernet, Alfred Colomb, Marie Rady, Marie Baumann, Charles Lefebvre, Cheshunt Hybrid, and all the Teas, although the latter were well protected with Spruce Fir boughs. I am much surprised to find Cheshunt Hybrid and Souvenir d'un Ami dead, as last year, although my thermometer only once reached 9°, or 23° of frost, yet they stood it without flinching, and bloomed profusely in the summer. I have lost also a great number of dwarfs on the seedling Brier and most of the above-named sorts, with the exception of the Teas, which were well protected. It is the practice of some rosarians with whom I am acquainted to cut back their Rose trees as far as the frost has affected them, which is generally to the snow line or to the place where the mulching reaches. I cannot think that this is a good plan, for this reason, that by cutting you expose the pith of the wood, and then should another severe frost ensue, which has been the case this year, it at once penetrates right into the heart of the tree, and kills the plant altogether; whereas if the tree had not been cut back till the usual time in all probability it would have been saved. On one piece of ground I have 700 dwarf standards (maidens last summer), which seem to have escaped with very few exceptions. I attribute this to the wood being all of last year's growth, for I find in almost every case where Roses are killed that it is not the young wood of last year that is affected, but the old. I am afraid we shall find a great number of our Roses, after they have been cut back in the spring, although at the present time they seem all right, throw out a few weakly shoots, and then gracefully retire. I sincerely hope I may be wrong, but this was the case with many of my trees last year, and, as a great number did not recover the shock to their system last winter, these, with many more frozen this year, will, I think, then succumb. How Roses on the Manetti have fared I am unable to say, as I have none on this stock, my soil being very heavy and cold, and it kills the tender fibres of the Manetti three months after planting. Three years ago I bought eighty plants of Mr. Walters, of Mount Radford, Exeter, and splendid trees they were, but very few were alive eight months after, and now I have not one—the roots of the Manetti rotted away. The thermometer here has fallen this winter once to zero (December 7), but many times it has registered over 20° of frost. I may mention that the shrubs are very much cut: common Laurel, Laurustinus, Sweet Bays, and Magnolias, if not quite dead, are fearfully injured—the latter, I am afraid, past recovery. I think we shall find many exhibitors of Roses when the time comes round unable to show their usual thirty-six or twenty-four, but will have to be content with a modest twelve. Perhaps other growers of Roses would give us an account of how their Roses are looking. *E. L. F.*

Orchid Culture.—Is it good practice, as recommended by one writer, to maintain a feeding atmosphere by means of decaying cocoa-fibre or leaves amongst the epiphytal kinds? Decay and its accompanying fungus are the dread of the Orchid grower, and yet we are told to bring them into our houses by means of decaying leaves; and besides, consider what quantities of insects, such as woodlice, slugs, &c., would, as a natural consequence, find their way to the plants if this practice were carried out. Has any reader of the *Gardeners' Chronicle* experience in this mode of treatment, and if so what are the results? Has it been proved to be beneficial, especially during the winter months? I am sure any particulars on this subject would be very interesting, as the culture of Orchids is increasing very much; and now it has been proved that they are not so difficult to grow as many imagine, their cultivation will become more general. Decaying cocoa-nut fibre or leaves must be quite a new element in the treatment of Orchids. *Alfred Gaut, Feb.* 11.

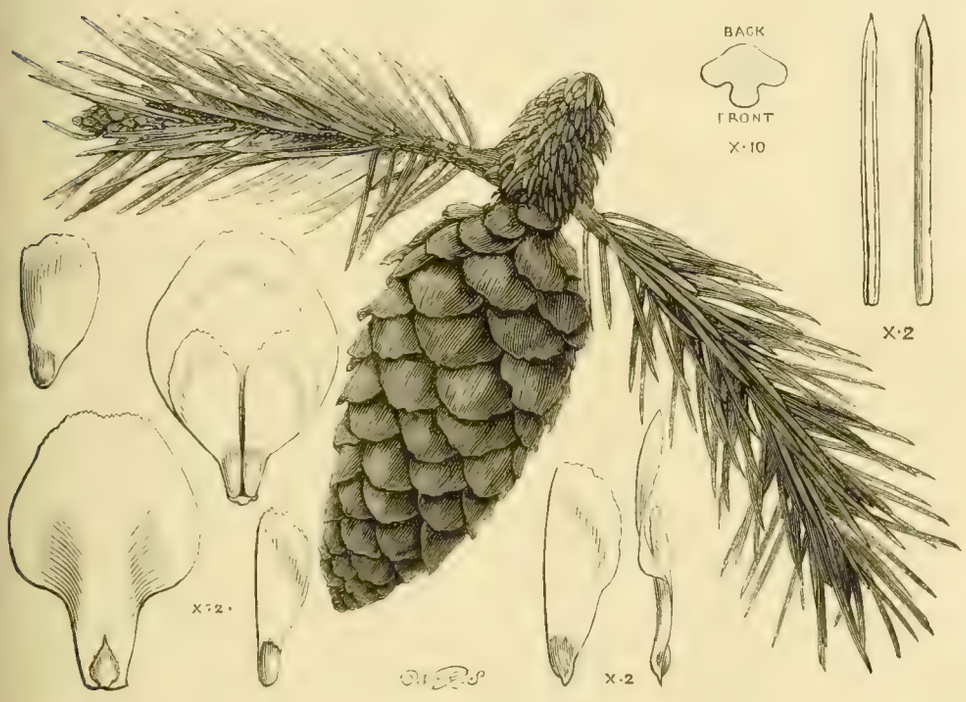

Fig. 43.—P. ALCOCKIANA (EXCELSA ACICULARIS, HORT.). (SEE P. 212.)

Croton Baronne James de Rothschild.—Of all ornamental-leaved stove plants—except perhaps certain Caladiums—the Crotons are assuredly the most remarkable. The Croton Baronne James de Rothschild is a plant of free growth and bold habit. It was obtained in 1875 by MM. Chantrier et Frères, horticulteurs, à Morte-fontaine (Oise), from a cross between C. Veitchii and C. maximus, and was exhibited by them for the first time in 1877 at South Kensington, being at that time from 2 to 3 feet high, but owing to its deficiency in character it did not receive a certificate, consequently it was grown on and propagated until 1878, when it was sent out for the first time, proving to be one of the finest leaved and most vigorous growing Crotons then in cultivation, the largest leaves attaining fully 18 inches in length and 5 to 6 inches in breadth. We have a plant at Ferrières that was taken as a cutting from the parent plant last spring, and which has already attained the height of 5 feet 6 inches, the leaves measuring from 1 foot to 18 inches in length and 4 to 6 inches in breadth. The colour consists of a dark green ground with beautiful rays of cherry-rose projecting from the middle vein, becoming gradually darker as the leaves develope. It forms a splendid contrast by gas or lamp light. This plant has been to the Castle twice, where it has stayed a fortnight each time. The last time it was taken was in November, and during that time, and in fact up till now, it has never lost a leaf—making it a very useful plant for the apartments, which is very unusual for this class of plants. This Croton, like all others of its genus, strikes very readily from cuttings, and amateurs possessing a stove should not be without it. *W. Lovell, au Fleurist de Ferrières-en-Brie.* [The foliage sent with this note was splendid, amongst the largest in size and richest in colouring we have yet seen. Eds.]

Twin-flowered Cypripedium insigne.—I send you a twin-flowered Cypripedium insigne as described by Mr. Hovey. It is cut from a plant which has borne fifty flowers, but this was the only stem which had two flowers out of that number. *G. J. Warren, Balcombe Place, Sussex.* [The flowers are very large and well developed. Eds.]

Rose Stock Pruners.—It is not easy to see how the somewhat primitive machine described by Mr. Smith at p. 182 can possess the power for removing large snags from Rose stocks, which the French machine exhibited by Messrs. Laing & Co. undoubtedly has; for, however cleverly harnessed to a bench the *sécateur* may be, it is dependent entirely on the length of the handle for lever power, and thus would remove the operator further from the blade, consequently out of position to skilfully manipulate his stocks. Does Mr. Smith really mean to say that his machine can be used in many cases in which the French machine could not possibly be employed? A pair of long-handled scissors strapped to a bench does not look like a portable affair, and unless for the purpose suggested by the French word in italics, one fails to understand its additional merits. On the score of economy—and in these times, when so many calls are made on our purses, it is needful to spend money with care—and having both seen and worked the machine figured in your journal, I can with confidence affirm that it is at once the most simple and effective ever introduced. *S. B., Forest Hill.*

Justicia flavicoma.—As "J. S." remarks, at p. 182, this species is seldom met with in plant stoves, a circumstance that is much to be regretted considering that we are so short of yellow-flowering stove plants. We grow a quantity of it here, and find it very useful and effective when associated with such plants as Begonias, Sericographis, Thyrsacanthus, &c. *T. W. S., Buxted Park.*

White Scale on Pines.—If Mr. G. Clark (see p. 122) will try the following plan, I will insure him success in getting rid of the scale. Pour 6 gallons of water into a tub, let it be boiling hot. Into this put 1 lb. of soft soap. Thoroughly dissolve the soap, and let it cool down till you can put your hands in it. Roll up your sleeves, put a few suckers in the tub, and, with a small stick and a piece of linen-rag tied on it, wash every scale off with the soapy water. The secret is in this—the thoroughly washing every scale off. A thin piece of lath, with a flat point, must be used to get the scale out from the angles of the leaves. After washing, the suckers must be placed so as to drain the water out of their hearts and from the angles of the leaves. Then mix soot and sulphur pounded fine, in equal parts, which will produce a dark green powder. Make an assistant hold up a sucker, and with a sulphur puff send the mixture down into the angles of the leaves, and all over the suckers. When dry pot the suckers. A dung frame or pit is a good place in which to give them a start. The mixture of soot and sulphur does not differ much in colour from the leaves of the Pine, so that it will hardly be noticed. As I have cleaned Pines myself as above indicated, I know it will answer, as I never had a scale after, and the cost is only a few pence. *W. Hutchison, Llwyndu Court.*

Strawberries.—I beg to inform Mr. Bridgman that the Strawberry plants in question were grown in the usual 32's or 7-inch pots, and that they were in no way selected as his query infers. My mode of culture is the usual one, and my plants were wintered outside plunged over the rim of the pot with leaves, and when the weather was severe a little hay was shaken over them. I have no shallow pits or perhaps these would be better; even then I would plunge them, as the roots are always in such a nice condition, and undoubtedly progressing. One point to be attended to when outside plunging is practised, is not to interfere with the

soil on taking the plant indoors until it is in a healthy and workable condition. I then clean and top-dress with loam, droppings, and soot. I also use this in potting, putting a pinch over the crocks as a preventive against the ingress of worms, also a dust on the surface of the soil as a stimulant about September. I prefer watering with weak manure-water in preference to a strong dose at intervals, and I do not know that there is any manure more safe than animal manure. Guano, if too strong, will cause the plants to languish and die. One point in Strawberry culture, and an important one, is the thinning of the fruit; and the operator must keep an eye to the best sets and the stout-stemmed fruits, as these will be the weighty ones on finishing. Several of the fruits on those plants, seven and eight, would turn the scale at half a pound, and some had fifteen and twenty good fruit on a plant perhaps not worth mentioning. I have had twenty-five excellent table fruit off a variety called the Prince of Wales, but have not had the pleasure of His Highness's company of late, but for the sake of old services I trust he is not discarded. *W. Ravenhill, Gr., Bowes Manor, Southgate.*

Humea elegans.—I can endorse Mr. Carlton's remarks at p. 182 regarding the suitability of this plant for the decoration of the conservatory in winter. Several years ago, while serving as improver under Mr. Dunn, at Heaton Park, Manchester, I assisted in lifting a few plants out of the flower-beds; these were potted and placed in the houses and conservatory, where they made a fine display for a long time. *T. W. S., Buxted Park.*

Soot on Boilers.—I am exceedingly obliged to "J. S." for his endeavour to enlighten me, but as neither his theories nor those of your correspondents whom I have already referred to accord with my experience, I beg of you, Messrs. Editors, to be so kind as to give me an answer to the question I have already asked. Will a kettle or boiler (for I presume they are alike in this respect) boil quicker or slower if coated with soot? Of clean or foul flues I have said nothing, nor need "J. S." Coke is a comparatively expensive fuel either for the tubular or almost every other form of boiler. The latter information I beg to send for "J. S.'s" special consideration. *T. Challis.* [Slower certainly. Eds.]

Grape Keeping.—Lady Downe's keep very well indeed, and Mrs. Pince's Black Muscat has kept fairly, but are more inclined to shrivel than the former; Muscat of Alexandria began to go bad before it was ripe, as also did Black Alicante. They were cut and bottled in the first week in the new year, and although we have not a proper Grape-room I may mention that we have kept up a supply longer than has been done in former years. *George Merritt, Gr., Kempton Hoo, Welwyn.*

Brussels Sprouts.—That the past ungenial season has been the cause of many failures in crops is beyond all doubt; but I think that in nine cases out of ten failures arise from growing an inferior strain, and not, as is often supposed, from any adverse procedure in the cultivation. Your correspondent's (Mr. Hinds) experience during the past summer tends to bear me out on this point. I have seen as good a crop of Sprouts from seed sown in the ordinary way with other greens, in the middle of March, as is possible to conceive, and yet we are being prompted by a correspondent in your last issue in a belief that seed sown in November is preferable to late sowings. That such may not be the case I will not dispute, but I very much question the advisability of such a course. From experience I find about the middle of the present month the best time to sow, for if sown earlier the plants are apt to get coddled, and a check must necessarily ensue which is unquestionably adverse to the well-being of the Brussels Sprouts. I always sow at the time above stated in a little heat, prick off as soon as the seedlings can be handled, retaining them in the same temperature close to the glass until established; then gradually hardening them off, and in two months from the time of sowing they are ready to be transferred to their growing quarters, which cannot be too liberally enriched. By this treatment I can, if necessary, commence picking about the middle of September. My crop thus treated last spring (in spite of the inclement season) has been all I could wish for, and I send a sample for your inspection. [Very good. Eds.]. I find Scrymgeour's (true) about the best, although a sort sent out by Messrs. Cutbush & Son, of Highgate, called Cutbush's Giant, is a grand one. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Sternbergia lutea, though a native of southern Europe, not extending in France northward of the Loire, is nevertheless a very hardy plant. Generally it flowers in September and October, but this year by exception it did not produce its flowers till nearly the middle of December, at the same time as the Christmas Rose. I have a border with some thousands of plants in full flower now (February 2). The thermometer went down here as low as 14° C. (6°.8 Fahr.), but neither the flowers nor the foliage are in the least injured. I attribute the retarded flowering of the Sternbergia to the want of heat and light in the dismal year 1879. It is a magnificent plant, doing well even in exposed places, but it prefers a dry and warm soil. Once planted it should not be disturbed, when it will multiply freely. My border has not been touched for fifteen years. Amaryllis Atamasco grows under the same conditions; one end of my border is filled with the plant, which produces its charming white flower in June and July. Its foliage is not injured by frost. *P. Joseph-Lafosse, Carentan, France.*

—— The yellow autumnal Crocus usually produces its flowers in the month of October, the flowers often preceding or coming up simultaneously with the leaves. I have it now in bloom (February 4), which ratifies the statement and answers the inquiry of your correspondents "J. S." and "A.," p. 120. I attribute the cause of its not producing its flowers at the usual period last autumn to the unfavourable state of the weather; the season was so continuously wet and cold, there was not sufficient heat in the soil to mature the bulbs in the summer, and the growth of the foliage continued on until the autumn. The present appearance of the flowers arises from the fact of their formation in the bulbs without being developed; they are now being forced up with the foliage, which is much later than usual, *i.e.*, the flowers and foliage of last October are only now being produced. I have no doubt that in warmer and drier seasons than 1879 this plant will resume its ordinary period of growth and blooming, proving the correctness of the description given of it by Messrs. Sutherland, Hemsley, and Vilmorin. *C. B. S., Jersey.*

Early Strawberries.—The want of sunshine during the past autumn would, it was hoped, terminate with the old year, but, so far as the present year has gone, it seems to be little improvement on its predecessor. We have now reached the end of the first week in February, and with the exception of a few hours upon two separate days we have been enveloped in comparative darkness. Early forcing, and especially Strawberry forcing, will have to be conducted with the greatest care, particularly where plants were potted rather late last autumn. It is a custom in many gardens to start the early vinery or Peach-house upon the same day in each succeeding year, and to start the first batch of Strawberries along with them. The treatment, as far as warmth and moisture is concerned, is seldom altered; the Vines are syringed according to orthodox rules, and the Strawberry plants are watered and syringed upon the same principle. In ordinary seasons this system of cultivation succeeds fairly well, but at the present time we have to calculate upon deficient maturation last autumn, and we are also face to face with a condition of the elements at the present time which will require constant and skilful attention in order to steer clear of untoward events. Some time ago I noticed symptoms in some of our earliest started plants which I knew augured no good, notwithstanding that they were kept in a temperature never exceeding 50° at night, and often falling as low as 40° at 6 A.M. The crowns seemed to be swelling quite naturally and the first young leaves began to unfold, but no flower-scape was visible. Upon a closer examination the flower truss was discovered rather behind time to my way of thinking. The house was then kept quite dry and the ventilators were opened more or less every day about 9 A.M. and kept open during the remainder of the day. Upon one or two rather bright days an increased circulation of air was admitted, and at the present time the flower-spikes are shooting up as promising as any one could desire, in advance of the leaves, a sure sign that Nature has had her time. I have no doubt that many beginners in Strawberry forcing have a large percentage of "blind plants" entirely owing to their own treatment. These blind crowns are the unhappy result of vague notions of forcing, forgetting that the work which is accomplished in a few bright days requires threefold in the time in dull weather. The reason why many people who fail with early Strawberries succeed later is because the internal development of the organs of fructification—although unseen—is so far accomplished that they readily yield to the influence of warmth when it is applied. The transition stage is passed, and with improved weather the work that required skill but a short time before gradually becomes a safe operation in the hands of the humblest tyro who can ventilate a house and use a watering-pot with anything like judgment. *W. Hinds, Canford.*

Transmutation in Cereals.—On the question of the changes of cereals referred to on p. 173, it may be interesting to note that it was published (and perhaps believed) in England long before Parkinson's time, whose account is quoted by Mr. Wilson. In the curious metrical translation of *Palladius on Husbandrie*, published in 1872 by the Early English Text Society "from the unique MS. of about 1420 A.D. in Colchester Castle," are these lines:—

"Tylle all thi felde, or all thy felde is lorne;
Thi Whete, a wonder, chaunging, thries sowe,
In lande to fatte, wol tourne into other corne,
And Rie of Whete ysowen wol up growe,
As thay that are expert in tilling knowe."
Book i., st. 24.

Henry N. Ellacombe, Bitton Vicarage.

Primula farinosa.—I am much obliged to Mr. Clapham for pointing out that the words of my note on P. farinosa might mislead. Instead of saying it is not a mountain plant, I should have said that, in order to thrive, it seems to want level bog and not mountain. I did not, however, mean to deny or doubt its doing well at an elevation of several hundred feet above the sea level; still, it is not a mountain plant in the sense in which such plants as Hieracium alpinum or Gentiana nivalis are mountain plants. In this respect it may be classed with the Droseras, and Pinguicula vulgaris, and Parnassia palustris, which are essentially bog plants, but accidentally mountain plants, because bogs and mountains are often associated. The sentence in question was worded as it is, because in a recent standard work on the British Flora I find "mountain pastures" given as the only habitat of P. farinosa, and I have elsewhere seen it called the "Mountain Primrose." I have never heard that it is confined to limestone soils, though I have seen it about here only on limestone. It is curious that it does not occur in the mountain limestone district of North Wales or North Derbyshire, where there are many spots which would seem exactly to suit it. Some seedlings of P. farinosa fertilised with pollen of P. japonica, raised in a garden here, produced flowers so nearly resembling those of P. amœna, that a good botanist to whom they were sent named them P. amœna. It must be observed that P. amœna is quite distinct from P. cortusoides amœna, with which it has lately been sometimes confused. *C. W. Dod.*

Staging Orchids.—Most Orchids are undoubtedly very beautiful, but I have repeatedly heard people remark on entering a house that everything around them appears so artificial and formal that their quaintness and beauty is to a great extent destroyed. If, instead of the straight stages, paths, and numerous rows of pots which continually meet the eye, Orchid-growers were to turn their attention more to the natural fernery style of arranging their plants it would, I think, be a step in the right direction. Let irregular rockwork of stones and burnt clay replace the iron and wood stages at present in use, and so formed that when the plants are in position but few pots can be seen. The stems of dead Tree Ferns, cut in lengths of from 1 to 4 feet, make capital stands to dot about, and I know of nothing which shows a suitable Orchid off to greater advantage. A Phalænopsis placed on one of these, standing in a carpet of moss, cannot be left unnoticed, because it looks so natural and refreshing. Pots made to represent the trunks of trees cut in different lengths, and the branches lopped off some inches from the stems and perforated numerously with holes, appear to me more suitable, and display the natural habits of the plants to greater advantage, than the smooth turned pots now in use. Blocks of this description were largely used ten or twelve years ago by Mr. Sherratt, then gardener to J. Bateman, Esq., Knypersley, in preference to wood, because there was no fear of fungus. In building a stage of rockwork of course it would be necessary to have the plants as near the glass as possible; but that would easily be done, and suitable places made where Orchids could to a certain extent occupy positions analogous to those they are found in by travellers and collectors. To give a finished appearance to the whole, and form a carpet, a liberal distribution of Adiantum cuneatum and Selaginella Kraussiana would prove the best subjects, as they are liable to but few insects. As Orchids are now arranged, we notice on entering a house a mass of bloom of every conceivable form and colour, and in our haste to see all at the same time we rush here and there, and in the end see—or at least remember—but little. But if we came upon their beauty by degrees, and in every corner something interesting was seen, and every projecting stone disclosed to view something grand, then would be kindled in every breast such an interest that the desire to know more of their history and culture would become irresistible. Take for instance a group of Cypripediums plunged in moss, and overhanging from a crevice a plant of Dendrobium Wardianum with say a dozen well-bloomed growths, each 4 feet in length, and no one would deny that the plants are seen to greater advantage than if the Cypripediums were standing on slates, and the Dendrobium hanging over a tile floor. *A. L. H.*

Art in the Conservatory.—I have read Mr. Adams' reply to my letter, and I am pleased to find

that when he gives the proper aspect of a span-roofed vinery as east and west his meaning is that it should be placed north and south. The phraseology is somewhat confusing and unusual, which has led me to attribute to it a different meaning. My reading of the article was taken from the *Building News*, where it appeared on January 16 and 23, and not from any of your gardening contemporaries, as Mr. Adams supposes. I regret that upon the other point referred to, my rules for obtaining the proper quantity of piping to keep up a given temperature, I am not able to agree with him. I pointed out in my former letter that the more elaborate rule given was copied from Mr. Hood's work. Mr. Adams says in his reply, "Taking the . . . simpler rule I gave." Will he be surprised to learn that this simpler rule is also copied from Hood, and is, as well as the other, more than forty years old (see *Hood*, first edition, 1837, pp. 17 to 25). Mr. Hood evidently was a man of great ability and research, to whom all horticulturists and heating engineers are much indebted, and as he himself, in his preface to the later editions points out, it is very unfair to borrow rules and tables from his work "without acknowledgment." Mr. Adams departs from Hood when he gives 26° as being low enough for ordinary calculations: Hood gives 10°. On the principle that the weakest link measures the strength of the chain, even 10° is not low enough. We have had in Roxburghshire and Berwickshire in December last a temperature of 15° below zero. Mr. Thomson, Clovenfords, if I remember rightly, registered 12° below zero; therefore it is necessary, in Scotland at least, to take a much lower figure than even 10°. In the winter of 1878-79 we had it repeatedly below zero, so that, instead of (as Mr. Adams says) experiencing this severe cold once in ten years, if so often, ten times in two years is nearer the truth; therefore, to take 26° Fahr. as our basis for calculating our heating apparatus when we have experienced a temperature of 30° or 40° lower is surely misleading. What the qualifications of Mr. Burden of Loughborough may be I know not, but have every reason to believe they are what is represented; at the same time I think Mr. Burden will not be slow to admit—as indeed all must admit who have looked at the subject—that the two rules quoted by Mr. Adams are, to say the least of it, contradictory to a large extent. Mr Adams gives another rule, but "neither in this does his witnesses agree." Let us apply this last rule of his friend's to the span vinery as formerly, with 1200 feet of glass = 1500 feet per minute. The rule, multiply the glass in feet (1500) by eleven times the required difference between the outside (always taken at 32°) and inside temperatures 70° (38°), and divide by fifteen times the intended difference between the temperature of the water (always 180°) and the air of the house (70°), 110°, thus — $38 \times 11 = 418 \times 1500 = 627{,}000 \div 110 \times 15 = 1650 = 380$ feet of pipe. Three rules are given—one gives 452 feet, another 380, another 270. But if we are to fix upon a temperature, say 26° to suit our rule, I have no doubt the figures may be made to correspond. I think, however, we should endeavour to find a rule to suit our temperatures rather than fix upon a certain temperature to suit our rules. And I hold that whatever our rules are—to be safe, at least for Scotland and the North of England—we must fix upon a point as low as zero. Allow me to say that I look upon Mr. Adams' paper as a most able and, as far as could be expected in the circumstances, an exhaustive treatment of the subject as a whole, from which no doubt good results will flow; and, notwithstanding anything said in either of my letters, I am very glad indeed to have had the opportunity of reading it. *A. D. Makenzie*, 2, *Grove Terrace, Edinburgh.*

Scirpus parvulus in Surrey.—Dr. E. de Crespigny has sent me specimens of the above plant, gathered last autumn on the banks of the Thames above Hammersmith Bridge. Mr. H. C. Watson confirms the name. The history of this species as a British plant is somewhat interesting; for many years it was supposed to be extinct, until Mr. A. G. More found it in Ireland in 1868. The following dates will show the long interval between its first discovery as a British species and the then quickly following records:

Near Lymington, Hampshire ..	1837 ..	Rev. G. E. Smith.
Mouth of the River Ovoca, Wicklow, Ireland!	1868 ..	Mr. A. G. More.
Little Sea, Studland, Dorsetshire!	1870 ..	Mr. Mansell-Pleydell.
Near Aveton Gifford, Devonshire	1878 ..	Mr. Archer Briggs.
Near Newton Abbot, Devonshire!	1879 ..	Mr. Archer Briggs.
Banks of the Thames, Surrey!	1879 ..	Dr. E. de Crespigny.

It is found in Europe from Gothland southwards, exclusive of Turkey and Spain (Hooker, *Student's Flora*), inland in Switzerland (Mr. H. C. Watson). *A. Bennett, Croydon.*

Plant Labels.—The use of petroleum-oil for dipping wood labels is also useful for preserving and painting them. I put some oil in a vessel and drop the bundle of labels into it, have ready beside me a lump of ground white lead, on to which I dab the label; one movement of the finger covers it with paint, and it is ready for use. *A. Booty, Rose Villa Nursery, Harrogate, Feb.* 4.

Uprooting of Conifers.—Mr. Culverwell (p. 182), in recommending the surface-dressing of the ground under these trees has, in my judgment, hit the right nail on the head, except that I do not agree with him in placing it round the stem or collar of the tree, as in many instances that would, if done indiscriminately, kill the tree. Surface-rooting trees like the Conifers are wonderfully benefited by soil placed over the roots, and if I remember rightly that veteran in the Pinetum, Mr. Frost of Dropmore, often surfaces his plants. Certain it is that it at once nourishes the roots and steadies the tree. Thirty years ago a good deal of levelling was done in the garden here, and 2 feet of soil had to be laid over the roots of a Cedar, bricks were placed round the tree 1½ foot clear of the stem, and then the earth was placed over the roots and up to this brickwork, but not a spadeful inside; the result is that it is now a magnificent tree of eighty summers. What a pity the Cedrus Libani and atlantica are not more planted: there is not a tree of the former 250 years old in this country, and yet what magnificent specimens one sees occasionally. But I must hark back to my surface-dressing: well, at the same time and place a quantity of soil had to be carted out into the park, it was spread round a deciduous tree, I forget whether Beech or Sycamore, but there was no protection to the collar of this tree, and the result was that it died the same summer; therefore my advice in planting Conifers is to plant high, then they can be surfaced with impunity without covering the collar. *J. Rust, Eridge Castle.*

Reports of Societies.

Royal Horticultural: *Feb.* 10.—At the annual general meeting of the Society, held on Tuesday, the President, Lord Aberdare, occupied the chair, the other members of the Council present being Messrs. Strickland, Lawrence, M.P., Grote, Denny, Webb, Clarke, Mason, and Hogg (secretary). The Assistant-Secretary, Mr. Jennings, having read the notices calling the meeting, as required by the charter, proceeded to read the minutes of the last annual meeting, which were duly confirmed and signed by the Chairman. Mr. John Lee and Mr. James F. West were then appointed scrutineers of the ballot, and on the motion of the President the report of the Council, which was published in our last issue (p. 184), was taken as read.

Lord Aberdare in moving the adoption of the report said with respect to the present position of the Society, that the Council considered it their duty to remain in possession of the gardens as long as they could, in order to protect the interests of the debenture-holders until the Chancery suit now pending between Her Majesty's Commissioners and the Society had been decided, as he believed it would be during the present month. What the results of the litigation in question might be, was of course very uncertain, and it was not advisable under the circumstances to further discuss the matter at present; but it was clearly the duty of the Society to leave no stone unturned to get the best terms they could both for the debenture-holders as well as themselves. With regard to the past year, it had been an unfortunate one all round, and doubly so in their case. The fortnightly meetings had, however, been of an unusually excellent character; still, the stars in their courses had fought against them; the Council had sowed liberally, but had reaped badly, their receipts not coming up to their expenditure by about £600. They had, however, some resources to fall back upon, which would enable them to start the year without any great burden upon their shoulders, but that would no longer justify them in running any risks. A good deal of the expenditure of the past year was of an exceptional character, and while the income derived from subscriptions had fallen off they had a set-off against this loss—a gain of about £200 more than usual derived from the sale of garden produce at Chiswick. The Society had also spent £200 more on medals than in the previous year, and the new printed list of Fellows, which was badly wanted, had cost them £60. The disastrous hailstorm on August 3 had also necessitated an expenditure of £140 at Chiswick to make good the damage, and they had been obliged to put in a new boiler to heat the large conservatory at a cost of £120. Still, with a proper regard to econony, he had no doubt they would this year be able to balance their accounts. With regard to the income derived from Fellows' subscriptions it should be remembered that they had suspended entrance-fees, and that the new Fellows had only to pay the annual subscription—a circumstance which he trusted would lead to an accession during the year of a greater number of new members. Alluding again to the Chancery suit, the President stated that it must not be inferred if the decision went against the Society that the severance of the connection between the Society and the Commissioners would necessarily follow, and concluded by moving the adoption of the report.

Mr. Guedalla, in a lengthy speech, wanting in point and cohesion, strongly deprecated the action of Her Majesty's Commissioners, and thought it would have been much better had they met a deputation from the debenture-holders, and discussed the points upon which the basis of a settlement of the claims of the latter could have been arrived at. He also referred to the action taken by Mr. Wills with reference to the proposal for holding an international horticultural exhibition this year, and blamed the Council for not supporting him, and the Commissioners for not granting the use of the gardens; on which point Sir Trevor Lawrence explained that at a meeting held to consider the advisability of holding the exhibition in question, a majority decided that it was inexpedient to do so; and Lord Aberdare stated, with reference to the supposed opposition of the Commissioners, that that body knew nothing about the matter.

After a few remarks from Mr. Wheble, the Chairman put the vote to the meeting, and the adoption of the report was carried unanimously. The balloting list for members of Council and office-bearers, nominated by the Council, was next declared to have been unanimously accepted by the Fellows; and Mr. W. B. Kellock asked a question with reference to the item in the balance-sheet referring to the life compositions; and further, whether the £100 paid to the Assistant-Secretary, as Editor of the *Journal*, formed part of Mr. Jennings' stipulated salary, or was in addition to it?

Lord Aberdare replied that as Mr. Kellock had been a former member of the Council he ought to know why the item referring to the life compositions appeared there now, as it had done during his membership, and with reference to the £100 that it formed part of Mr. Jennings' regular salary.

Mr. Liggins moved a vote of thanks to the Council for the action they had taken to defend the interests of the Society in the Chancery suit instituted by Her Majesty's Commissioners, which was seconded and carried unanimously; and the usual vote of thanks to the Chairman brought the proceedings to a close.

Scientific Committee.—Dr. Maxwell Masters, F.R.S., in the chair.

Ash Root.—The Chairman reported that he had examined the Ash root submitted to him at a former meeting, and had found that the main cause of the deformity was attributable to the great increase in thickness of the corky layers of the rind. No trace of fungus had been seen.

Phylloxera at the Cape.—Mr. MacLachlan stated that he had examined specimens sent from the Cape of diseased Vines, but without finding any trace of the insect. He adverted to the folly of indulging in panic, particularly where, as in this case, there was no basis for it. The Chairman remarked that it had been reported that the Cape Government had actually enacted or were about to enact a law absolutely prohibiting the importation of any living plants whatever beyond their frontier; and he suggested that the Council of the Society might be appropriately requested to take steps to urge on the Colonial Government the useless folly of such an enactment. Considerable discussion ensued, the Chairman and others giving their experience of the working of similar laws in Italy and Spain. Opinion was unanimous as to the futile character of such enactments, and as to their absurdity when applied to plants other than Vines, but as to official remonstrance on the part of the Society it was considered better to await full official information.

Peach Twigs and Galvanised Wire.—Mr. Hudson, gr., Gunnersbury House, Acton, sent some shoots of Peach trees, which had apparently been injured by being tied to galvanised wire. This is a subject upon which there has been much discussion. The specimens sent were referred to Dr. Hogg and the Rev. George Henslow for examination and report.

Specimens Shown.—By Mr. Rann: Flower-spike of Dasylirion glaucophyllum, and male spike of Encephalartos villosus. By Messrs. Veitch: specimens of Nepenthes bicalcarata (see p. 201). By Mr. Cannell: a Primrose, supposed to have originated in a cross between the English magenta-coloured hybrid Primrose and the Chinese form. The plant exhibited was of peculiar aspect, dwarf habit, and with small flowers. Some of the petals were lilac, others deep magenta, others variously blotched and spotted. The foliage and the stems were of the character of the Chinese form.

New Species of Crocus.—Mr. Maw then read his paper on this subject, and illustrated it with numerous exquisite coloured drawings. The paper will appear *in extenso* in the *Journal* of the Society, and is specially interesting, not only for the large number of new species described, but also for the valuable notes on structure and geographical distribution by which they were accompanied, and the discrimination

shown in the unravelling of the synonymy of the older and less known species.

Floral Committee.—Mr. Charles Noble in the chair. But few novelties of any value came before the committee to-day, and three certificates only were awarded. Mr. Bull contributed a choice little group, as usual, which included, besides Palms and other handsome foliaged plants, a small specimen of Psychotria cyanococca, with a cluster of small blue fruit; a flowering specimen, the first we have seen, of Tillandsia musaica; the pretty new Cymbidium Lowianum, with a spike of nine flowers; flowering plants of Lycaste Skinneri, and its varieties rubella and candida; Cattleya Trianæ var. Vesta, Odontoglossum cirrosum, &c. A Bronze Medal was recommended. From Messrs. James Veitch & Sons came an excellent group of Cyclamens, and a small collection of new plants, which included the new Bornean Nepenthes bicalcarata, two new hybrid Orchids, and one or two seedling Amaryllis. The Hon. and Rev. J. T. Boscawen, Lamorran Rectory, Probus, sent a seedling Amaryllis, named Beauty of Cornwall, a medium-sized, deep blood-red flower, with the margins of the segments wavy. Mr. Cannell brought up from Swanley individual flowers of twenty distinct varieties of Primula sinensis, though only a few of them were of first-rate quality. Mr. Cannell also showed a group of white Primula plants growing in 48-pots, bearing from three to four good trusses of flowers on each, and measuring across the top from 12 to 18 inches. They were in every respect admirable, and shown to-day to illustrate the virtues as a fertiliser of "Cannell's Invigorator," or food for plants. Mr. H. B. Smith, of Ealing Dean, showed several plants of the distinct and pretty pale rose-flowered Cyclamen persicum named Rosy Morn, which was certificated two years ago. Mr. Chambers, Westlake Nursery, Isleworth, showed a small but profusely flowered specimen of Cœlogyne cristata; and Mr. E. Wilson, gr. to T. Farmer Hall, Esq., Effingham House, near Leatherhead, showed a nicely flowered Dendrobium chrysotoxum. Messrs. Osborn & Sons, Fulham, showed a group of fine-foliaged and forced flowering plants. Cut flowers of Cineraria Webbiana, a rosy-purple-flowered species from the Canary Islands; and of the deep blue-flowered Salvia albo-cœrulea, were contributed by Mr. Green, gr. to Sir George Macleay; and of Maranta Warscewiczii, by Mr. Hudson, gr. to H. J. Atkinson, Esq., Acton.

New Plants Certificated.

First-class Certificates were awarded to Messrs. James Veitch & Sons, for Nepenthes bicalcarata, a Bornean species, introduced by Mr. Burbidge, and which is figured and described in another column (p. 200); for D. splendidissimum ×, a hybrid between D. heterocarpum and either D. macropyllum Huttoni or D. nobile, with sepals and petals cream-coloured and tipped with purple, and the lip yellow with a blackish-purple blotch at the base; and for Daphne Blagayana, a new Styrian species, with ivory-white sweet-scented flowers, arranged in a terminal cluster, immediately below being a circlet of small green leaves.

Fruit Committee.—Henry Webb, Esq. in the chair. The most interesting subject which came under the notice of this committee was a sample of new Black Hamburgh Grapes, shown by Mr. Stevens, of Trentham, good in size, and well coloured, accompanied by a sample of a late last year's crop of the same variety, which, although in an excellent state of preservation, were not to be compared with the former for flavour and appearance. To produce such Grapes in the second week in February, and especially in such a winter, is a most creditable performance, which we think deserves high praise, and something more than the Cultural Commendation that was awarded. Mr. L. Killick, Langley, near Maidstone, exhibited a collection of sixty varieties of Apples, all in excellent preservation, and most of them above the average quality of last season. The award of a Silver Knightian Medal was recommended. He also exhibited a nice dish of Vick's Criterion Tomato; and Mr. H. A. Mann, The Gardens, St. Vincent, Grantham, sent a sample of large Mushrooms.

The Weather.

London: *Barometer.*—During the week ending Saturday, February 7, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.37 inches at the beginning of the week to 30.33 inches by the evening of the 1st; increased to 30.46 inches by the morning of the 3d, and steadily decreased to 29.49 inches by the end of the week. The mean value for the week at sea level was 30.16 inches, being 0.13 inch below that of the preceding week, and 0.20 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 48° on the 7th to 44° on the 4th; the mean value for the week was 46°. The lowest temperatures of the air observed by night varied from 23¼° on the 2d, and 24¼° on the 5th, to 41° on the 7th; the mean value for the week was 31¼°. The mean daily range of temperature in the week was 14¾°; the greatest range in the day being 24° on the 2d, and the least 7°, on the 7th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Feb. 1, 35°, −3°.6; 2d, 35°.8, − 2°.9; 3d, 40°, + 1°.2; 4th, 35°.8, — 3°.1; 5th, 34°.4, — 4°.6; 6th, 42°.9, + 3°.8; 7th, 45°, + 5°.9. The mean temperature of the air for the week was 38½°, being ½° below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 97° on the 5th, 84° on the 2d, and 83° on the 4th; on the 3d the reading did not rise above 49°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 18° on the 2d, 20° on the 1st and 5th, and 21° on the 4th. The mean of the seven lowest readings was 27°.

Wind. — The direction of the wind was S.W. and its strength almost calm, except on the 6th and 7th, when it was moderately strong.

The weather during the week was somewhat fine, though generally dull, and the sky cloudy.

Very dense *fogs* were prevalent during the first part of the week, that on Wednesday night being unusually dense.

Rain fell on three days during the week; the amount measured was 0.34 inch.

England: *Temperature.*—During the week ending Saturday, February 7, the highest temperatures of the air observed by day were above 53° at Truro, Sheffield, Leeds, and Sunderland, and below 50° at Brighton, Blackheath (London), Norwich, Wolverhampton, and Hull; the mean value for the week from all stations was 51½°. The lowest temperatures of the air observed by night were below 30° at Truro, Brighton, Blackheath, Cambridge, Nottingham, Liverpool, Leeds, and Bradford, and above 35° at Plymouth and Sunderland; the mean value from all places was 29¾°. The extreme range of temperature in the week was above 25° at Cambridge and Leeds, and below 16° at Brighton and Plymouth; the mean range from all stations was 21¾°.

The mean of the seven high day temperatures was above 50° at Truro, Plymouth, Sheffield, Liverpool, Leeds, and Sunderland, and below 45° at Brighton and Wolverhampton; the general mean from all places was 48½°. The mean of the seven low night temperatures was below 35° at Blackheath, Brighton, Wolverhampton, Nottingham, and Leeds, and above 40° at Truro and Plymouth; the mean from all stations was 36½°. The mean daily range of temperature in the week was above 14½° at Blackheath and Leeds, and below 10° at Plymouth, Brighton, and Hull; the mean daily range from all places was 12°.

The mean temperature of the air for the week from all stations was 42°, being 3½° higher than the value for the corresponding week in 1879. The mean temperature was above 45° at Truro, Plymouth, and Sunderland, and below 40° at Brighton, Blackheath, Wolverhampton, and Nottingham.

Rain.—The amounts of rain measured at the several places varied from three-fourths of an inch at both Truro and Brighton, to two-hundredths of an inch at Sunderland; at Bradford no rain fell; the average fall over the country was 0.30 inch.

The weather during the week was generally dull and cold, and the sky cloudy. Dense fogs were prevalent everywhere.

Scotland: *Temperature.* — During the week ending Saturday, February 7, the highest temperatures of the air observed by day varied from 55¼° at Edinburgh and Leith, to 50° at Dundee; the mean value from all places was 53°. The lowest temperatures of the air observed by night varied from 35¼° at Edinburgh and Aberdeen, to 41° at Paisley; the mean value from all stations was 36¾°. The mean range of temperature in the week from all places was 16¼°.

The mean temperature of the air for the week from all stations was 45°, being 8° higher than the value for the corresponding week in 1879. The mean temperature was above 46° at Paisley and Leith, and below 45° at Dundee, Aberdeen, and Greenock.

Rain.—The heaviest falls of rain were 1.17 inch at Greenock and 0.91 inch at Perth; and the least falls were 0.05 inch at Aberdeen and 0.41 inch at Glasgow; the average fall over the country was 0.68 inch.

Dublin. — The highest temperature of the air observed by day was 56¾°, the lowest observed by night was 28½°, the extreme range was 28¼°, the mean was 45½°; and the fall of rain was 0.80 inch.

TABLE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, February 11, 1880.

Month and Day	Barometer: Mean Reading Reduced to 32 Fahr.	Barometer: Departure from Average of 18 years	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat = 100	Wind: Average Direction.	Rainfall.
Feb.	In.	In.	°	°	°	°	°	°	°		In.
5	29.89	+ 0.12	45.5	24.3	21.2	34.4	— 4.6	33.2	94	WNW: WSW	0.00
6	29.67	— 0.10	47.2	38.8	8.4	42.9	+ 3.8	41.8	97	S.W.: WSW	0.01
7	29.43	— 0.34	48.0	41.0	7.0	45.0	+ 5.9	44.4	98	S.	0.32
8	29.40	— 0.37	45.6	36.5	9.0	40.6	+ 1.5	38.6	93	S.W.: WSW	0.26
9	29.13	— 0.64	47.4	33.2	14.2	40.1	+ 1.0	39.0	96	S.S.W.	0.21
10	29.33	— 0.45	46.0	35.0	11.0	40.3	+ 1.3	37.6	90	WSW: WNW	0.00
11	29.61	— 0.18	47.6	33.0	9.6	38.0	— 1.0	34.9	89	N.N.E.	0.00
Mean	29.49	— 0.28	46.0	34.5	11.5	40.2	+ 1.1	38.5	94	W.: S.W.	sum 0.80

Feb. 5.—Fine and bright till evening, overcast afterwards. Some fog and hoar-frost in morning. Cold.
— 6.—Generally dull and cloudy. Fine at intervals in morning. Overcast, and a little rain at night.
— 7.—A dull, overcast, wet day. Miserable. Mild. Damp.
— 8.—Overcast in morning, fine bright afternoon. Smart shower of hail at 6 P.M. Cloudless afterwards. Heavy rain in early morning.
— 9.—Fine and bright till 2 P.M., overcast afterwards. Rain in early morning, and frequently in afternoon and evening. Strong wind.
— 10.—A fine bright day, partially cloudy. Cooler. Overcast at night.
— 11.—A dull, cloudy day. Cold. Fine and cloudless at night.

JAMES GLAISHER, F.R.S.

Variorum.

The Whistling Tree. — In Nubia and the Soudan groves of a species of Acacia are described as existing whose scientific appellation, as well as their popular name, is derived from a peculiar sound emitted by the branches when swayed by the wind. The Arabic name is the "soffar," or pipe; and the specific name of *fistula*, also meaning a pipe, has been given to it for the same reason as that which prompted the natives to give it its local designation. The tree is infested with insects, whose eggs are deposited in the young shoots and extremities of the branches. A sort of gall-like excrescence about an inch in diameter is produced at the base of these shoots, and when the larva has emerged from this nidus it leaves a small circular hole, the action of the wind in which causes it to produce a whistling sound like that produced by a flute, or by blowing into any hollow pipe. When the wind is violent, the noise caused by thousands of these natural flutes in a grove of Acacias is most remarkable. The description given by Dr. Schweinfurth of these "bladder-like galls" leaves it uncertain whether they are true gall-nuts or whether they are the secretion of a species of lac insect. The valuable Indian lac insect thrives on two or three species of Acacia, while one variety (the A. arabica) also produces a kind of pod or gall-nut, which is useful for tanning. In either case, these natural "whistles" of the Whistling Tree would form a valuable article of commerce if they could be easily and regularly collected and exported. *The Colonies and India.*

Enquiries.

He that questioneth much shall learn much.—Bacon.

Wood Suitable for Constructing Vineries, &c.—Will some correspondent oblige by furnishing me with his experience as regards the suitability of Scotch Fir and Larch for employment in the building of vineries, &c.? *W. J.*

Answers to Correspondents.

Apple Twigs: *E. W. S.* The specks you mention are natural formations to certain varieties. They are botanically "lenticels," consisting in local thickening of the cork layer of the bark. At least this is the interpretation we put on them, but we have not examined them microscopically.

Bedding-out: *Countryman.* You should apply at once to either Mr. Gibson, at Hyde Park; Mr. Roger, at Battersea Park; Mr. McIntyre, at Victoria Park; or Mr. Brown, at Regent's Park. This is the best time of the year for making the change you propose.

Clematis indivisa: *R.* It may be propagated by grafting on the roots in March.

CROQUET GROUND: *A. B.* Sow the ground with an admixture of good grasses, not with any one kind. The sorts we should recommend are Lolium perenne tenuis, Poa trivialis, Cynosurus cristatus, Festuca ovina and duriuscula, Trisetum flavescens, and Agrostis stolonifera, with a little Dutch Clover. If these are thoroughly mixed over the ground they will soon produce a good turf, but you must give it time to acquire compactness of growth.

"ESTATES ROLL": *W. P.* Published by Messrs. Dowsett & Woods, 70, Lincoln's Inn Fields, W.C.

FORESTS OF SOUTH AFRICA: *J. D.* You will get much information from the Rev. Dr. Croumbie Brown's books on *Forests and Moisture* (Oliver & Boyd), and on the *Hydrology of South Africa* (King & Co.).

NAMES OF FRUIT: *Veritas.* We do not recognise your Apple.—*A. O. E.* 1, Belle Apres Noel; 2, Franc Réal d'Hiver; 3, Beurré Diel; 4, Beurré de Rance; 6, Glou Morceau.

NAME OF FUNGUS: *J. Hart.* The fungus from Kingston, Jamaica, is Polyporus lucidus, which is almost cosmopolitan. *M. J. B.*

NAMES OF PLANTS: *T. H. Meggy.* One of the many forms of Ilex Aquifolium, allied to maderense.—*W. Powell.* Helleborus olympicus; one of the earliest blooming sorts.—*H. J. Ross.* Your names appear to be correct.—*J. C.* 1, Adiantum curvatum; 2, Selaginella Martensii; 3, Eranthemum aureo-reticulatum.—*T. P. G.* Begonia semperflorens; Amomum Cardamomum.—*Enquirer, Haydock.* 1, Cattleya labiata; 2, sent to Prof. Reichenbach for identification; 3, Angræcum eburneum.—*H. C.* 1, Drosera binata; 2, Lycopodium varium; 3, Grevillea buxifolia; 4, Drosera peltata; 5, Darwinia fascicularis; 6, Xerotes glauca.

CATALOGUES RECEIVED:—G. and W. Yates (28, Market Place, Manchester), Descriptive Catalogue of Vegetable and Flower Seeds.—B. K. Bliss & Sons (34, Barclay Street, New York), Illustrated Handbook for the Farm and Garden.—Vilmorin, Andrieux & Co. (4, Quai de la Megisserie, Paris), General Catalogue of Vegetable and Flower Seeds.—H. Cannell (Swanley, Kent), Illustrated Floral Guide for 1880.—Thomas Imrie & Sons (Ayr, N.B.), Catalogue of Vegetable and Flower Seeds, Gladioli Roots, Florists' Flowers, &c.—Makenzie & Moncur (Upper Grove Place, Edinburgh), Illustrated Catalogue of Horticultural Buildings, Heating Apparatus, &c.—James Yates (29, Little Underbank, Stockport), Descriptive Catalogue of Select Vegetable and Flower Seeds.—John A. Bruce & Co. (Hamilton, Canada), Illustrated and Descriptive Catalogue of Seeds.—Cole & Brothers (Pella, Iowa, U.S.A.), Illustrated Catalogue and Guide to the Flower and Vegetable Garden.—John Sherratt (Knypersley Nursery, Biddulph, near Congleton), Descriptive Catalogue of Vegetable, Farm, and Flower Seeds.

COMMUNICATIONS RECEIVED.—S. P. O.—W. T. D.—M. I.—G. S. (Jamaica).—W. D.—J. R.—E. W. B.—F. S. & Co.—F. A. N.—R.—J. S.—A. O.—G. H. P.—C. F.—P. M'K.—C. R.—J. S. C.—H. J. Murton.—A. M.—J. Hart.—S. T.—R, D.—R. W.—E. B.—H. C.—M. S.—J. V. & S.

Markets.

COVENT GARDEN, February 12.

Trade has been very quiet during the week, and the demand for any but the best class of goods has been slow. American Apples still arrive in large quantities, but not of such satisfactory quality as they have been. Good samples of home-grown cooking varieties are in request. Large consignments of St. Michael Pines have been reaching us, prices realised being exceptionally low. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	9 0–18 0	Ficus elastica, each	2 6–15 0
Azaleas, per dozen	30 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–18 0	Fuchsias, per dozen	12 0–18 0
Bouvardias, per doz.	12 0–24 0	Hyacinths, per doz.	9 0–18 0
Cinerarias, per doz.	9 0–18 0	Myrtles, per doz.	6 0–12 0
Cyclamen, per dozen	12 0–30 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	9 0–18 0
Dracæna terminalis	30 0–60 0	Primula, single, per dozen	4 0– 9 0
— viridis, per doz.	18 0–24 0	Solanum, per dozen	9 0–24 0
Erica gracilis, per dozen	9 0–18 0	Tulips, 12 pots	8 0–12 0
— hyemalis, p. doz.	12 0–30 0		
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

CUT FLOWERS.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 0	Mignonette, 12 bun.	6 0– 9 0
Arum Lilies, per dozen	6 0–12 0	Narcissus, Paper-white, 12 spikes	2 0– 4 0
Azalea, 12 sprays	1 0– 3 0	Pelargoniums, 12 spr.	1 6– 3 0
Bouvardias, per bun.	1 0– 4 0	— zonal, 12 sprays	0 9– 2 0
Camellias, per doz.	3 0–12 0	Poinsettia, 12 blms.	3 0– 9 0
Carnations, per dozen	1 0– 3 0	Primula, double, per bunch	1 6– 3 0
Cyclamen, 12 blms.	0 4– 1 0	— single, per bunch	0 6– 1 0
Epiphyllum, 12 blms.	0 6– 1 6	Roses (indoor), doz.	4 0–12 0
Eucharis, per doz.	6 0–12 0	— Roses, Fr., doz.	2 6– 6 0
Euphorbia, 12 sprays	3 0– 6 0	Spiræa, 12 sprays	2 0– 4 0
Gardenias, 12 blms.	12 0–24 0	Tropæolum, 12 bun.	1 0– 3 0
Heliotropes, 12 sp.	0 6– 1 0	Tuberoses, per dozen	4 0– 6 0
Hyacinths, 12 spikes	6 0–12 0	Tulips, 12 blooms	1 0– 3 0
— small	3 0– 6 0	Violets, Fr., per bun.	5 0– 7 6
— Roman, 12 spikes	2 0– 4 0	White Lilac, Fr., per bundle	6 0–10 0
Lily of Val., 12 spr.	1 0– 4 0		

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Lemons, per 100	3 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– ..	Pears, per dozen	3 6– 6 0
Grapes, per lb.	2 6– 8 0	Pine-apples, per lb.	2 0– 3 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0–10 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz.	3 0– 4 0
— English, p. 100	15 0– ..	Mint, green, bunch	2 0– ..
— French, per bun.	7 0–25 0	Onions, per bushel	8 0– ..
Beet, per doz.	1 0– 2 0	— Spring, per bun.	0 6– ..
Brussels Sprouts, lb.	0 6– ..	Parsley, per lb.	1 6– ..
Cabbages, per doz.	1 0– 2 0	Peas, per lb.	1 0– ..
Carrots, per bunch	0 8– ..	Potatos (new), per lb.	0 3– 0 9
— French, per lb.	0 6– ..	Rhubarb (Leeds), per bundle	0 9– ..
Cauliflowers, per doz.	2 0– 5 0	Seakale, per punnet	3 0– ..
Celery, per bundle	1 6– 4 0	Shallots, per lb.	0 6– ..
Chilis, per 100	3 0– ..	Spinach, per bushel	5 0–15 0
Cucumbers, each	1 6– 3 0	Tomatos, per dozen	3 0– ..
Endive, per score	4 6– ..	Turnips, new, bunch	0 6– ..
Garlic, per lb.	0 6– ..		
Herbs, per bunch	0 2– 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 130*s.* to 190*s.* per ton. German produce is making from 6*s.* to 7*s.* per bag.

SEEDS.

LONDON: *Feb.* 11.—Messrs. John Shaw & Sons, 37, Mark Lane, state that nothing new or interesting has occurred this week in connection with the trade for foreign seeds. As regards red Clover the supply continues abundant, but the demand is meagre. From the Board of Trade returns, just published, it appears that the imports into the United Kingdom of Clover and grass seeds amounted during the past month to £99,967, against £78,153 for January, 1879. There is no quotable variation in either Alsike or white Clover. Trefoils are quiet. Perennial and Italian Rye-grasses firm. For Tares there is a brisk sale at full rates. Bird seeds meet a slow inquiry. Haricots, Lentils, and Peas continue cheap.

CORN.

The trade at Mark Lane on Monday was quiet, but the tone a trifle firmer. The better qualities of English Wheat moved off quietly on former terms, and foreign Wheat was held for full prices. Barley was dull, especially feeding qualities. Malt was quiet, and without alteration. Oats were a trifle firmer than on Friday, but on the week there is a reduction of about 3*d.* per quarter. Maize showed no material change. Beans and Peas were dull, and quotations ruled in buyers' favour. The flour market was inactive, and prices were somewhat easier as compared with Monday se'nnight.—Trade was steady on Wednesday. The holders of Wheat were rather firm, and business altogether was quiet. Barley was very slow of sale, as also was Malt. Oats and Maize found few buyers, and prices were much the same as on Monday. Beans, Peas, and flour were taken off to a limited extent on former terms.—Average prices of corn for the week ending Feb. 7:—Wheat, 44*s.* 2*d.*; Barley, 36*s.* 10*d.*; Oats, 21*s.* 3*d.* For the corresponding period last year:—Wheat, 38*s.* 1*d.*; Barley, 35*s.* 7*d.*; Oats, 20*s.*

CATTLE.

At the Metropolitan Market on Monday trade in beasts was excessively dull, prices being also lower for all kinds, and many inferior lots remained unsold. Trade in sheep was very dull, and only for choicest qualities were our top quotations obtained. Calves were scarce and dear. Quotations:—Beasts, 4*s.* to 4*s.* 8*d.*, and 5*s.* 2*d.* to 5*s.* 8*d.*; calves, 5*s.* to 6*s.* 8*d.*; sheep, 4*s.* 8*d.* to 5*s.* 4*d.*, and 5*s.* 8*d.* to 6*s.* 6*d.*; pigs, 3*s.* 8*d.* to 4*s.* 6*d.*—Thursday's cattle trade was in a dull and weak state. Supplies were only moderate, but sufficient for the demand. The tendency throughout was adverse, both as regards beasts and sheep.

HAY.

Tuesday's Whitechapel Market report states that superior fodder was very slow of sale, but prices showed no material change. Prime Clover, 100*s.* to 124*s.*; inferior, 70*s.* to 95*s.*; prime meadow hay, 80*s.* to 94*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 37*s.* per load.—On Thursday there was a moderate supply of hay and straw on sale. The trade was dull, but there was no material change in prices.—Cumberland Market quotations:—Superior meadow hay, 95*s.* to 105*s.*; inferior, 40*s.* to 76*s.*; superior Clover, 115*s.* to 126*s.*; inferior, 75*s.* to 95*s.*; and straw, 34*s.* to 40*s.* per load.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that the demand for all sound Potatos remains pretty good, and prices may be quoted firm. Scotch Regents, 146*s.* to 165*s.*; do. Champions, 140*s.* to 150*s.*; Lincoln Regents, 140*s.* to 155*s.*; Victorias, 160*s.* to 190*s.* per ton. German reds, 6*s.* 6*d.* to 7*s.* 6*d.* per bag; Belgian kidneys, 6*s.* to 6*s.* 8*d.*; French whites, 4*s.* 9*d.* to 5*s.*—Last week's imports into London were 390 bags from Malta, 439 bags from Rotterdam, 537 bags from Dantzic, 3189 bags from Hamburg, and 2763 barrels from Nova Scotia.

Government Stock.—The closing price of Consols on Monday was 97⅞ to 98 for both account and delivery. The same figures were recorded on Tuesday and Wednesday. Thursday's final quotations were, for the account, 97 15/16 to 98 1/16, and for delivery, 98⅞ to 98.

Wandsworth Common and Garret Lane Nurseries.

R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.

All goods delivered free on rail in London or at own residence within six miles of the Nurseries.

CATALOGUES free by post on application.

Kent, the Garden of England.

COB NUTS, fine Kentish; Kentish PLUMS, CHERRIES, PEARS, DAMSONS and APPLES; specimen MULBERRIES, large AUCUBAS, large LIMES, YUCCAS, and the finest general stock of FRUIT TREES in the Kingdom, some 200,000 to choose from.

General Descriptive FRUIT LIST on application.

The Trade supplied.

THOS. BUNYARD AND SONS, Old Nurseries, Maidstone.

SPECIAL OFFER to the Trade.

ASH, Weeping, 8 to 10 feet stems, good heads, 18*s.* to 21*s.* per dozen.
THORNS, Paul's new Double Scarlet, Standards, 10*s.* per dozen.
,, Paul's new Double Scarlet, Pyramids, 7*s.* per dozen.
CHESTNUT, Horse, fine trees, 8*s.* per dozen.
BEECH, Purple, 7 to 8 feet, 15*s.* per dozen.
LIME, White-leaved (Tillia alba), grafted, 10 to 12 feet, 15*s.* per dozen.
,, Common, 10 to 12 feet, 12*s.* per dozen, 80*s.* per 100.
LABURNUMS, 8 to 10 feet, 8*s.* per dozen, 50*s.* per 100.
ELMS, of sorts, 4 to 6 feet, 3*s.* per dozen, 20*s.* per 100.
POPLARS, of sorts, 7 to 9 feet, 6*s.* per dozen, 40*s.* per 100.
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BERBERIS AQUIFOLIA, 18 inches, 7*s.* 6*d.* per 100.
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SYCAMORES, 10 to 15 feet, 9*s.* per dozen, 60*s.* per 100.
CHERRIES, Morello, dwarf, 1-yr. cut backs, 35*s.* per 100.
MULBERRY, Standards, 30*s.*, 42*s.*, and 60*s.* per dozen.

A few large trees, price on application.

KINMONT AND KIDD, Exotic and Vauxhall Nurseries, Canterbury, Kent.

New Hardy Hybrid.

GLADIOLUS LEMOINEI and MARIE LEMOINE.

Price for strong bulbs, 12 francs; do., middle-sized, 7 francs.

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APPLES, Pyramid, extra strong and well rooted, 40*s.* per 100.
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CHERRIES, Standard trained, PLUMS, Standard trained, PEARS, Dwarf trained, } Prices and sorts on application.
SPRUCE, Norway, 2 to 3 feet, very bushy and well rooted, 40*s.* per 1000.
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To the Trade.

MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.

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WILLIAM CROWDER has to offer:—

ALDER, 2 to 3 feet and 3 to 4 feet.
BEECH, 2 to 3 feet and 3 to 4 feet.
ELM, 3 to 4 feet, 4 to 5 feet, and 5 to 6 feet.
SYCAMORE, 2 to 3 feet, 4 to 6 feet, and 6 to 8 feet.
CHESTNUT, Horse, 3 to 4 feet, 6 to 8 feet, and 8 to 10 feet.
LIMES, 4 to 6 feet, 6 to 8 feet, and 8 to 10 feet, fine.
POPLAR, Black Italian, 2 to 3 feet and 3 to 4 feet.

To the Trade.

Thimbleby, February 3, 1880.

Windsor Nurseries, Putney, S.W.

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S. MAHOOD AND SON have to offer a large stock of HARDY and ORNAMENTAL SHRUBS and TREES, in great variety, comprising Hollies, Cupressus, Thujopsis, Cedrus Deodara, Box Trees, &c., 6 to 8 feet high, good specimens; a large quantity of smaller Shrubs, Aucubas, Portugal Laurels, &c.; several thousand Ivies, from 4 to 8 feet, good strong plants in pots. All in good condition for moving, and at low prices.

An inspection invited.

TREES for AVENUE, PARK, or STREET PLANTING.

ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
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LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
,, Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.

They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.

The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.

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100 Acres to select from.

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Our strain of Doubles will produce some splendid varieties, including fringed, of immense size and very full, having been hybridised and saved from the new varieties which we shall send out this spring. For descriptions, see the *Garden Oracle* for 1880. Doubles, sealed packet, 200 seeds, 5s.

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Fresh seeds in packets (post-free), at 1s. each, or 6s. per pound.

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S. BIDE can still offer good strong Standard, Half-Standard, and Dwarf Roses—all first-class varieties.

HOLLIES, Gold and Silver Variegated, 1½ to 3 feet.
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PLUMS, PEACHES, and NECTARINES, dwarf-trained.
ASH, stout, 2 to 3 feet and 3 to 5 feet.
HAZEL, 2 to 4 feet.
BIRCH, 4 to 6 feet.

Send for prices of the above to
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Market Gardens, Biggleswade, Beds.

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P.S. There being no reliable seed of last year's growth, Mr. E. can strongly recommend the above, being all grown by him in 1878, and can be depended upon for producing a good plant.

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LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.

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COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.

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Write for our NEW PAMPHLET, post-free.

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SEED BAGS and SACKS. Specially prepared Sewing or Tying, White or Tarred TWINE, ROPES, LINES, &c. NETTING and SHADING CANVAS. RICK CLOTHS and WATERPROOF COVERS of all descriptions.

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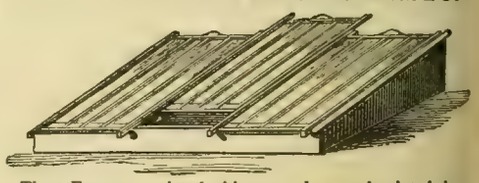

These Frames are glazed with 21-oz. glass, and painted three coats best paint. The frame is 24 inches high at the back and 13 inches at front; sides are 1¼ inch thick, and the bars of the lights 2 inches deep. The wood used is best selected red deal. Each light has an iron strengthening rod and handle. No brickwork is required for these Frames.

1-light FRAME,	4 feet by 6 feet,	£2	0	0
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NURSERYMEN FOR FOREST, ORNAMENTAL, AND FRUIT TREES, SHRUBS, AND ALL KINDS OF HOUSE PLANTS.

THE SCOTTISH CHAMPION POTATO.

THE CHAMPION POTATO has been most appropriately named, for, in Scotland at all events, it has thoroughly beaten every other variety in disease-resisting properties, and has lately been lifted at the rate of 10 to 12 tons an imperal acre, grown as an ordinary field crop. Having paid much attention to the Champion since it first appeared, we can fully endorse all that has been said in its praise, and certainly the past unfavourable season has proved it to be the most valuable introduction of the last few years. It originally came from Forfarshire, and, after trial, was recommended in the Lawson Seed List of 1875. In general appearance it comes between the Scotch Regent and the Irish Rock, embodying the good qualities of the former and the hardy constitution of the latter. Like other Potatos, its eating quality varies according to circumstances as regards soil, climate, and cultivation, but it may safely be classed among good table sorts. The Champion is a strong, rank grower, and should be allowed a fourth more space at least than that which ordinary kinds require in planting. It is, perhaps, the latest field Potato to ripen, the haulm remaining fresh when that of all others is withered. It should, consequently, be planted earlier than is usual for late sorts generally in order to do it justice. It will grow remarkably well on poor soils where other kinds would not succeed, and altogether it is highly recommended for a main crop in every garden and farm. It cannot, however, be too prominently kept in view that to fortify its disease-resisting character a thorough change of seed is necessary.

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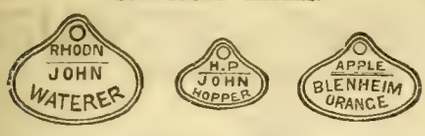

The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

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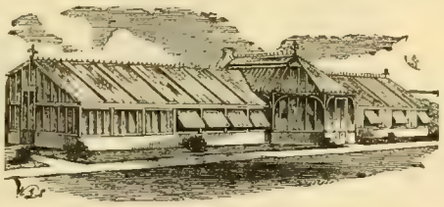

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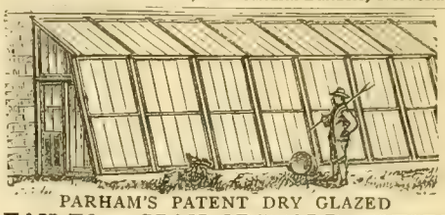

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TIFFANY, No. 1, 3s. 6d.; No. 2, 4s. 6d. per piece of 20 yards long, 38 inches wide. Mineralised, 6d. per piece extra.
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SOLE MANUFACTURERS OF
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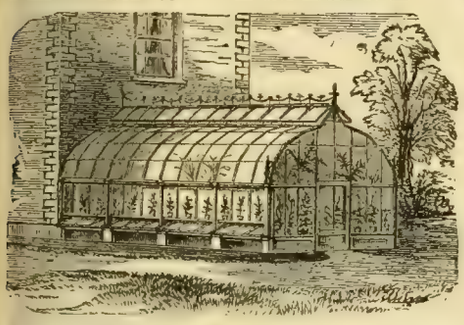

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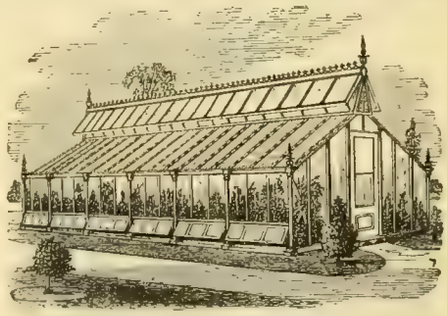

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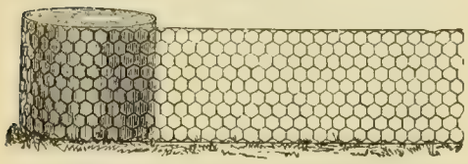

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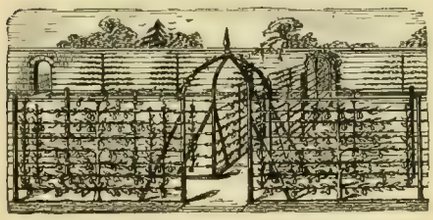

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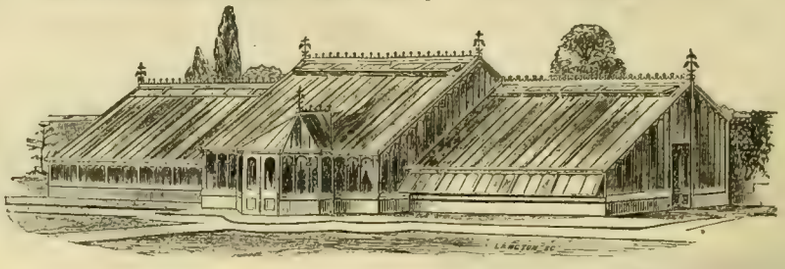

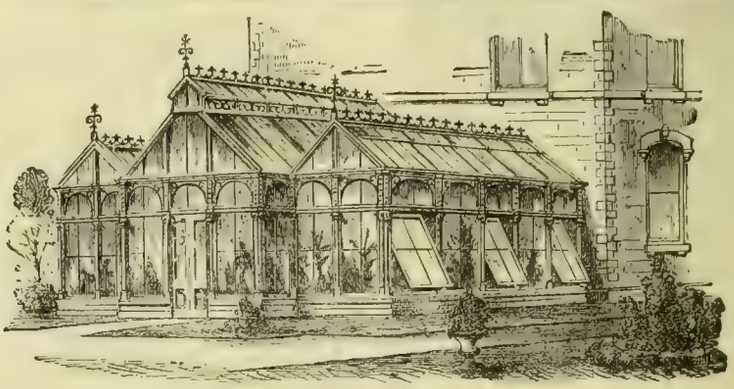

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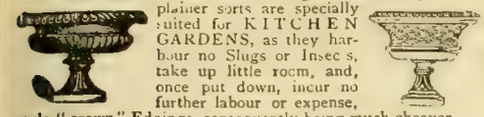

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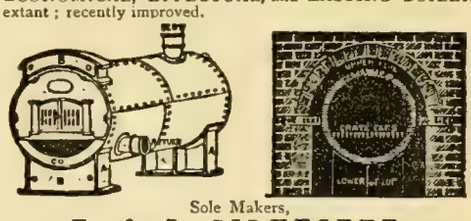

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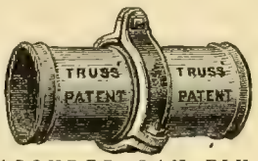

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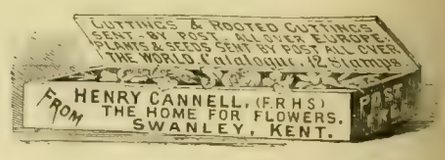

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THE

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PHŒNIX RECLINATA (true), the finest and hardiest of all table Palms, strong 1-yr. seedlings, in store pots, 24s. per 100, £10 per 1000. Also LATANIA BORBONICA, seedlings, in store pots, 12s. per 100, £4 per 1000 Apply to
JEAN NUYTENS VERSCHAFFELT, Ghent, Belgium.

LARGE ORANGE TREES FOR SALE.—A Gentleman who is removing from his present residence wishes to Dispose of FOUR LARGE ORANGE TREES in Pitch Pine Tubs. The Trees are 5 feet 6 inches high, the stems being 18 inches, and the heads are 4 feet across. The tubs are 2 feet 6 inches deep and 1 foot 10 inches square. Apply to
W. STRAPP, Esq., The Grange, Crawley Down, Sussex.

To Seed Merchants

PLAIN CRESS.—A few Quarters, of good colour and growth, to be disposed of. Sample and price on application to
WOOD AND INGRAM, Nurserymen, &c., Huntingdon.

STOCK PLANTS of VERBENAS.—We have as usual a large stock of the above, which for vigour and freedom from disease cannot be surpassed; they are very bushy, and bear already large quantities of clean healthy cuttings. Trade price, 16s. per 100, or 140s per 1000.
A List of 50 sorts, also DAHLIAS in Pot-roots, may be had on application to
KEYNES AND CO., Nurserymen, Salisbury.

PHEASANT-EYED NARCISS.—Bulbs of this sweet-scented Narciss 10s. per bushel, 6s. per half bushel, 3s. 6d per peck; also Double Narciss, 5s. per peck. Terms cash with order. Package free. Post-office Orders payable Vauxhall Cross.
J. E. ALDERSON, Langley Lane, South Lambeth, Surrey.

New Rare and Choice Hardy Perennials.

SPRING CATALOGUE of the above is in course of preparation, and will be posted to my Patrons as soon as issued, post-free to all Applicants.
THOMAS S. WARE, Hale Farm Nursery, Tottenham, London.

Special List of Cheap Ferns.

THE ABOVE SPECIAL LIST of a large number of varieties of FERNS and SELAGINELLAS, offered at very low prices, will be forwarded on application. Ferns being our Speciality, and having an immense stock, we are able to supply them at the most reasonable prices.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

Important.

RASPBERRY CANES.

MR. R. BATH has now but a few thousand of his highly renowned Fastolf remaining for Disposal. 20s per 1000; sample 100, 4s. Post-office Order or Cheque with order. No deliveries made in any case without a previous remittance. Crayford, Kent.

To the Trade

"PRIDE OF ONTARIO" POTATO.

H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.
Seed Growing Establishment Wisbech.

IN EXCHANGE for other PLANTS, a quantity of root stems of DRACÆNAS TERMINALIS, COOPERI, and INDIVISA.
T. J. HART, Castle Gardens, Parsonstown, Ireland.

EUCHARIS AMAZONICA.—Twenty-four Pots to be SOLD or EXCHANGED for ROSES. Apply to Z, Messrs. Hogg & Robertson, 22, Mary Street, Dublin.
Those persons who replied to a previous advertisement, please apply again to the above address.

Floral Commission Agent.

W. CALE is open to receive communications from the Trade and others, for a regular supply of choice CUT FLOWERS; best quality only.
13, James Street, Covent Garden, W.C.

Marechal Niel Roses.

WANTED, supply weekly of good CUT BLOOMS of TEA ROSES and other CHOICE FLOWERS. State price to
PETER Mc KENZIE, Florist, 1, Gordon Street, Glasgow.

WANTED, CUT MAIDENHAIR FERN. Cash by return of post.
W. F. BOFF, 203, Upper Street, Islington, N.

WANTED, to Exchange for, or to Purchase PETUNIAS of all kinds, either as Plants or Cuttings; the same with BEDDING CALCEOLARIAS.
H. CANNELL, Swanley, Kent.

Hardy Herbaceous Plants.

WANTED, a quantity of HARDY HERBACEOUS PLANTS. Lists, with prices per dozen, for good strong specimens, to the Secretary, Botanic Gardens, Regent's Park, London.

WANTED, a few Thousand AMERICAN TUBEROSES.—Must be very fine roots.
W. F. BOFF, 203, Upper Street, Islington, N.

WANTED, THYMUS CITRIODORUS AUREO-MARGINATA.—Please state the price per 100 for good clumps to
H. APPLEBY, Box Hill Nurseries, Dorking, Surrey.

WANTED, AUCUBA JAPONICA, CEDRUS DEODARA, PRUNUS, LAUROCERASUS, CAUCASICA, COLCHICA, ROTUNDIFOLIA, LUSITANICA; THUJA GIGANTEA, RHODODENDRON (hybrids, named sorts).—State sizes and lowest prices to
C. J. BLACKITH AND CO., 129, Lower Thames Street, London, E.C.

Larch Firs.

WANTED, good Transplanted LARCH, 1½ to 2, and 2 to 3 feet. Samples and price to
MAURICE YOUNG, Milford Nurseries, Godalming.

Lancashire Gooseberries.

WANTED, Plants or Cuttings. State varieties and price to
STUART, MEIN AND ALLAN, The Nurseries, Kelso, N.B.

WANTED, JERUSALEM ARTICHOKES.—Send price and quantity to
JAMES DICKSON AND SONS, Newton Nurseries, Chester.

WANTED, Strong SEAKALE, and JERUSALEM ARTICHOKES.
E. COOLING, Derby.

WANTED, a quantity of LETTUCE PLANTS, Autumn sown. State quantity, varieties, and price to
H. GODFREY, Nurseryman, Stourbridge.

Dynamite.

WANTED, to blow up 300 large Tree Roots. Any one accustomed to such work can write and state terms, either with or without cost of material, to
Mr. STANTON, Park Place, Henley-on-Thames.

How to Make a Lawn.

SEE

SUTTON'S TREATISE on MAKING NEW and IMPROVING OLD LAWNS.
Gratis and post-free on application.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

SPIRÆA PALMATA.—The largest and best stock in Europe, 10s. 6d., 15s., 20s, and 25s. per 100. SPIRÆA JAPONICA, for forcing, the finest possible clumps.
CHARLES NOBLE, Sunningdale.

SPRUCE FIRS.—Many thousands, 2, 3, 4 and 5 feet. Stout, well furnished, and good rooted.
ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

To the Trade and Others.

S. BIDE has to offer a very fine lot of 2-yr. Seedling SCOTCH FIR (very scarce this season), sample and price of which will be forwarded on application to
S. BIDE, Alma Nursery, Farnham, Surrey.

Quicks—Quicks.

THORN QUICKS.—About 60,000 good strong, 3-yr., cut back and transplanted last Spring, to be sold at 12s per 1000. Apply to
WM. BRAY, Nurseryman, Okehampton.

QUICK, several thousand extra strong, 8-yr. transplanted; large LARCH, 6 to 15 feet; SCOTCH FIR and CHESTNUTS, 10 to 20 feet. Price on application.
M. LEWIS, The Ember Nurseries Thames Ditton, Surrey

QUICK, 100,000 fine strong and extra strong; also strong LARCH, Austrian PINE, fine specimens, 6 to 9 feet; strong PURPLE BEECH, &c.
W. GROVE, Tupsley, Hereford.

BOX EDGING.—Dwarf Dutch, in an old-fashioned garden about 3000 yards for sale, cheap; also some good FOREST FIBRE, nearly equal to Peat. Apply
Markfield, near South Tottenham Station, Stamford Hill, N.

Garden Seeds.

CHARLES TURNER'S Descriptive CATALOGUE of the above is now ready, containing selections of the best kinds only, as well as several interesting and valuable novelties.
The Royal Nurseries, Slough.

FRESH SPHAGNUM MOSS for ORCHIDS.—Sample bushel, 1s. 6d.; 5 bushels, 10s. 6d.; 10 bushels, 20s., for cash. Common and decorative, any quantity on application
THOS. BEAUCHAMP, Woodfalls Cross, Downton, Salisbury.

Pansies—Pansies.

PANSY SEED, saved from the finest Named Collections in Europe, 2s. 6d. and 5s. per packet.
HENRY HOOPER, Nurseryman, Widcombe Hill, Bath.

Seeds—Seeds—Seeds.

WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application. Highgate, London, N.; and Barnet, Herts.

Gold Medal Begonias.

LAING'S CHOICE HYBRIDISED SEED, superior to all others, harvested from their unequalled collection, was again awarded the Royal Horticultural Society's Medal in August. Sealed packets, free by post, 1s. and 2s. 6d. each. The Trade supplied. Now is the time to sow.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

Bedding Roses.

CRANSTON'S CRIMSON BEDDER.—No Garden should be without a bed of this brilliant crimson and perpetual flowering bedding Rose. (Hundreds of testimonials.) Strong ground plants 10s. per dozen, 75s. per 100. Other choice select Roses for bedding, 60s to 75s. per 100.
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.

PEACHES and NECTARINES.—Extra sized Dwarf-trained—(the Trade supplied)—are offered by GEORGE SMITH, The Dell Nursery, Rock Ferry, Cheshire.

KENTISH FRUIT TREES.—One of the largest and best Stocks in the country, consisting of Standard and Pyramid Apples, Pears, Plums, and Cherries, from 60s. per 100. A splendid lot of Hessel and William Pears, Gooseberries, and Currants, from 8s. per 100.
T. EVES, Gravesend Nurseries.—Established 1810.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Vines—Vines—Vines.

F. AND A. SMITH can supply the above, in strong close-jointed Canes, true to name, Fruiting and Planting. Price on application.
The Nurseries, West Dulwich, S.E.

GRAPE VINES.—Fruiting and Planting Canes of leading sorts.
FRANCIS R. KINGHORN, Sheen Nurseries, Richmond Surrey.

To the Trade.

ASPARAGUS, GIANT, 1, 2, 3, and 4-yr. Price on application.
JAMES BIRD, Nurseryman, Downham.

SALES BY AUCTION.

4000 Lilium auratum from Japan, and other choice LILIES, PLANTS, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, February 23, at half-past 12 o'Clock precisely, 4000 very fine bulbs of LILIUM AURATUM, just arrived from Japan in the best possible condition; also an importation from Japan of gigantic bulbs of LILIUM LANCIFOLIUM ALBUM and RUBRUM, L. KRAMERI, and various other choice LILIES; an importation of Japanese ORCHIDS; SARRACENIAS from New Jersey; some fine roots of TIGRIDIA GRANDIFLORA and CONCHIFLORA; 600 bulbs of PANCRATIUM AMŒNUM; an importation of AMARYLLIS BELLADONNA; 2000 fine roots of American TUBEROSES; English grown LILIES, choice GLADIOLI, SPIRÆAS, LILY of the VALLEY, &c.

May be viewed the morning of Sale, and Catalogues had.

Specimen Camellias and Azaleas.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, February 25, at half-past 12 o'Clock precisely, SPECIMEN CAMELLIAS, choice named sorts; also some fine plants of WHITE AZALEAS, from a well-known English grower; some good plants of LAPAGERIA ALBA; a consignment of TUBEROSES from America; 1000 fine English-grown Bulbs of LILIUM AURATUM; an importation of several varieties of rare LILIES from Japan; 5000 splendid Bulbs of LILIUM AURATUM, just arrived from Japan, in the finest possible condition; English-grown LILIES, SPIRÆAS, LILY of the VALLEY, &c.

May be viewed the morning of Sale, and Catalogues had.

Brazilian and other Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, February 26, at half-past 12 o'Clock precisely, BRAZILIAN ORCHIDS, consisting of the new, rare, and beautiful LÆLIA DORMANIANA, discovered by Mr. H. Blunt, in September last, and described by Prof. Dr. Reichenbach, in *Gardeners' Chronicle*, February 7 inst., p. 168; the rare and lovely ONCIDIUM GARDNERI, pronounced by Dr. Reichenbach as a "glorious Oncidium," far superior to O. curtum (see *Gardeners' Chronicle*, Jan. 10, 1880, p. 41); ONCIDIUM CONCOLOR, O. DASYTYLE, O. FORBESII, O. CRISPUM, CATTLEYA MARGINATA, C. SCHILLERIANA, C. AMETHYSTINA and LÆLIA DAYANA, from Mr. R. Bullen of Lewisham; an importation from Ecuador of ONCIDIUM MACRANTHUM, in good condition; also the rare and extremely pretty rose-coloured variety of ONCIDIUM NUBIGENUM; and an importation of a quantity of good plants of the chaste and interesting dove flower, PERISTERIA ELATA, and various other ORCHIDS, many in flower.

May be viewed the morning of Sale, and Catalogues had.

Hardy Plants and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, February 28, at half-past 12 o'Clock precisely, first-class STANDARD and DWARF ROSES, FRENCH TREES, HARDY and ORNAMENTAL TREES and SHRUBS, HERBACEOUS PLANTS, GLADIOLI, LILIUMS, LILY of the VALLEY, SPIRÆAS, &c.

May be viewed the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 4, at half-past 12 o'Clock precisely, a collection of good established ORCHIDS, in the most perfect health and condition. In it will be found many very rare species and several fine specimens suitable for exhibition, among them Lælia purpurata, 3 feet through, with eighty pseudobulbs and leads and five flower-sheaths; Cypripedium villosum, 2½ feet through, with forty growths; Odontoglossum Alexandræ, twelve bulbs and four leads; Dendrobium thyrsiflorum, upwards of thirty pseudobulbs and showing flower-spikes; Cypripedium Harrisianum, 1½ foot through, with eleven growths; Cattleya Mossiæ, 2 feet through, with forty pseudobulbs and leads and four flower-sheaths; Arundina bambusæfolia, the best specimen in Europe of this rare and pretty Orchid; Cypripedium pardinum, with twenty-five growths; Cattleya Warneri, with upwards of thirty pseudobulbs and growths and two flower-sheaths; Cattleya citrina, masses with from sixty to 120 bulbs; Odontoglossum vexillarium, very find and strong: and among the rare kinds will be found Odontoglossum baphicanthum, Epidendrum antenniferum, Calanthe pleiochroma, Oncidium globoliferum, Sarcanthes Hartmanni, Cœlogyne Parishii, showing five flower-spikes; Dendrobium Schrœderi, Trichosma suavis, Masdevallia tovarensis, Pescatorea Dayana, Bulbophyllum Beccari, Oncidium superbiens, Chysis aurea, Epidendrum Parkinsonianum, Luisia platyglossa, Sophronites violacea, Dendrobium Linawianum, Masdevallia bella, Odontoglossum Chestertoni, Oncidium Gardneri, Dendrobium Boxalli.

On view the morning of Sale, and Catalogues had.

Important Collection of Orchids.

MR. J. C. STEVENS has received instructions from Captain Edwards to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY, and FRIDAY, March 17, 18, and 19, at half-past 12 o'Clock precisely each day, the entire COLLECTION of ESTABLISHED ORCHIDS (formed by the late Mr. Serjeant Cox, at Moat Mount, Mill Hill, near Hendon.

May be viewed the morning of Sale, and Catalogues had.

Brentwood, close to the Station.
CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, by order of Mr. Mann, on the Premises, The Nurseries, Brentwood, on FRIDAY, March 5, at 12 o'Clock, the remaining well-grown NURSERY STOCK, comprising Cedrus Deodara, 3 to 10 feet; Cupressus, 3 to 5 feet; Green Hollies, from 3 feet; Piceas, Laurels, Aucubus, and other evergreens, choice Rhododendrons, an assortment of Standard and Dwarf Roses, 1600 Manetti Stocks in dormant bud, &c.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. Messrs. P. & M. are instructed to offer the whole of the FREEHOLD BUILDING ESTATE EARLY in MAY, in convenient plots. Plans and Particulars may be had when ready at the Auctioneers' offices.

Tottenham, N.
(Adjoining the station).

CLEARANCE SALE of STOCK growing on Land required by the Great Eastern Railway in March next for the extension of their line.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION on the Premises, The Hale Farm Nurseries, Tottenham, on TUESDAY, February 24, at 12 o Clock precisely, by order of Mr. Ware, the remaining portion of the NURSERY STOCK growing on the above land, consisting of 3000 Standard and Dwarf Roses, of strong clean growth; a large quantity of Apples and Pears, and other fruit trees; an assortment of Shrubs for borders; 30,000 strong 3-yr. old Asparagus, Herbaceous Alpine Plants, Bulbs, &c.

May be viewed. Catalogues had on the Premises and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

City Auction Rooms, 38 and 39, Gracechurch St., E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the above Rooms, on TUESDAY, February 24, at 12 o'Clock precisely, a superb assortment of 500 handsome Standard Dwarf Climbing ROSES, selected FRUIT TREES, hardy CONIFERÆ and EVERGREEN SHRUBS, AMERICAN PLANTS, some choice Double CAMELLIAS and AZALEA INDICA, well set with bloom-buds; ERICAS, EPACRIS, Double White PRIMULAS, and a variety of GREENHOUSE PLANTS, Choice LILIUMS, GLADIOLUS, DAHLIAS in DRY ROOTS, &c.

On view the morning of Sale. Catalogues at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

The Nurseries, Westerham, Kent.

IMPORTANT UNRESERVED SALE, the Land being required for Seed Growing.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, as above, on WEDNESDAY and THURSDAY, February 25 and 26, at 12 o'Clock punctually each day, by order of Mr. J. Cattell, several Acres of very valuable NURSERY STOCK, comprising the usual variety of choice Border Shrubs and Evergreens for effective planting; 2000 Green Hollies, 12,000 Common Laurels, 5000 Privet, 3000 fine English Yews, 3000 Thuja Lobbii, 12,000 Forest Trees, including 6000 Horse Chestnuts, 6 to 12 feet; and large quantities of other stock too numerous to mention.

May now be viewed. Catalogues had at the Nursery, or of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. Vans will meet the morning trains at Sevenoaks and Eden Bridge Stations to convey purchasers to the Sale.

Lilies from Japan.

IMPORTANT CONSIGNMENT of 6000 splendid BULBS of LILIUM AURATUM, 800 L. KRAMERI, and 10 cases of IRIS, including new and distinct varieties, just arrived from Japan. Also an assortment of English-grown LILIES, HARDY PLANTS and BULBS; 300 DRIED BULBS CYCLAMEN PERSICUM, 200 double TIGER LILIES, 4000 AMERICAN TUBEROSES, DAHLIAS, CHRISTMAS ROSES, and 100 lots of choice established ORCHIDS from private collections, for unreserved sale.

MESSRS. PROTHEROE AND MORRIS will SELL the above, at the Mart, Tokenhouse Yard, E.C., on MONDAY, March 1.

Catalogues at 98, Gracechurch Street, E.C.

Teddington.
Expiration of Tenancy at Lady Day next.

CLEARANCE SALE of the remainder of the well-grown NURSERY STOCK, including a variety of Coniferæ and Evergreen Shrubs, 2000 fine Limes, 1000 Horse Chestnuts, and other Ornamental trees; 600 Fruit trees, and other Stock.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, the Teddington Park Nursery, Waldegrave Road, five minutes' walk from the Strawberry Hill Station, on TUESDAY, March 2, at 12 o'Clock, by order of Mr. R. Laing.

May be viewed. Catalogues had at Mr. Laing's Nursery, Twickenham; and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Horsell, near Woking Station, Surrey.
WITHOUT RESERVE.—IMPORTANT SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. H. & C. Cobbett, to SELL by AUCTION, at their several Nurseries at Horsell, near Woking Station, on TUESDAY, March 2, and following days, at 12 o'Clock precisely each day, several Acres of first-class NURSERY STOCK, in excellent condition for removal, consisting of a large quantity of Border Shrubs, 2000 Limes, 8 to 12 feet; 1000 fine straight Planes, 8 to 10 feet; 4000 worked Thorns, 8000 Chestnuts, and thousands of other Ornamental and Forest Trees; 40,000 Seedling Green Hollies, 2000 Golden and Silver Variegated Hollies, 3000 Cupressus Lawsoniana, 2000 English Yews, 4000 American Arbor-vitæ, 1000 bushy Portugal Laurels, and large quantities of other small Coniferæ, 6000 Rhododendrons, including the best named varieties; 3000 Green Box, 28,000 Manetti Stocks, 1000 Standard and Half-standard Roses, and many thousands of Ornamental and Flowering Shrubs too numerous to mention.

May be viewed. Catalogues obtained on the Premises, or of the Auctioneers and Valuers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

East Dulwich.—Rectory Nursery.

LAST CLEARANCE SALE of NURSERY STOCK, including 3000 Variegated Hollies, 5000 Lygustrum ovalifolium, 1000 Evergreens, a quantity of Aucuba japonica, Wellingtonia gigantea, Portugal Laurels, Box and other Shrubs, Standard and Dwarf Roses, a large assortment of Fruit Trees, Ornamental Forest Trees and Greenhouse Plants; also the erections of GREENHOUSES, FORCING FRAMES, a large quantity of useful TIMBER, LEAF-MOULD, and numerous effects.

MESSRS. OWEN AND SON will SELL the above by AUCTION, on TUESDAY, February 24, at 11 for 12 o'Clock, by order of Mr. Weller (the land being required for building purposes), on the Premises, Crystal Palace Road, East Dulwich, Surrey, five minutes' walk from the Champion Hill Station on the South London Line.

On view three days before Sale. Catalogues on the Premises, and of the Auctioneers, Lee, and The Lodge, Forest Hill, Kent.

Mottingham Lodge, Mottingham, Kent.

MR. C. RARATY will SELL by AUCTION, on MARCH 1, at 12 o'Clock, on the Premises as above, without reserve, the whole of the LIVE and DEAD FARMING STOCK—Horses, Cows, Heifers, Poultry, Pigs, nearly new Carts, Sawing Machines, Chaff-cutting Machines, Root Pulpers, and useful effects; about 500 dozen of Bedding-out Plants, Choice Hothouse Plants, and miscellaneous items.

On view Saturday prior and morning of Sale.

Catalogues to be had at the Lodge, Lee Public Hall and Estate Office, the principal Inns in the neighbourhood, and of the Auctioneer, High Street, Wandsworth, S.W.

WANTED, a GREENHOUSE, second-hand, but in good condition—a small Conservatory or Greenhouse, round roof preferred, about 12 feet or 14 feet in length, by 8 feet or 10 feet in width. State lowest price and dimensions to

A. WILKINSON, Park Hill, Carshalton. Horticultural builders need not reply.

TO BE SOLD, a Six-light Span GREENHOUSE, with Boiler and Pipes; also a good stock of BEDDING PLANTS.

G. S., 2, Cecil Villas, Heathfield Park, Twickenham.

TO BE DISPOSED OF, with Immediate Possession, a capital FLORIST'S, FRUITERER'S, and SEEDSMAN'S BUSINESS, with or without Glass and Ground. Situate main thoroughfare, S.E., doing a large and profitable business. Incoming by valuation, about £200.

A. B. C., *Gardeners' Chronicle* Office, W.C.

TO LET, in the neighbourhood of London, and close to a Railway Station, 2 to 3 ACRES of LAND, with Greenhouse, Shed, &c. Highly suitable for a Seedsman's trial ground.—Apply to A. Z., *Gardeners' Chronicle* Office, W.C.

TO LET, ROSEHILL GARDENS, NORTON, and may be entered upon at the November Term—the above Gardens comprising about 7 acres of first-class Garden ground, with the Dwelling-house, Vineries, &c. Now in the occupation of Mr. T. Oliver as Tenant.

For particulars apply to J. J. FENNY, Stockton-on-Tees.

To Nurserymen, Gardeners, and Others.

TO LET, NURSERY PREMISES, at Edmonton.—About Two Acres of Ground, with Glass-houses, Pits, and convenient Dwelling-house. For particulars apply to Mr. MAPLE, 335, Essex Road, N.

TO BE LET, on easy terms, The RABLEY NURSERY, containing 9 Acres of Land, 13 Greenhouses (part planted with Vines), heated pits, 12-roomed Dwelling-house, Stables, &c. Stock optional, the proprietor having other engagements.

Apply to EDWARD BENNETT, The Vineyard, Potters Bar, Middlesex.

Surrey.

TO BE LET, an old-established NURSERY, with an excellent connection, of about 16 Acres, with Dwelling-house and Cottages, very advantageously situate in a neighbourhood renowned for the Nursery Business, and only about 1 mile from the Addlestone Station, and 2 miles from the Woking Station on the South-Western Railway.

For further particulars apply to Messrs. R. & J. WATERER AND SON, Auctioneers and Valuers, Chertsey.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

To Foresters, Nurserymen, and Others.

THE THIRSK BURIAL BOARD are prepared to RECEIVE TENDERS for the supply of 665 TREES and SHRUBS, suitable for planting in a Cemetery. Particulars as to quantities and sorts can be obtained at my Office. Tenders must be sent in on or before MONDAY, March 1 next.—By Order,

HENRY SMITH, Solicitor, Thirsk,
Clerk to the Board.

Orchids, Bulbs, &c.

THE NEW PLANT and BULB CO. beg to announce the arrival of their first Consignment of ORCHIDS from New Granada. Special LIST (No. 46), containing full particulars of the above, with LIST of New and Rare Bulbous and other Plants, is now ready. Post-free on application. Lion Walk, Colchester.

VERBENAS and LOBELIAS.—VERBENAS, in 25 choice varieties, rooted cuttings, strong and healthy. LOBELIA PUMILA MAGNIFICA, the best of the dwarf section, strong plants from stores. 6s. per 100, post-free. Cash with order.

WILLIAM FOSTER, Nurseryman, Stroud.

To Erica Growers.

FOR SALE, a quantity of HYEMALIS and GRACILIS, in 40's, 48's, and 60's. Price per 1000 on application to

T. C. PAGET, Royal Nurseries, Clapham, S.

MYATT'S PROLIFIC EARLY KIDNEY POTATOS.—A few Tons to dispose of. Price £9 10s. per ton, free on rails, nett cash.

W. W. JOHNSON AND SON, Seed Merchants, Boston, Lincolnshire.

SPECIAL OFFER of POTATOS.—MYATT'S ASHLEAF KIDNEY, and SCOTCH CHAMPION.—Prices on application to

LITTLE AND BALLANTYNE, Seed Merchants and Nurserymen, Carlisle.

STRONG ALDER.—100,000 of the above offered cheap, to clear a drift.

MAURICE YOUNG, Milford Nurseries, Godalming.

RHODODENDRONS for Covert Planting, &c.—Fine plants, 1½ to 4 feet high, £9 per 1000, package free.

W. JACKSON, Blakedown, Kidderminster.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.

Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

LEICESTER RED CELERY has again proved itself to be the hardiest, sweetest, most solid, and best Celery this unfavourable season; when most kinds have been soft and watery this has been good in every way. Those wishing to obtain the true article should have it in printed packets, price 1s.; post-free on receipt of 13 stamps

BROCCOLI, Harrison's new Dwarf Hardy; a late valuable kind, 1s. per packet.

SAVOY, Harrison's King Coffee Garden, 1s per packet.

TURNIP, Harrison's Exhibition; a perfect round white variety, from 6d. per packet.

CARROT, Harrison's Early Market, 6d. per packet.

HARRISON'S "LEICESTER SEEDS," of choicest quality, are supplied in collections of 21s. and upwards, sent carriage free. Trade Prices and full particulars on application to

HARRISON AND SONS, Seed Growers, Leicester.

Thimbleby Nurseries, Horncastle.

WILLIAM CROWDER has to offer:—

ALDER, 2 to 3 feet and 3 to 4 feet.
BEECH, 2 to 3 feet and 3 to 4 feet.
ELM, 3 to 4 feet, 4 to 5 feet, and 5 to 6 feet.
SYCAMORE, 2 to 3 feet, 4 to 6 feet, and 6 to 8 feet.
CHESTNUT, Horse, 3 to 4 feet, 6 to 8 feet, and 8 to 10 feet.
LIMES, 4 to 6 feet, 6 to 8 feet, and 8 to 10 feet, fine.
POPLAR, Black Italian, 2 to 3 feet and 3 to 4 feet.

To the Trade.

Thimbleby, February 3, 1880.

To the Trade.

HOME-GROWN GARDEN and FIELD SEEDS.

H. AND F. SHARPE are prepared to make special offers of their choice stocks of HOME-GROWN GARDEN and FIELD SEEDS to those who have not yet completed their supplies for the coming season.

Seed Growing Establishment, Wisbech.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to

Mr. JEAN NUYTENS VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium.

London Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

SPIRÆA PALMATA.—This beautiful pink variety, with immense flower bunches, justly called "The Queen of Spiræas," is offered at 20s. per 100, strong clumps. Wholesale CATALOGUES free on application.

BUDDENBORG BROTHERS, Bulb Growers, House, Bloemswaard, Hillegom, near Haarlem, Holland.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, offer as under:—

At per 1000:—

ALDER, 2 to 3 feet, 22s.; 3 to 4 feet, 27s.
ASH, Mountain, 3 to 4 feet, 20s.
DOGWOOD, Red, 1 to 1½ foot, 40s.; 1½ to 2 feet, 60s.; 3 to 4 feet, 80s.
FIR, Silver, 4 to 6 inches, 8s.
,, Spruce, 4 to 8 inches, 5s.; 6 to 9 inches, 7s.; 9 to 15 inches, 9s.; 1 to 1½ foot, 12s.; 1½ to 2 feet, 20s.
LARCH, 1 to 1½ foot, 15s.
POPLAR, Black Italian, 3 to 4 feet, 23s.; 4 to 5 feet, 28s.
PRIVET, yellow-berried, 1½ to 2 feet, 16s.
QUICKS, 9 to 15 inches, 12s.; 1½ to 2 feet, 22s.
WILLOW, Huntingdon, 4 to 5 feet, 30s.
FLOWERING SHRUBS, in variety, 40s. to 60s.
BERBERIS, Aquifolia, 6 to 9 inches, 12s.
,, Darwinii, 1 to 1½ foot, 70s.
,, Dulcis, 9 to 12 inches, 20s.
DAFZEREON, Red, 9 to 18 inches, 60s.
IVY, Irish, 25s. and 40s.
LAUREL, Common, 9 to 12 inches, 35s.; 1 to 1½ foot, 40s.
,, Portugal, 1½ to 2 feet, 60s.
PERNETTYA, mucronata, 6 to 9 inches, 25s.
RHODODENDRON, hybrids, 4 to 6 inches, 50s; 6 to 9 inches, 65s.; 9 to 15 inches, 85s.
,, ferrugineum and hirsutum, 80s.
FURZE or GORSE, double, 1 to 1½ foot, 80s.
YEWS, 9 to 12 inches, 75s.; 1 to 1½ foot, 100s.; 2 to 3 feet, 200s.

At per 100:—

ARBOR-VITÆ, Tom Thumb, 6 to 9 inches, 7s.
AZALEA, pontica, 1½ to 2 feet, 30s.
BOX, elegantissima, 6 to 12 inches, 10s.
CEDRUS, Deodara, 1½ to 2 feet, 60s.
CRYPTOMERIA, elegans, 9 to 15 inches, 15s.; 1½ to 2 feet, 30s.; 2 to 3 feet, 35s.
HOLLY, 1 to 1½ foot, 20s.; 1½ to 2 feet, 28s.
ILICEA, nobilis, 2 to 3 feet, 60s.
PINUS, Cembra, 4 to 6 feet, 30s.
RETINOSPORA, plumosa, 4 to 6 inches, 12s.
THUJOPSIS, dolabrata, 3 to 4 inches, 10s.; 6 to 9 inches, 18s.; &c.

CHEAP and GOOD.

A liberal discount to the Trade.

ROSES, Dwarf, the best Hybrid Perpetual varieties, 5s. per dozen, 35s. per 100.
VINES, good planting canes of Black Hamburgh, Buckland's Sweetwater, Gros Colmar, Foster's Seedling, Muscat of Alexandria, &c., 2s. 6d. each.
CHERRY, Dwarf-trained Morello, fine, 2s. 6d. each.
CEDRUS, Deodara, 3½ to 4 feet, 30s. per dozen.
CUPRESSUS, Lawsoniana, 4 to 5 feet, 12s. per dozen.
,, ,, 6 to 7 feet, 21s. per dozen.
,, macrocarpa, 2 feet, in pots, 50s. per 100.
LAUREL, 2 feet, bushy, 18s. per 100.
THUJA, chinensis, 2½ to 3 feet, 50s. per 100.
,, aurea, 2½ feet, splendid specimens, 2½ feet through, 6s. 6d. each.
,, elegantissima, 3 feet, 42s. per dozen.
BEECH, 5 to 6 feet, 15s. per 100.
CHESTNUT, Horse, 9 to 10 feet, with fine heads, splendid trees, 18s. per dozen.

H. BLANDFORD, The Dorset Nurseries, Blandford.

GEO. JACKMAN & SON
WOKING NURSERY SURREY

JACKMAN'S Descriptive Priced CATALOGUE, Free on application, containing—
JACKMAN'S List of FRUIT TREES, suitable for large or small Gardens.
JACKMAN'S List of ROSES—selected Dwarfs and Standards.
JACKMAN'S List of AMERICAN PLANTS, for Peat and Loamy Soils.
JACKMAN'S List of CONIFERS, for Lawns and Pleasure Grounds.
JACKMAN'S List of HARDY SHRUBS, adapted for Belts, Shrubberies, Screens, &c.
JACKMAN'S List of ORNAMENTAL TREES, suitable for Parks and Private Gardens.
JACKMAN'S List of HARDY CLIMBERS, including their celebrated Clematises.
JACKMAN'S Assortment of TREES and SHRUBS, adapted for planting by the Sea-coast, on Chalk Soil, beneath the Shade of Trees, and in Cities and Towns.

GEO. JACKMAN & SON
WOKING NURSERY SURREY

DANIELS' CHOICE

DISEASE-RESISTING

SEED POTATOS.

	Per Peck, 14 lb.	Per Bush., 56 lb.
MAGNUM BONUM (true)	3s. 6d.	12s 0d.
MARKET CHAMPION	2 6	9 0
JOHNSTONE'S DOWNSHIRE	6 0	21 0
REDSKIN FLOURBALL	2 6	9 0
BEAUTY of HEBRON (new)	3 6	12 6
Also the following early varieties:—		
AMERICAN EARLY ROSE	2s. 6d.	9s. 0d.
RIVERS' ROYAL ASHLEAF	2 6	9 0
MYATT'S ALHLEAF	3 0	10 6

All Orders of 20s. and upwards, Carriage Free.
Special quotations for large quantities.

Beautifully Illustrated Catalogue of Choice Kitchen Garden and Flower Seeds, Lilies, Gladioli, &c., gratis and post-free to all Customers and intending Purchasers on application.

DANIELS BROTHERS, Seed Growers,
Royal Norfolk Seed Establishment, Norwich.

TREES for AVENUE, PARK, or STREET PLANTING.

ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
,, Horse, 14 to 16 feet, girting 8 to 10 inches.
,, Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
,, Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.

They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.

The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

To the Trade.

MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.

Seed Growing Establishment, Wisbech.

SPECIAL CHEAP OFFER TO THE TRADE.

APPLES, Pyramid, extra strong and well rooted, 40s. per 100.
PEARS, Pyramid and Standard, extra strong and well rooted, 50s. per 100.
CHERRIES, Standard trained, PLUMS, Standard trained, PEARS, Dwarf trained, } Prices and sorts on application.
SPRUCE, Norway, 2 to 3 feet, very bushy and well rooted, 40s. per 1000.
THUJOPSIS BOREALIS, 5 to 6 feet, 24s. per dozen; 6 to 7 feet, 30s. per dozen; 7 to 8 feet, 48s. per dozen.

W. G. CALDWELL AND SONS, The Nurseries, Knutsford.

New Hardy Hybrid.

GLADIOLUS LEMOINEI and MARIE LEMOINE.

Price for strong bulbs, 12 francs; do., middle-sized, 7 francs. Received First-class Certificate from The Royal Horticultural Society on August 12, 1879, and noticed in the *Garden*, No. 404.

VICTOR LEMOINE, Horticulturist, Nancy, France.

Special Advertisement.

WHITE SPANISH ONION SEED.—The Advertiser begs to inform the general public that having harvested in fine condition a quantity of the above selected stock of PURE SPANISH ONION SEED in 1878, he is now preparing to supply the same in any quantity at 6d. per ounce, free to any address in England, on receipt of Post-office Order payable at Castle Hedingham, or postage stamps. Address THOMAS ELEY, Miller and Maltster, Sible Hedingham, Essex.

P.S. There being no reliable seed of last year's growth, Mr. E. can strongly recommend the above, being all grown by him in 1878, and can be depended upon for producing a good plant.

Roses—Roses—Roses.

S. BIDE can still offer good strong Standard, Half-Standard, and Dwarf Roses—all first-class varieties.

HOLLIES, Gold and Silver Variegated, 1½ to 3 feet.
PONTICUM RHODODENDRONS, 1½ to 2½ feet.
AUCUBAS, 1½ to 2 feet.
PLUMS, PEACHES, and NECTARINES, dwarf-trained.
ASH, stout, 2 to 3 feet and 3 to 5 feet.
HAZEL, 2 to 4 feet.
BIRCH, 4 to 6 feet.

Send for prices of the above to
S. BIDE, Alma Nursery, Farnham, Surrey.

Established in 1815.

Hollamby's Nurseries, Groombridge, Tunbridge Wells.
100 Acres to select from.

EDWIN HOLLAMBY'S Descriptive Priced CATALOGUE of Roses, Evergreens, and Flowering Shrubs, Conifers, Fruit and Forest Trees, &c., will be forwarded free on application.

N.B.—Through trucks to all parts: a great saving in packing.

SPECIAL OFFER TO THE TRADE.

ASH, Weeping, 8 to 10 feet stems, good heads, 18s. to 21s. per dozen.
THORNS, Paul's new Double Scarlet, Standards, 10s. per dozen.
,, Paul's new Double Scarlet, Pyramids, 7s. per dozen.
CHESTNUT, Horse, fine trees, 8s. per dozen.
BEECH, Purple, 7 to 8 feet, 15s. per dozen.
LIME, White-leaved (Tillia alba), grafted, 10 to 12 feet, 15s. per dozen.
,, Common, 10 to 12 feet, 12s. per dozen, 80s. per 100.
LABURNUMS, 8 to 10 feet, 8s. per dozen, 50s. per 100.
ELMS, of sorts, 4 to 6 feet, 3s. per dozen, 20s. per 100.
POPLARS, of sorts, 7 to 9 feet, 6s. per dozen, 40s. per 100.
COB NUTS and FILBERTS, from layers, bushy, 4 feet, 25s. per 100.
BERBERIS AQUIFOLIA, 18 inches, 7s. 6d. per 100.
ROSES, own selection, fine plants, Standards, H.P.'s, 75s. per 100.
SYCAMORES, 10 to 15 feet, 9s. per dozen, 60s. per 100.
CHERRIES, Morello, dwarf, 1-yr. cut backs, 35s. per 100.
MULBERRY, Standards, 30s., 42s., and 60s. per dozen.

A few large trees, price on application.

KINMONT AND KIDD, Exotic and Vauxhall Nurseries, Canterbury, Kent.

Wandsworth Common and Garret Lane Nurseries.

R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.

All goods delivered free on rail in London or at own residence within six miles of the Nurseries.

CATALOGUES free by post on application.

New Catalogue for 1880

WM. CLIBRAN AND SON, The Oldfield Nurseries, Altrincham, Cheshire, will have great pleasure in sending their DESCRIPTIVE PRICED LIST upon application. Their stock of Florists' Flowers, Bedding and Soft-wooded Plants generally, is surpassed by none either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to purchasers is that none of the Plants offered are taken from a warm propagating-house and sent off immediately, but are all carefully hardened, and most of them potted off singly, and are thereby fitted for transit by post or rail without the slightest injury. A great proportion of the under-mentioned are autumn-struck plants, and can be had in pots if required, and all in a variety of sorts and colours, all good for exhibition or home decoration :—

Our Selection. Per doz —s.	d.	Our Selection. Per doz.—s.	d.
Abutilons, in variety .. 3	0	Mesembryanthemum fol. var., per 100, 10s. 2	0
Achimenes, in variety .. 3	0	Mimulus, in variety .. 3	0
Ageratums, small plants, per 100, 5s. 1	0	Myosotis, per 100, 6s. .. 1	6
Ageratums, in pots, per 100, 15s. 2	6	Pæonies, white, blush, crimson, and other shades 6	0
Antirrhinums 3	6	Pansies, show, per 100, 25s. 3	6
Begonias, Tuberous, from 4s. to 18	0	Pansies, Bedding, about 20,000 to select from, per 100, 12s. 2	0
Other sorts 3	0	Pentstemons, per 100, 25s. 3	6
Bouvardias, 4s. to .. 6	0	Phloxes, per 100, 25s. .. 3	6
Caladiums 9	0	Pelargoniums, Show, Fancy, and French, 6s. to 9	0
Calceolaria Golden Gem (not in pots) per 100, 5s. 1	0	Pinks, per 100, 25s. .. 3	6
Carpet Bedding Plants (see Catalogue)		Potentillas, Double .. 6	0
Carnations and Picotees, 12 plants 7	0	Polyanthus, Seedlings, per 100, 5s. 1	0
12 pairs 12	0	Polyanthus, named sorts (see Catalogue)	
Chrysanthemums, in great variety, per 100, 18s. 3	0	Primroses, Double, 4s. to 9	0
Clematis, to name .. 9	0	Primroses, old Double Velvet, 1s. 6d each.	
Coleus 3	0	Primroses, Single, assorted colours .. 2	0
Dactylis elegantissima, per 100, 6s. 1	0	Pyrethrums, Double .. 6	0
Dahlias, per 100, 20s. .. 3	6	Roses, H P., fine plants from ground, per 100, 40s. 6	0
Delphiniums 6	0	Roses, Climbing or Mosses 4	0
Ep phyllum 9	0	Rock Plants, per 100, 15s. 3	0
Ferns, Stove and Greenhouse, 6s. to 9	0	Salvias 3	0
Fuchsias, per 100, 18s. 3	0	Saxifrages 3	0
Gardenia florida .. 6	0	Sedums 3	0
Greenhouse Plants .. 9	0	Sedum acre aurea, elegans, and glaucum, per 100, 8s. 1	6
Geranium bicolor .. 3	0	Stove Plants 9	0
Geranium, Silver-edged 3	6	Succulents, 4s. to .. 6	0
Geranium, Double .. 3	0	Tropæolums 3	0
Geraniums for Bedding 3	0	Violas (immense stock of best sorts), per 100, 8s. to 12s. 2	0
Geraniums, for pot culture, 3s. to 6	0	Verbenas, stock plants, in pots 3	0
Gladiolus, splendid seedlings, per 100, 20s. .. 3	0	Verbenas, young, not in pots 1	6
Gladiolus Brenchleyensis, per 100, 6s. .. 1	0	Violets, sweet 3	0
Gloxinias, 6s. and .. 9	0	Vines, all the leading kinds for planting and fruiting, 30s. to .. 60	0
Hardy Climbing Plants, in great variety, 6s. .. 9	0	Strawberry Runners (our collection contains 65 varieties), per 100, 2s. 6d.	
Hollyhocks, Seedlings 4	0	Apples, Pears, Plums, Cherries, Pyramid, 6s. to 18	0
Helianthemums 2	6	Dwarf-trained, 18s. to .. 30	0
Herbaceous Plants, per 100, 20s. 3	0		
Heliotropes 2	6		
Hepaticas 4	0		
Iresine Lindeni, per 100, 10s. 2	0		
Iris, German 3	0		
Ivies, in variety 6	0		
Ivies, Irish 3	0		
Lantanas 2	6		
Lilium auratum, very fine, each, 1s. and 1s. 6d.			
Lobelias, small, per 100, 4s. 1	0		
Lobelias, in pots .. 2	6		

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

SEED POTATOS.—

Snowflake	Paterson's Victoria
Early Rose	Regent
Myatt's Prolific	Dalmahoy
Fortyfold	Fluke
Bresee's Prolific	Champion (Scotch)
Early Shaw	Redskin Flourball

And other leading varieties. Prices on application to JOSIAH H. BATH, York Street, Borough Market, S.E.

Windsor Nurseries, Putney, S.W.

To GENTLEMEN, BUILDERS, and the TRADE.

S. MAHOOD AND SON have to offer a large stock of HARDY and ORNAMENTAL SHRUBS and TREES, in great variety, comprising Hollies, Cupressus, Thujopsis, Cedrus Deodara, Box Trees, &c., 6 to 8 feet high, good specimens; a large quantity of smaller Shrubs, Aucubas, Portugal Laurels, &c.; several thousand Ivies, from 4 to 8 feet, good strong plants in pots. All in good condition for moving, and at low prices.

An inspection invited.

Cheap **Orchids.**

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

TREE SEEDS.—

ABIES DOUGLASII, post-free, 2s. 6d. per ounce.
" MENZIESII, post-free, 4s. per ounce.
PICEA NOBILIS, post-free, 4s. per ounce.
PINUS MONTICOLA, post-free, 3s. per ounce.
LARCH, Native, 2s. per pound.

The above are all of crop 1879, and collected from Trees grown in Scotland, and may be fully relied on for purity and hardiness.

Special prices for large quantities, and to the Trade on application.

BEN. REID AND CO., Nurserymen and Seedsmen, Aberdeen.

YEWS, from 3½ to 4½ feet, 90s. per 100; Green HOLLIES, 2 feet, 30s. per 100; Variegated HOLLIES, 1½ to 2 feet, £5 per 100, good plants and well rooted. All good young bushy plants, well rooted—as good as any one wishes to see for Hedges, &c. Nicely furnished. A good time for planting.

JOSEPH SPOONER, Woking Station.

WILLIAM FIELD, NURSERYMAN, &c., Tarvin Road, Chester, offers the following :—

RHUBARB, Linnæus, 20s. per 100.
PRIVETS, 2-yr. bedded, strong and good, 10s. per 1000.
LAUREL, Common, 4 to 5 feet, 25s. per 100.
CURRANT, Black Naples, strong, 12s. per 100.
" Victoria Red, 8s. per 100, for cash.

Montbretia Pottsii.

See Illustration in the *Garden* of January 24.

THE LAWSON SEED and NURSERY CO. (Limited), Edinburgh and London, are now Booking Orders for Flowering Bulbs of the above named Hardy Cap Bulb, having secured the stock from Mr. Potts, the introducer of it. Price 2s. 6d. each, or 24s. per dozen; the usual discount to the Trade

Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

TO THE TRADE.

SEED POTATOS.

H. & F. SHARPE

Invite the attention of the Trade to their Special PRICED LIST of SEED POTATOS, issued last November,

Which comprises, amongst many others, the following excellent varieties, viz. :—

PRIDE OF ONTARIO (New),
RIVERS' ROYAL ASHLEAF,
MYATT'S PROLIFIC ASHLEAF,
MONARCH KIDNEY (New),
AMERICAN EARLY ROSE,
BRESEE'S PROLIFIC,

MAGNUM BONUM,
CHAMPION,
ELLIOTT'S WONDER,
SNOWFLAKE,
BRESEE'S PEERLESS,
BRESEE'S KING OF THE EARLIES

The above have been Grown from the Finest Selected Stocks, are of Splendid Quality and Free from Disease.

SEED GROWING ESTABLISHMENT,
WISBECH.

ESTABLISHED ORCHIDS

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 4, at half-past 12 o'Clock precisely, a Collection of good ESTABLISHED ORCHIDS, in the most perfect health and condition. In it will be found many very rare species and several fine specimens suitable for exhibition, among them LÆLIA PURPURATA, 3 feet through, with eighty pseudo bulbs and leads, and five flower-sheaths; CYPRIPEDIUM VILLOSUM, 2½ feet through, with forty growths; ODONTOGLOSSUM ALEXANDRÆ, twelve bulbs and four leads; DENDRODROBIUM THYRSIFLORUM, upwards of thirty pseudobulbs, and showing flower-spikes; CYPRIPEDIUM HARRISIANUM, 1½ foot through, with eleven growths; CATTLEYA MOSSIÆ, 2 feet through, with forty pseudobulbs and leads, and four flower-sheaths; ARUNDINA BAMBUSÆFOLIA, the best specimen in Europe of this rare and pretty Orchid; CYPRIPEDIUM PARDINUM, with twenty-five growths; CATTLEYA WARNERI, with upwards of thirty pseudobulbs and growths, and two flower-sheaths; CATTLEYA CITRINA, masses with from sixty to one hundred and twenty bulbs; ODONTOGLOSSUM VEXILLARIUM, very fine and strong; and among the rare kinds will be found :—

ODONTOGLOSSUM BAPHICANTHUM
EPIDENDRUM ANTENNIFERUM
CALANTHE PLEIOCHROMA
ONCIDIUM GLOBOLIFERUM
SARCANTHUS HARTMANNI
CŒLOGYNE PARISHII, showing five flower-spikes
DENDROBIUM SCHRŒDERI
TRICHOSMA SUAVIS
MASDEVALLIA TOVARENSIS
PESCATORIA DAYANA

BULBOPHYLLUM BECCARI
ONCIDIUM SUPERBIENS
CHYSIS AUREA
EPIDENDRUM PARKINSONIANUM
LUISIA PLATYGLOSSA
SOPHRONITES VIOLACEA
DENDROBIUM LINAWIANUM
MASDEVALLIA BELLA
ODONTOGLOSSUM CHESTERTONI
ONCIDIUM GARDNERI
DENDROBIUM BOXALLI.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

TO THE TRADE ONLY.

NEW DWARF KIDNEY BEAN, "THE MONSTER,"

OR MAMMOTH LONG-PODDED NEGRO.

Was awarded a First-class Certificate by the Royal Horticultural Society, on August 26, 1879.

This is one of the most valuable varieties that has been introduced of late years. It differs from the ordinary type in having much larger pods, and in being more productive and very early. It is of robust habit, and the pods, which are produced freely and continuously, range from 7 to 8 inches in length, and are very fleshy.

OFFERED THIS SEASON FOR THE FIRST TIME.

In Sealed half-pint Packets, 2s. 6d., or by post, 2s. 9d.

Retail of the principal Seedsmen in the United Kingdom. Wholesale only of

HURST & SON,

6, LEADENHALL STREET, LONDON, E.C.

TRADE NOTICE.

We are now prepared to give Special Quotations, on application, for all kinds of

AGRICULTURAL SEEDS.

HURST & SON,

6, LEADENHALL STREET, LONDON, E.C.

VEGETABLE AND FLOWER SEEDS.

IRELAND & THOMSON

Have pleasure in intimating that their

DESCRIPTIVE PRICED CATALOGUE of KITCHEN GARDEN and FLOWER SEEDS, GARDEN IMPLEMENTS, and REQUISITES, &c., for 1880,

Is now ready, and will be sent, post-free, on application.

BEGONIA, TUBEROUS, from finest sorts in cultivation, extra choice. Per packet, 2s. 6d. and 5s.

CELOSIA PYRAMIDALIS PLUMOSA AUREA AND RUBRA. Superb strain. Per packet, 2s. 6d., and 5s.

STOCK, EAST LOTHIAN (true), in four colours. Per packet, 1s., 2s. 6d., and 5s., each.

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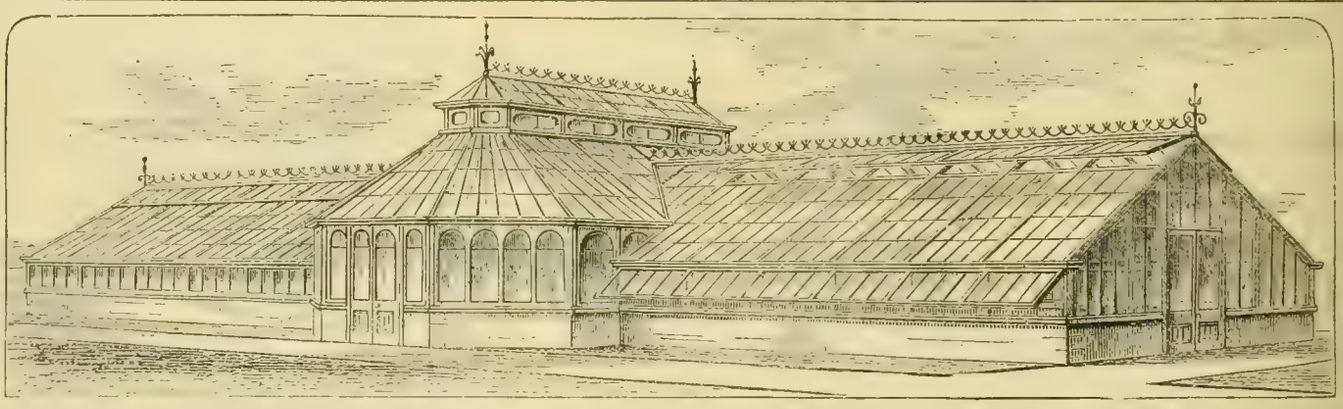

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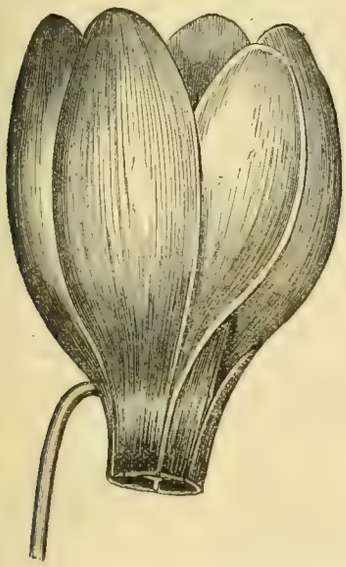

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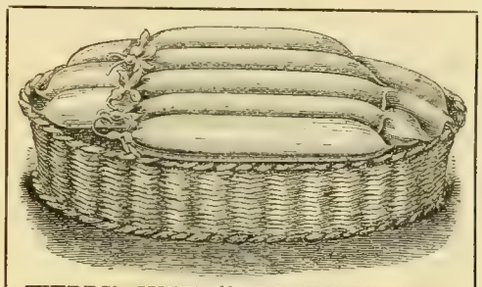

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THE
Gardeners' Chronicle.

SATURDAY, FEBRUARY 21, 1880.

NURSERY STOCK.

THERE are some economic aspects of the nursery trade of a very interesting, instructive, and, indeed, a startling character. When we think of the hundreds of thousands of the commoner plants grown in nurseries, and forming in many of these establishments the staple stock cultivated—and when we consider the vast quantities of these raised annually, the question naturally arises how they are obtained in such myriads. Let any one look through a catalogue of common nursery stock, such as the Hazel, Laurel, Hawthorn, Larch, Spruce Fir, Oak, Ash, &c., and think what quantities of these are annually required for planting, and the necessity for their production in huge numbers is at once apparent. It is not a common practice throughout the nursery trade to grow these plants from seed. But few lay themselves out to produce; the large majority buy in stock in a young state from the producers, and plant up in vacant ground for their own consumption. It would not pay many of them to grow from seed; they cannot spare the ground, which they devote to more remunerative crops; and so it has come to pass that there are in the nursery trade those who lay themselves out to supply what others find it better to purchase than to raise for themselves.

Northampton is one among many places where one of these manufacturing nurseries is to be found, viz., that of Messrs. Thomas Perkins & Sons. The soil is well adapted for the culture of plants for covert and forest, as well as for ordinary plantations. It is a substantial red loam of great depth, resting on ironstone, and in it all kinds of nursery plants, and especially fruit trees, grow well, throwing out fibrous roots that soon attach themselves to the soil when transplanted. The Kingsthorpe Nursery, on the road to Leicester, is many acres in extent, the same red loamy soil extending throughout; and there is this peculiarity about it—that the labourers can work on it at any time, as rain passes so quickly away from the surface. It is a soil, however, that needs plenty of feeding to keep it in good character for generous growth.

QUICK, OR HAWTHORN.

Common Quick, or Hawthorn, is raised here in immense quantities. In 1875—a good year for tree and bush seeds of all kinds—as many as 1250 bushels of haws were obtained and sown; and it is worthy of note that the crop has been an indifferent one since. This large quantity was obtained from extensive Crown lands in the county of Northampton, and there are always those who gather the berries in the proper season and sell them to the growers. In a season like that of 1875, when the berries are plentiful, they can be purchased as low as 1s. per bushel, but when they are at all scarce prices rule higher. The berries are procured in autumn, and then buried in pits in the same

way as Potatos, after being well turned over previously to cause them to rot. This is done to induce germination: the shell, being very hard, has to be softened before the cotyledons will issue from it. From one to two millions of plants are raised annually, the crop being regulated by the quantity of berries obtained.

In the nurseries Hawthorn is transplanted when one year old, and sold when two or three years old: what is unsold in the third year is again transplanted. When young the Hawthorn grows very rapidly, if planted in good ground. Its rapid growth makes it useful for hedgerows, and if well pruned and kept down when young, it quickly grows into a thick and intricately woven hedge. When it arrives at the height of a tree, however, it makes wood very slowly, and lives to a great age. Its beauty and picturesqueness, as conducive to a charming feature in the landscape, entitle it to high consideration. It is of a dense leafy growth; its snowy blossoms are often produced in such quantities as to completely whiten the whole head of the tree, and which in the case of the common, as well as of some of the choice sorts, have a delightful perfume, while in autumn and winter the ruddy crimson-coloured haws give the plant a rich and glowing appearance in our forests, open glades, and thickets. It is largely planted as covert for game.

"The English Hawthorn," remarks Mr. A. J. Downing, in his book on *Landscape Gardening*, "is not only a beautiful small tree, but it is connected in our minds with all the elegant poetic and legendary associations which belong to it in England, for scarcely any tree is richer in such than this. With the floral games of May this plant, from its blooming at that period and being the favourite of the season, has become so identified that the blossoms are known in many parts of Britain chiefly by that name. Among the ancient Greeks and Romans they were dedicated to Flora, whose festival began on the first of that month, and in the olden times of merry England the Maypole, its top decked with the gayest garlands of these blossoms, was raised amid the shouts of the young and old assembled to celebrate the happy rustic festival." One variety, the Glastonbury Thorn, which in favourable seasons and situations blooms as early as Christmas, and in January or February, is well known because of the popular legend attached to it by the monks of the dark ages.

Hazel Nuts.

The Hazel or common Nut of the woods is raised in large quantities, from 400,000 to 500,000 annually, when there is a good crop of Nuts. In 1875, when Nuts were plentiful, 100 bushels were sown, obtained from the woods in Northampton, Leicestershire, &c. They are sown broadcast in prepared beds as soon as they can be obtained in the autumn. If the Nuts are kept long before sowing a kind of hard skin or filament gathers about the kernel, and prevents it from germinating. When English wood-nuts are plentiful, as they were five years ago, they can be purchased at 3*s*. per bushel; when they are scarce the price is much higher. It is sometimes necessary to purchase Spanish Nuts for sowing, at something like 10*s*. per bushel, but this is only necessary when English Nuts are not forthcoming. The seedlings are transplanted the following autumn, and sold generally when three years old, the plants averaging 3 feet in height.

The Hazel is extensively grown for coppice wood in some parts of England, in Sussex and Kent it is much used for this purpose; and rods formed of the strongest growths of a few years are used for making hoops, and the stouter wood for burning for charcoal. "The male catkins make their appearance in September, on the previous year's shoots, but are not fully developed or expanded until the succeeding season, when the female flowers appear, about February 1, and in April they are in full bloom. These are small, and of a beautiful red colour." The Hazel seldom exceeds 20 feet in height, and from its mode of growth and size may be called either a small tree or a large shrub. The South of Spain produces great quantities of Hazel nuts, which are exported in considerable numbers to other parts of the Continent, particularly from the port of Barcelona, by which name all the Spanish Nuts are known. The Hazel appears to have been looked upon by the ancients more in reference to the superstitious practices in which it was employed than on account of its useful properties. Pliny states that torches were made of its branches at marriages, the burning of which was supposed to be lucky to the young couple. In more recent times advantage has been taken of the credulity of mankind by its employment for the purpose of discovering metals, water, hidden treasure, lost property, &c., by means of a divining rod formed of a twig of Hazel. The impositions that have been practised by designing persons by the aid of this instrument are almost incredible, and it has scarcely as yet fallen entirely into disuse.

Hornbeam.

The Hornbeam is raised to the amount of from 5000 to 6000 plants a year. It is not nearly so much in request as the two previous subjects. It is raised from seed obtained in Scotland; the seed being sown when ripe, or kept in dry sand till the following spring and sown in the usual manner. According to Miller, the Hornbeam reaches 70 feet in height, with a large round stem, perfectly straight and sound when growing on a stiff clay, which appears to be its natural soil. In this country it is much used for hedgerows, to afford protection and shelter in nurseries, &c., where it is kept cut back and clipped close. It is said to thrive on cold barren and exposed hills, and in situations where few other trees will vegetate. It is by no means of slow growth, and resists the violence of winds better than most other trees, from its close compact habit, and is thus well adapted as a means of shelter. It has been recommended that it "be raised from seeds planted in the spot where it is intended to grow, and these seeds may be sown in autumn, when they will germinate the following spring." In like manner with the Beech, the leaves of the Hornbeam remain on the branches till the young buds push them off in spring; it is thus a good winter as well as an effective summer shelter. The Hornbeam when in bloom is particularly elegant. *R. D.*

New Garden Plants.

Restrepia Falkenbergii, *n. sp.**

This new Restrepia is easily recognised by its strong growth, its unicolored sheaths without blotches, its large leaves (my largest one 0.05 : 0.09 m.), which are underneath, almost totally bluish-purple, or with several stripes of that colour. The flowers are in the way of those of Restrepia antennifera, yellow, with some white and purple. If you do not expect flowers of a Vanda teres from a Restrepia, you may consider it a lovely gem, but *de gustibus non est disputandum*.

Who was its discoverer? I cannot say. It may have been discovered by M. Patin, in New Granada. The two flowers he kindly gave me look admirable, and the purple stripes on the side of the connate inferior sepal are more conspicuous than in my last specimens. Yet this beautiful flower has, what our French friends call "beauté de diable"—it is good for nothing, since the flowers have been smashed with a hot iron. Such flowers are very useful for preserving well the charms of colour, but a botanist detests them as soon as he has to make careful investigations. If I were a collector I might prepare a few flowers with a hot iron, to give evidence of colour, and then dry others in the ordinary way. I think hot-ironed flowers would do very well for Messrs. Stevens' salerooms.

My recent specimens were gathered by two fresh collectors, Messrs. Falkenberg and Schmidtchen. The successes of Mr. Falkenberg are well known and admirable, inasmuch as this collector immediately began with successes. Usually a young collector begins by pleasing his employer or his *chargé d'affaires* with cases full of Epidendrum cochleatum, E. ciliare, Brassia caudata, Eria stellata, Sarcochilus unguiculatus, and such fine things, which modern Orchidists do not appreciate. Mr. Falkenberg has earned his successes not only by his knowledge, but perhaps even more by his rare skill in packing. Some authorities pretend that packing is quite indifferent, but this appears to be a great mistake.

As to Mr. Schmidtchen, from Dresden, he has just made his *début*. Mr. F. Sander has kindly sent sketches of flowers, dried specimens, some highly curious itinerary sketches and a living Restrepia, all evidences which speak highly in favour of the young traveller, to whom I wish good success, provided he is not yet tired of the career. This, however, is a rare case. Usually the traveller loses the peace of mind necessary for domestic life, preferring the adventurous risks of a nomadic career.

As to the Restrepia, it is a great satisfaction to me to name it in memory of Mr. Falkenberg. *H. G. Rchb. f.*

Liparis Stricklandiana, *n. sp.**

A cæspitose plant with conico-ovoid bulbs, which usually have two ligulate acute leaves, the whole being of a bright apple-green colour. A very neat sketch of the plant was kindly presented me by the possessor. The peduncle is quite two-edged, and swordlike with very sharp wings, and bears a rather dense raceme of greenish flowers, which finally may turn to ochre colour. This species comes near Liparis stachyum, whose dimensions it has, excepting the much shorter raceme (0.04 m. of length). Its chief features are the ensiform peduncle and the very curious lip, which is quite novel in the group, though it is superseded by the even more curious lip of that species which bears the name of its lynx-eyed discoverer, Mr. Gustave Mann. This one was sent by Sir C. W. Strickland, Hildenley, Malton, an ardent and constant friend of even botanical Orchids, whose name the curious modest plant may now bear. It was bought five to six years ago from Mr. Bull, and may be of Assamese origin. I have no doubt Mr. Bull would not be so cruel as to keep the original locality secret if one of his fellow-workmen wished especially to know the place. *H. G. Rchb. f.*

Odontoglossum crispum flaveolum, *Rchb. f.*

A fresh flower sent by Mr. R. Warner from Broomfield, Chelmsford, is totally yellow, with very few red spots and lines. Thus we have a new illustration of the nice variety introduced by Mr. Bull and Dr. Wallace. This variety is a great delight to me, since Dr. Lindley most distinctly said that his species had flowers, "yellow, with a purple-spotted centre." This statement always disturbed me, as there is not the least doubt that the typical Odontoglossum crispum of Dr. Lindley was a white Alexandræ—tip-top Alexandræ—gathered by Hartweg. Dr. Lindley was influenced in this statement by his copy of a copy prepared by poor Matthews (who was poisoned by his sweet brown wife), and which was taken from an original drawing kept at Lima in a collection of Ruiz and Pavon. This represents an Odontoglossum which Dr. Lindley identified with his crispum, I might say with English keenness. There is a narrow-leaved (0.02 m. broad) bulb represented, with a cut and an eight-flowered (such buds and cut flowers!) peduncle. Sepals, petals, lip, are very crisp. There are two serrated keels running over half of the lip. The column has no wings. Colour yellow, with numerous small spots, as small as those I saw on the petals of O. Andersonianum lobatum, which I had but once, viz., from Mr. B. S. Williams. As to me, I would not dare to name it at all. After all, it is but justice to state that Dr. Lindley was a far better judge than I can be, since he appears to have seen many such copies, even from species, specimens of which were at hand (*e.g.*, Oncidium corynophorum, Lindl.). Now, in such a case, a judicious observer (and who can be more judicious than Dr. Lindley was?) gets a certain instinctive appreciation of the powers of the artists he understands, whether the drawings are true, or the work of an imaginative man. Whatever may have been the original of the plant of Ruiz and Pavon, whether Dr. Lindley was right or wrong, he is now, at all events, justified by this modern English introduction. *H. G. Rchb. f.* [We learn that it was received by Mr. Warner from his collector, Mr. Carder, who collected it near Bogota. Eds.]

* *Restrepia Falkenbergii*, n. sp.—Cæspitosa, magna (usque 0.19 m. alta); vaginis ancipitibus sursum ampliatis ac obliquis immaculatis; folio cuneato oblongo obtuse acuto, discolori; sepalo impari a triangulo basilari in caudam longiorem apice clavatam extenso; sepalis paribus connatis apice bidentatis; tepalis sepalo impari subæqualibus sed brevioribus et angustioribus; labello pandurato, isthmo bene angusto, portione superiori utrinque obtusangulo, inferiori (anteriori) obtusangula apice obtuse bidentato; carinis obscuris ternis in parte anteriori, intennis ante basin optime evolutis.

* *Liparis Stricklandiana*, n. sp.—Pseudobulbis ovoideo conicis mono—triphyllis, vulgo diphyllis; foliis lineari-ligulatis acutis, pedunculo compresso utrinque alato, hinc ensiformi; racemo pluriflore; bracteis triangulis ovaria pedicellata non æquantibus; sepalis ligulatis; tepalis linearibus apice retusis, labello a cuneata basi transverso dilatato trilobo, lobis lateralibus rotundatis, lobo medio triangulo brevi, omnibus lobis antice minutissime denticulatis; columna curvata apice vix conspicue dilatata.—Flores nonnisi siccos compressos vidi. Sepala extus supra lineam mediam visa obtuse carinata. Calli minuti forte hemisphærici seu conici in labelli ungue videntur adesse, sed nimis compressi, hinc non pro certo indicati. *H. G. Rchb. f.*

JAPANESE CONIFERS.—VIII.

(*Continued from p. 213.*)

Picea polita, Carrière.*—This is one of the handsomest, and, it may be said, happiest, of the Spruces. It is handsome in habit and outline; it is happy in the same sense that the nation that has no history is happy. Its specific identity has hardly been doubted. Its characteristics have never been confounded with those of its neighbours. In consequence the list of synonyms attaching to it is small indeed when compared with the string of *aliases* which the faithful chronicler is compelled to attach to most other subjects whose history he has to write. It has indeed been ballotted about between Picea, Abies, and Pinus, and will probably continue to be so according to the varying proclivities of botanists, but its specific rank remains unchanged. For the gardener this, the Tiger-tail Spruce, should have special attractions, for it is, at least in the young state, one of the noblest of its race, and is, we believe, quite hardy. As seen at Combe Wood and Kew its sturdy habit, bold foliage, and striking appearance justify all we can say in its praise. The Japanese call the plant the Tiger-tail Spruce on account of some fancied resemblance in the long pendulous branches of old trees to a tiger's tail. Its stiff very sharply pointed leaves would rather suggest the idea of tiger's claws. In any case, we would recommend the amateur to be as wary in handling this plant as he would be in caressing a cat or grasping a thistle. Rub it the wrong way and he will not forget the motto, *Nemo me impune lacessit.*

Habit.—A lofty tree, with the habit of the common Spruce, but in the young state with much of the bold aspect of P. Pinsapo.

Shoots.—Stout, pale brown glabrous, cushions (pulvini) oblong, the free ends very prominent, those on the upper surface of the side shoots straight, on the lower surface bent to the right or to the left; cicatrices rhomboid.

Bud-scales persistent, ovate acute, shining brown when young, smoky when old and forming a tube around the base of the roots.

Leaves on the leader shoot, as on the laterals, spreading, diverging on all sides, rather distant from each other, 7—8 lines long, 1 line wide, linear curved upwards, 4-sided, with stomata on all sides, flattened at the tips into a rhomboid pungent tip. On transverse section the hypoderm cells are seen to be continuous, in a double layer at the corners. There is no palisade tissue, and the resin canals are two in number, one on either side, just beneath the hypoderm, just as in P. Alcockiana (see fig. 41, p. 212).

Flowers not seen.

Cones growing at the ends of the branches, deflexed, elliptic, or barrel-shaped, 4—5 inches long. Scales coriaceous, shining, brown, abruptly wedge-shaped at the base, ovate or rounded and erose at the upper portion; bracts described as minute, linear-oblong, entire, much shorter than the scales (obsolete in the specimens examined); wing of seed two-thirds the length of the scale, oblong obovate erose.

This plant has been likened to the Himalayan P. Morinda or Smithiana, but its foliage is shorter and more sturdy, and the cones more barrel-shaped. The young plants in the nurseries are very different in their rigid habit and spreading or ascending branches from the more slender pendent or recurved branches of Smithiana. The foliage, too, is widely different on the two plants. In addition to the habitat in the forests of Central and Northern Japan, this Spruce is said by Siebold to grow in Korea and in the Kurile Islands, but we have seen no specimens from those localities.

Our figure was taken from a plant which produced cones at Combe Wood: the cones are rather smaller than native specimens. The seeds were originally introduced by the late Mr. John Veitch in 1862 (see *Gardeners' Chronicle* of that year, p. 1218). Carrière remarks that he has seen some very vigorous growing plants of this species produce flattish leaves (*presque planes*), on which ground he thinks it possible that it is the same as Siebold's P. jezoensis, an hypothesis, however, to which we cannot assent (see *ante*, p. 151). Some doubts have been expressed as to the position of the cones in this and other species.

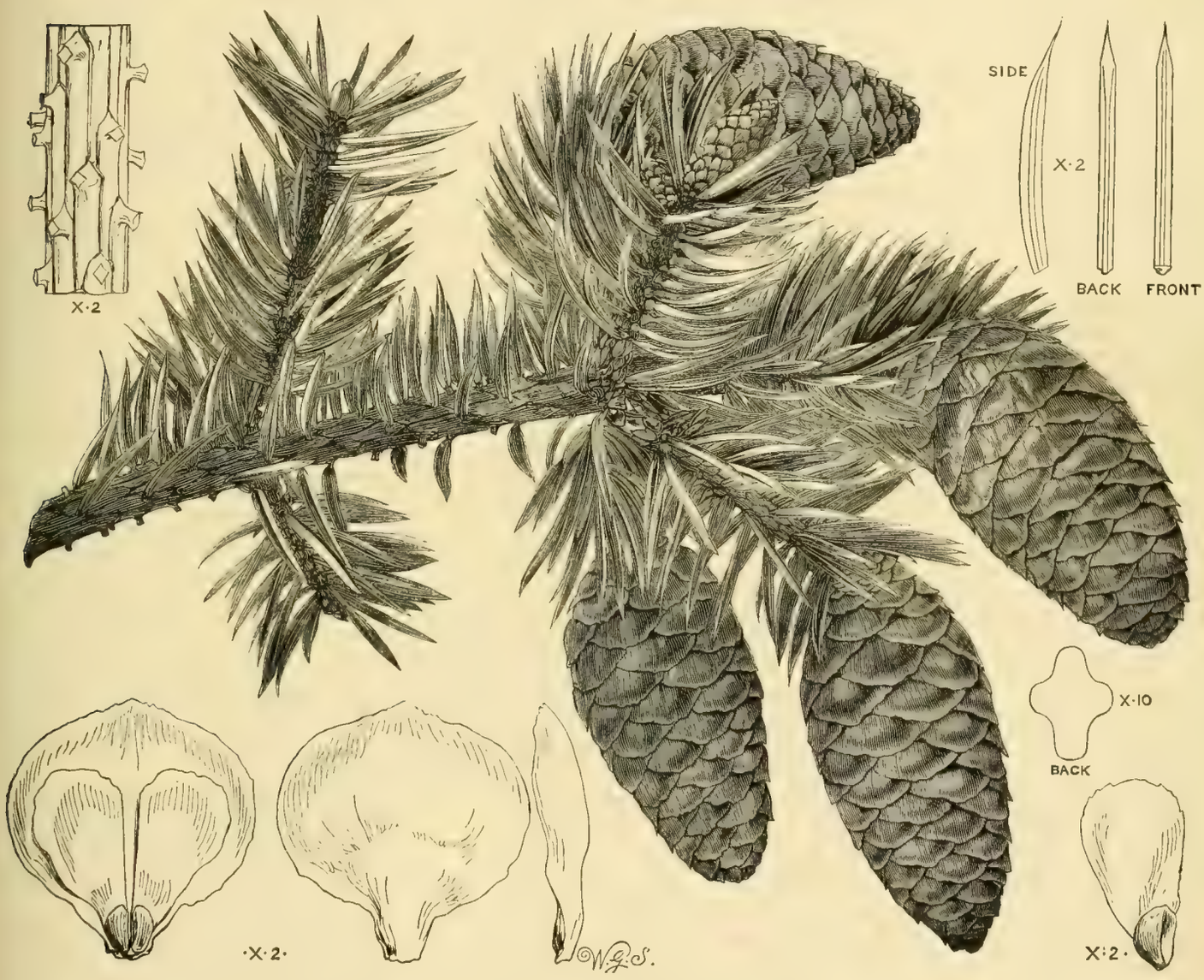

Fig. 44.—Picea polita: branch with cones, real size; portion of shoot, showing the pulvini, magn. twice; leaves, cone-scales, and seeds, all magn. twice; section of leaf, magn. ten times.

* Picea polita, Carrière, Traite Général des Conifères, p. 256, ed. 2, p. 342 (1867).
Abies polita, Sieb. and Zucc., Flor. Jap. ii., p. 20, t. 111; Lindley, Gard. Chron. 1862, p. 1218; Gordon, Pinetum, ed. 2, 16 (1875); Murray, Pines and Firs of Japan (1863), 77, figs. 149—158.
Pinus polita, Antoine, Conif., p. 95, t. 36, f. 1; Parlatore, in DC. Prod. xvi., ii., p. 417 (1868).
Hab. — Mountains of the northern parts of Nipon, where it constitutes forests. Cultivated elsewhere near the temples. (Central mountains rare, teste Maries.) J. G. Veitch! Maximowicz!

This doubt generally arises from the fact that the botanist has often detached cones to deal with, but in the present instance there is no doubt as to the cones being bent downwards (ultimately perhaps becoming quite pendulous), as in the true Spruces. Unfortunately we can say nothing as to the value of the tree as a timber-tree, but judging from appearances only it would seem, from its sturdy habit, as if it should be valuable. *M. T. M.*

CONCERNING FLOWER SHOWS.—II.

One of the principal causes of confusion at country flower shows is the presence of too many masters, and the absence of a central decisive authority. It is easy to account for this. Every member of the committee fancies himself on the exhibition day an all-important personage, and, regarding himself as a sun, wants to be the controlling centre of revolving planets. But, unfortunately, the area of ordinary shows is too limited for the comfortable existence of more than one solar system: even where there is only one, the sun finds full occupation in preventing collisions when too many comets are present on the scene. I should then lay down as a never-to-be-broken rule—I. That there should be a general manager empowered to decide absolutely on every point turning up on the exhibition day. It will be obvious that this largely endowed personage must be a good organiser, a man of decision and of even temper, thoroughly fair and honest, deeply interested in the welfare of the show, of quick perception and prompt in action. He should never under any circumstances be an exhibitor at any show under his control, or his decisions, however just, will be open to suspicions of unfairness to others, and partiality towards himself. One of the most useful men I ever knew connected with the management of provincial flower shows was also a most successful exhibitor, and he entirely marred his usefulness in the one capacity by that circumstance, and at length it became a common remark that all the arrangements were made with reference to his occupying the best position as an exhibitor, and the foremost place as a winner of prizes. This ultimately led to the breaking up of a society which was for some years the leading one of the district, and there has never since been any society of importance formed to take its place.

The general manager will of course need assistance according to the extent of the show; and the other members of the committee, if truly loyal, will gladly accept the subordinate positions of lieutenants, and fill them to the best of their ability under the directions of their chief. I should then have as Rule II., that there must be a sufficient number of competent assistants. First among these will be the secretary with his clerk or clerks; his duties should be limited to purely clerical work, which should be done efficiently and promptly: thus he will keep pace with the judges' awards, and have the prize cards in their places without delay. He should occupy a position easily accessible from all parts of the exhibition, and should remain almost a fixture there so that when wanted he may be readily found. All my readers who have been present at big shows as exhibitors will recognise the importance of this regulation, for they well know what valuable time is often wasted in hunting for the secretary, when he is rambling all over the place, dragged here by one and there by another, till he is wearied to death by mere physical exertion, and his mental power is well nigh exhausted by the unceasing drains upon it. The other assistants required for the satisfactory carrying out of the show will vary in number according to the extent of the ground covered. Suppose for instance there are five exhibition tents: each of them, if of any size, should have stationed in it a lieutenant acting under the directions of the general manager, and whose decisions so far as the exhibitors are concerned should be subject to no interference except that of the chief. Each of these lieutenants should be supplied with a list of the exhibits to be staged in his tent; and a rough plan of the places assigned to them severally should be in his possession; this of course will have been prepared by or had the sanction of the chief beforehand. When possible, the exact position in the tent for every important exhibit should be plainly marked, so that on the arrival of an exhibitor no time need be wasted in finding out where he is to stage, nor the annoyance of re-staging have to be undergone after considerable labour has been expended in arranging exhibits in the wrong place. It is customary at some shows for the secretary to have hung up in some conspicuous place, ready for instant inspection, a list of the entries and the positions where the exhibits are to be arranged set forth. Thus, suppose there are, as in the case mentioned, five tents, and they are designated respectively, A, B, C, D and E. Suppose further that there are forty classes, and that from Nos. 1 to 4 are to be placed in tent A, Nos. 5 to 14 in tent B, and so on, the list for the information of the exhibitor will tell him at once that his exhibits in class 3 must be taken to tent A, and those for classes 6, 9, and 12, are to go to tent B. The information will cost very little trouble in the preparation, and be most useful in saving time, temper, and trouble. If we follow our imaginary exhibitor to tent A, we shall see that the exact spot for his exhibits is pointed out to him at once by the gentleman in charge of the tent. With such a methodised plan, the spaces apportioned will be gradually and smoothly taken possession of, and though there will be bustle and excitement, there need be no undue amount of either.

Of course, there must be a sufficient amount of labouring strength at the disposal of each lieutenant, and here it is that most shows are very weak. For even if, with organisation and good management the work to be done is minimised, it invariably happens that the labourers are allowed to be here, there, and everywhere, like waiters at ordinary public dinners, instead of being told off to particular work, and kept at it till it is finished. This, in my opinion, is the only proper way to get the work done well, and without undue friction. So many men to tent A, so many to each of the others; there and nowhere else should they be employed until the work they have in hand is completed. Meanwhile the general manager is passing from tent to tent, catching at a glance the temper of the moment and its needs. As he detects weak places he does his best to strengthen them, he tells his lieutenant what to do, hears this discontented exhibitor's complaint and tries to mollify him, and that one's request, and grants or refuses it as seems best to his judgment under the circumstances. However free he may be from personally carrying out details—and if the show is large he ought to be quite free—he will find ample occupation. He will find too little room for the exhibits in one place, too few exhibits for the room in another, but being freed from the necessity of doing work which can be done equally well by his assistants, his mind will be at liberty to deal with circumstances as they arise, and the almost inevitable hitches and worries will be reduced to a point which will enable him to cope with them. He will thus have every reasonable chance in his favour that everything will be in orderly array for the judges at the appointed time, only supposing that the exhibitors are punctual, or fairly so; and such as are not, unless for a very sufficient reason, should be debarred from competing. As a rule it will, I think, be found necessary to give a little latitude to exhibitors from a distance, for however well their plans are laid they cannot prevent trains being late or accidents by the way. A good manager will be able do deal with cases of this sort on their merits, and if he be fair and straightforward no one will accuse him of favouritism because he makes some exceptions to the general rule. Speaking from a tolerably long experience of exhibitors I must say I have almost always found them reasonable once they had confidence in the fairness of the management. *G. E. R.*

(*To be continued.*)

NOTES ON PLANTS INTRODUCED FROM CHINA AND JAPAN.

I have already sent you some remarks upon Chinese and Japanese Chrysanthemums, and also upon the Moutan Pæony. There is little to add upon the large number of fine hardy plants, a list of which has appeared in your columns. I have the satisfaction, however, to state that almost all the others are better cultivated and brought to a higher state of perfection in England than in China itself, which says much for the skill of our English gardeners.

In conclusion, one or two running remarks upon the collection may be of interest. And first as regards the Azalea: every mountain and hill in the southern and central provinces of China is covered with these beautiful plants. They are like our own Heaths, and quite as abundant. By far the finest are cultivated in gardens, indeed it was only in gardens that I could find any worthy of introduction into England. A. amœna and A. narcissiflora—which, by-the-bye, I have omitted in my list—are beautiful species, and I believe are more hardy than the common A. indica. A. obtusa is the most brilliant of all the reds, and seems to set itself and all things around it in a glow. Then there are some early flowered variegated kinds, such as A. vittata and variegata, which prove very useful.

And here we must not pass the pretty Anemone japonica, which was one of the first plants discovered by me in the North of China. It grew and flowered in great profusion on tombs of the Chinese near Shanghai in the autumn. I may also notice a hardy Palm (Chamærops Fortunei), which I saw in large quantities in the central districts of China, and which gave a semi-tropical appearance to the scenery. I sent some plants to the late Sir William Hooker at Kew, and requested him to forward some to His Royal Highness the Prince Consort, at Osborne, in the Isle of Wight. These, I believe, have been thriving there since that time.

The Kum-quat (Citrus japonica) is another plant deserving of notice (see figure in *Gardeners' Chronicle*, 1874, vol. ii., p. 337). It grows in the central provinces of China, and is much more hardy than other members of the Orange tribe with which we are acquainted. It is subject to a warm summer, and a winter nearly as cold as that of England. Mr. Bateman succeeded in growing it well in this country. He exhibited it in fruit at South Kensington, where it was much admired. Were it successfully grown with us another remarkable feature would be added to our greenhouses in the winter months.

I have but little to say of Camellias. We have done them so well in England, and have raised so many fine varieties, that I could not add many to our lists. Camellia Cup of Beauty and Prince Frederick William were good kinds which I sent home. And here let me say a word about C. hexangularis, or Star Camellia. This was one of the plants I was asked, in my instructions from the Horticultural Society, to look out for and to bring home. I did look out for it, and, as I thought, discovered it and sent it home. It was a very beautiful plant when in bloom. Its flowers were divided into six divisions, resembling a star, and very unlike any other Camellia with which I am acquainted; but, strange to say, when it reached England and bloomed the star-shape was gone, and it proved to be only a common kind after all. I do not think I could have made any mistake in the matter, and can only account for the circumstance by supposing the soil and hot temperature of Southern China was the cause.

Of berried plants for winter decoration I discovered some remarkable kinds: Aucuba japonica and its varieties are examples of these fine plants. When I set out for Japan I was aware that all the Aucubas which form such an ornament to our gardens, particularly to our town gardens, were female kinds, and probably had all been raised from one plant. Need I say how anxiously I looked out for the male plant; how I cut the flower-buds open with my penknife before they opened, and how pleased I was to find stamens inside. It was in Dr. Hall's garden at Yokohama that I made the welcome discovery. The Doctor was good enough to let me dig up his plant, and this was the first male that reached England.

Skimmia japonica and others of the genus are beautiful examples of evergreen shrubs which become covered with red berries during winter. They are very hardy in this country, and are now much admired. In the West London Cemetery, where I sometimes walk, I observe they are much used as ornaments on the tops and sides of the graves.

Of trees I need scarcely write. Abies Kæmpferi, the Golden Pine of the Chinese, Cryptomeria japonica, Cephalotaxus Fortunei, Cupressus funebris, Pinus Bungeana, the Umbrella Pine, the Retinosporas, and many others, are now well known and justly admired.

The Clematis lanuginosa I ought perhaps to mention, as I think many of the fine varieties raised lately in England claim this as one of the parents.

There is only one other point to which I wish to draw attention. Many of the Chinese plants flower very early in the year. Jasminum nudiflorum flowers in the winter months even in England. With very little care our banks can be covered with its pretty yellow blossoms when the snow yet lies upon the ground. The double-flowered Peaches and Prunus triloba can easily be brought into flower in the spring without much artificial heat. What an advantage this is if we would only take the advantage of it.

But I fear I am tiring you and your readers. I could tell you of Dielytra spectabilis, Spiræa palmata, Primula japonica, Forsythia viridissima, Viburnum plicatum and V. macrocephalum, and Weigela rosea. But enough: we will leave the plants to speak for themselves. *Robert Fortune.* [If Mr. Fortune himself is not tired, we are quite sure our readers are not; and even the plants will be all the better if Mr. Fortune will interpret for them, and not leave them to speak for themselves. In any case, we tender hearty thanks to Mr. Fortune for his very interesting communications. Eds.]

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(*see* Cocoa-nut, double)
sechellarum, 583, '41; 985, '65 (fig.)
LOMARIA—
ciliata, Moore, 290, '66
Dalgairnsiæ, 793, vii., '77 (fig.)
discolor, 661, '55
—— bipinnatifida, 488, viii., '77
—— New Zealand forms of, 73, '67
Dobroydensis, 42, ix., '78
dura, Moore, 290, '66
gibba Bellii, Moore, 25, '76; 710, '68
—— *cornuta*, 49, ix., '78
—— *crispa*, Moore, 682, '68
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Lechleri, Moore, 634, '66
neo-caledonica, 42, ix., '78
LONICERA—
angustifolia, 559, '48
brachypoda aureo-reticulata, 6, '63
discolor, 639, '47
diversifolia, 375, 751, '44
flexuosa (*see* japonica)
fragrantissima, 106, ix., '78 (fig.)
glaucophylla, 700, '58 (fig.)
japonica chinensis, 1079, '73
Periclymenum var. aureum, 1079, '73
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Standishii, 1286, '68; 106, ix., '78 (fig.)
stipulata, 700, '58 (fig.)
LOPEZIA—
lineata, 55, '41
LOPHOSPERMUM—
(= Maurandya)
erubescente-scandens ×, 254, '42
scandens, 185, '45
LOPIMIA—
malacophylla, 289, '48
LORANTHACEÆ—
Angolan, Welwitsch on, 835, '71
LORANTHUS—
the, effect of, on trees, 772, '53 (fig.)
europæus, 139, '73
LOXOCOCCUS—
rupicola, 114, x., '78
LUCULIA—
Pinceana, 103, '45
LUISIA—
macrotis, Rchb. f., 1110, '69
microptera, 1503, '70
Psyche, 842, '65 (fig.)
LUMINOUS—
fungus, 63, i., '74 (fig.)
LUPINUS—
arvensis, 71, '44
Hartwegii, 133, '45
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ramosissimus, 367, '43
LUXEMBURGIA—
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LYCASTE—
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Dowiana, 194, ii., '74
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lanipes, 212, '43
lasioglossa, Rchb. f., 215, '72
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mesochlæna, 788, '55
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Skinneri, 86, '44; 212, '62
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Sieboldii, 116, '55
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pubiflorum, 388, '63 (fig.)
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(*see* Selaginella)
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M.

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MACADAMIA—
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MACHÆRANTHERA—
n. sp., 471, x., '78
MACKAYA—
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MACLEANIA—
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Mackenzii, 665, vii., '77 (fig.)
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plumosa, Hort. Bull, 652, iii., '75 (fig.) (= Paulo Guilielmi)
species of, 49, vii., '77 (fig.)
MADIA—
sativa, 255, '42
MAGNOLIA—
Campbellii, 334, '69
Lennei, 545, '67
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MALLOO—
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MALOPE—
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MALUS—
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(*see* Achimenes)
MANETTIA—
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MANGOSTEEN—
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saltatoria, 488, ii., '74
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(*see* Acer: Negundo)
the Scarlet, 276, '44
list of, 1013, '68
MARANTA—
(*see* Calathea)
arrecta, 1079, '73
synonymy of, 822, iii., '75
Baraquinii, 334, '69
hieroglyphica, 488, ii., '74
Hoyetii, 440, ix., '78
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Morrenii, 441, ix., '78
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fragrans, 6, '41; 423, '42; 169, '45
MASDEVALLIA—
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attenuata, Rchb. f., 834, '71
Barlæana, Rchb. f., 170, v., '76
bella, Rchb. f., 725, ix., '78
caloptera, Rchb. f., 338, i., '74; 322, ii., '74; 290, iv., '75; 104, ix., 78
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Harryana, Rchb. f., 1421, '71; 1079, '73; 488, ii., '74
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Houtteana, Rchb. f., 98, ii., '74; 488, ii., '74
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muscosa, Rchb. f., 460, iii., '75
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Nycterinia, Rchb. f., 1238, '73; 639, i., '74 (fig.); 715, ii., '74; 106, '75
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THE GENERA OF PLANTS.*

THE important work, of which we have chronicled the previous progress, has reached another noteworthy stage, in the first part of the third volume, which has just been published. It contains the whole of the Incompletæ, or Monochlamydeæ, and the Gymnospermeæ (Conifers, Cycads, &c.). The first part of the first volume appeared in 1862, so that some twenty years have elapsed since the work was commenced, and the authors may be congratulated on having at length been able to complete the Dicotyledonous orders. Let us hope that they will, after no long interval, be able to do the same for the Monocotyledons, as Mr. Bentham has been for some time past actively engaged upon the Orchids. Although most of the orders contained in this part have been comparatively recently elaborated in De Candolle's *Prodromus*, there are probably as many changes in the limitation and arrangement of the genera as in any previous part. Many of the deviations from the limitations of genera adopted by various authors in the *Prodromus* are merely returns to previous definitions. The definitions of two proposed new natural orders may be reckoned amongst the most important alterations, as the establishment of a new order is now-a-days a very rare occurrence. The first is the Balanopseæ, established for Baillon's genus Balanops, which consists of about six arboreous and shrubby species, all, apparently, endemic in New Caledonia. Baillon himself refers it to the Cupuliferæ, but the authors of the *Genera Plantarum* think it is much more closely related to the Euphorbiaceæ, from which it essentially differs in the ovules and seeds being erect from the base of the ovary, not pendulous from the apex. The second is the Leitnerieæ, proposed for the genus Leitneria of Chapman, two shrubby species of which are known—one a native of Florida, and the other of Texas. The genus is figured in Hooker's *Icones Plantarum*, xi., t. 1044, and has hitherto been referred to the Myricaceæ. Bentham and Hooker place their new order between the Platanaceæ and the Juglandeæ.

Of all the orders, however, contained in this part, the Coniferæ is perhaps the most interesting to the majority of the readers of this journal; therefore, we will briefly set forth the arrangement adopted, together with the limits of the principal genera. As in the *Prodromus* (Parlatore), the Cupressineæ, Taxodeæ, Taxeæ, Podocarpeæ, Araucarieæ, and Abietineæ, are regarded as tribes of the order Coniferæ, but their disposition, and the limitation of some of the principal genera, is wholly different. Parlatore admits thirty-three genera, Bentham and Hooker thirty-two. The numbers agree so closely in consequence of Parlatore having admitted several more genera in the Cupressineæ than Hooker and Bentham, although the former author places Cedrus, Larix, Picea, Abies, Tsuga, &c., under Pinus. It is satisfactory to find that the authors of the *Genera Plantarum* have been able to leave the genera of the Coniferæ, with one important exception explained below, almost as they are understood by horticulturists. We allude more particularly to the large genera. Callitris includes Frenela, Widdringtonia, and some other less known names. Diselma is referred to Fitzroya. Libocedrus includes the recently published Calocedrus of Kurz, while Thuya (the spelling adopted), is made to include Biota, Thuyopsis, Chamæcyparis and Retinospora. This is the greatest deviation from what may be termed the ordinary nomenclature. Wellingtonia is definitively reduced to Sequoia. Athrotaxis (not Arthrotaxis as commonly written), it is stated, is closely allied to Sequoia, and can only be distinguished from S. sempervirens by the native country and the acuminate scales of the cones. Ginkgo is the name retained for the Maidenhair Tree, commonly known as Salisburia; and Dammara makes way for the older Agathis. The Abietineæ are divided into the following genera:—Pinus, Linn.; Cedrus, Loud.; Picea, Lindl.; Tsuga, Carr.; Pseudotsuga, Carr.; Abies, Juss.; and Larix, Willd. With regard to Picea and Abies, Don, in Loudon's *Arboretum Britannicum*, misapplied them by substituting the one for the other, and he has been wittingly or unwittingly followed by most subsequent British writers; but the authors of the *Genera Plantarum* have returned to Link's orignal definition. Of course there was no help for this in following the rule of recognising the right of priority. Piceas, then, have persistent cone-scales, whilst the scales fall with the seeds from the cones of all species of Abies. On what ground the authors quote as synomyms the names knowingly proposed by "Johannes Senilis" for previously named genera does not appear. Such names should be ignored, otherwise every person desirous of notoriety may obtain it in the same manner, and have his vagaries handed down to posterity in a standard work.

Among the large orders which have undergone considerable modification, the Euphorbiaceæ and the Laurineæ are the most important, and a glance through the copious references under many of the genera will give an idea of the immense amount of labour expended upon the 450 pages of this part, especially when we know that each of these is verified in the proof sheets by direct comparison with the works quoted. The order Urticaceæ includes the tribes Ulmeæ, Celtideæ, Cannabineæ, Moreæ, Artocarpeæ, Conocephaleæ, Urticeæ, and Thelygoneæ; and the genera Betula and Alnus are regarded as forming a tribe of the Cupuliferæ.

* *Genera Plantarum ad exemplaria imprimis in herbariis Kewensibus servata definita*; auctoribus G. Bentham et J. D. Hooker. Voluminis tertii pars 1 sistens Dicotyledonum Monochlamydearum ordines xxxvi. Nyctagineas—Ceratophylleas, et Gymnospermearum ordines iii. Gnetaceas—Cycadaceas. (Williams and Norgate.)

GARDEN GOSSIP.

BY A LADY.—NO. I.

A GRUMBLE. — Ladies of small means, with a patch of ground behind their villa residence and a taste for flowers, will understand me when I say there is nothing they dread so much as the visit of the odd-jobs man, who comes round once a week to "do up" their gardens for them; unless it is that of the man sent from the nursery gardener's once or twice a year to prune or plant. The odd-jobs man is probably ignorant, but may possibly be under control, and if he is not changed very often may learn where the pet plants are hidden underground in winter, even though the label has disappeared. But the man from the gardener's is often a fresh hand every year, and he knows nothing of the special garden, or the special tastes of its owner, and he has no interest in anything beyond the one bit of work he is sent to do. Consequently, when the lady goes round to look at the trees that he has pruned, and to clear up the fallen twigs, which he seldom cares to remove from the beds on which they have dropped, she often finds that one of her pets has fallen a victim to his carelessness; or if he has been employed to plant, perhaps some darling alpine has been cast aside as a weed to make room for a scarlet Pelargonium.

Two years ago I set a man who was working in our garden to lay down fresh gravel on the paths in my rock garden, especially charging him not to touch the beds and plants. On going out to look at his work, I found a root of Aubrietia lying in a little hollow devoted to plants requiring moisture and shade. I asked the meaning, and was told, with many apologies, that he had accidentally uprooted the Aubrietia; "but," he added, in a tone intended to inspire hope and confidence, "I was going to plant it again just in that spot." He had been going to put a plant of the common Aubrietia (a perfect weed in my garden) on the top of my Swiss yellow Pinguiculas, and a pet Norwegian specimen of Asplenium viride! He seemed extremely puzzled when I objected to the arrangement, preferring to throw away the plant which he had thought so precious.

But this is but an example of the accidents that frequently attend the visit of the odd-jobs man. The man from the gardener's may generally be expected to know better, but this expectation is not always realised. Gardeners must, of course, have young hands on their establishments, and when there is a press of work they cannot always avoid sending these out to the ladies who want their gardens done up for the summer. Young hands are often conceited, and apt to fancy they must know more about gardening than any female, and so they give but slight attention to her hints and warnings. Yet it may well happen that the lady herself could do the work just as well, if not better, were it not that she lacks the physical strength she once possessed.

For I think the love of flowers and of gardening grows with advancing age and inability to garden, and the same lady who as a girl thought it a great nuisance to have to cut off the dead Roses, or weed a flower-bed, will be glad enough to do it in her old age, and only long to be able to do more than her failing strength will admit of her attempting.

An old lady naturally cares most for old-fashioned flowers; for, after all, the greatest charm flowers possess to the old is their association with bygone days. What charm can a bed of Pelargoniums boast that will compare with that of a root of Starch Hyacinth, if the latter grew in a corner of the kitchen garden of her father's parsonage? Or what cares she for the latest sport of a Chinese Primrose in comparison with the double lilac Primroses for which she used to hunt in the shrubbery in the early spring days of her childhood? So she tries to fill her garden with flowers which, to her, are living memories of her youth, and perhaps tries in vain to get the gardener to respect plants which he regards as little better than rubbish. Many ladies will treasure for life some old-fashioned flower which is directly descended from an individual plant that belonged to a mother or sister long since departed; and the loss of a treasure of this kind, through the carelessness of a man hired for the day, is mourned almost as if it were a renewal of their original loss.

Some ladies, stronger in mind and body than the generality of their sex, try to avoid all these dangers by dispensing altogether with the gardener. I know one instance in which an elderly lady, with the assistance of her maid, does all the work of her garden, even including the mowing of her grass-plot; and the consequence is that her little garden abounds with charming old-fashioned flowers that her fond hands have protected since the days when they were commoner than at present. Her garden is bounded on one side by an old wall, from every crevice of which spring lovely little Ferns, which she assured me were self-sown. It seemed as though they knew where to find protection from their natural enemies, the Fern-hawkers, just as wild birds will come and build in any garden where nest-taking is absolutely prohibited.

But instances like these are rare; and in spite of the present agitation in favour of teaching ladies to garden, I doubt whether the professional gardener will ever suffer much from female competition. I can but advise all ladies who care for their flowers to supervise the hired gardeners whom they are obliged to employ occasionally, and never to let their gardens be put in order while they are from home.

On the other hand, I would beseech all gardeners to remember that there are some who do not care for showy beds of Pelargoniums and Petunias, but who do care very much for common and often weedy-looking plants, and that a due consideration for the tastes of their employers, and a little forbearance towards their special hobbies, would save them from being looked upon rather as enemies than as the friends, which they ought to be in virtue of mutual tastes and occupations.

A MODERN CONSERVATORY.

THE accompanying illustration (fig. 45) represents the exterior view of a new conservatory and plant-house, erected last autumn at Eagle Cliff, Greenhithe, the residence of Mr. R. S. Dunbar, of the Thames Bank Iron Company. The conservatories illustrate Mr. W. H. Lascelles' patent system of bent wood construction as exhibited by him at the Paris Exhibition. The advantages are increased strength with improved appearance at a very slight increase in the cost; there is no movement in the bar, and in in the case of a greenhouse erected a few years since in the Horticultural Gardens, when it was taken down after being there two years, there was not a broken or cracked square of glass, although it was glazed with bent glass. We may note, by the way, that the centre of the straight bar roof is the weakest place; but in a curved roof all parts are equally strong, and the effect produced both inside and out is better than in the case of a straight roof. A curved roof admits more sunlight and heat than a straight roof, and Loudon, thirty or forty years ago, said that for growing plants or fruit a curved roof was much to be preferred.

The heating of the structure is supplied by six rows of pipes in a trench below the floor-line, and so arranged that either conservatory can be heated at will; while the ventilation is amply provided for by the lantern-roof, which opens by a simple mechanical contrivance on either side or both, as may be desired, while the large hanging sashes by a similar arrangement provide for free ventilation, which can be done instantly, and yet is amply secure against a gale of wind or any one attempting to open them from the outside. The conservatories have an agreeable appearance, and the fine-foliaged and other plants, as arranged by the excellent gardener, Mr. W. Green, lend a charm to the whole surroundings.

LONDON MARKET PLANTS.

(*Continued from p.* 202)

THE PLANT HOUSES.—From what I have said at pp. 180, 202, it will be understood that the glass accommodation at Messrs. Beckwith & Sons is very extensive. There are over fifty houses, averaging about 105 feet long, and from 11 to 40 feet in width. They are constructed so as to give an amount of light to the plants which I have never before met with, and much doubt if any exist equal to them in this respect. The whole of the portion which holds the glass is composed of thin iron bars about 1½ inch in breadth, just strong enough to afford stability but no more; each of these bars consists of a single piece running right through from one wall-plate to the other bent to the requisite angle in three places, that is, at the ridge and each eave. There is no ridge-pole or anything of a like character, neither is there anything at the eaves in the shape of a longitudinal piece or spout, no purlines, brackets, or cross-stays, upright or other supports, except in a few of the widest houses; nothing, in fact, inside or out, from end to end of these long houses, but the thin bars and the glass, which is bedded in putty, and puttied at the top as well, all as close and tight-fitting as can be. The sides consist of a single upright square of glass which meets the lowermost square in the roof, the bottom of which just rests on the upper edge of the side square, and overlaps it slightly so as to throw off the water which is caught by the spout that, instead of being in its usual place at the eave, is fixed to the wall plate. At the ridge of the houses the arrangement is similar, the top squares at one side coming up a little higher than those at the opposite side of the roof and also slightly overlapping them; these laps at both the ridge and the eaves are, like the whole, as tight as possible. The ventilation is by shutters in the side walls, and hinged lights in the roof: the latter, about 2 feet deep, in pairs opposite each other, and instead of being hinged at the top, which, as will be understood, the arrangement of the ridge does not permit, they are hinged at the bottom, opening upwards, one just overlapping the other when shut, in a similar way to the glass at the roof.

It will thus be seen that unless it were possible to make the roofs of plant-houses all one transparent piece, like a propagating glass, they could not have more light than Messrs. Beckwith's houses afford. They, at all events, have hit upon the way to give all the light possible to their plants, without which the soft-wooded things grown could not bear the heat they receive in winter. The glass employed is 24 oz., 20 by 18 inches. Much has been said from time to time for and against iron roofs, some maintaining that the drip from the iron injures the plants, and that the breakage of glass in them is greater than in wood. As to the first objection, it is simply imaginary unless there is neglect in painting; neither is there any foundation in the second if the glass is not put in too tight. I have seen a good deal more glass cracked in wood-roofed houses through sudden fluctuations of the weather than was to be seen in any part of Messrs. Beckwith's establishment. All the wood used for staging is Pitch Pine, not painted, which on this resinous timber is simply useless as a preservative. The houses that have been recently built, and others that are to go up, may be said to be imperishable, for there is nothing about them that can rot excepting the doors and their frames. A description of one will suffice: 120 feet long, 16 feet wide, roof of iron and glass, like those already described, centre and side stages all of concrete, made as follows: one part hard-setting lime to five of the fine siftings from burnt clay ballast. As the walls and stages are being built of this, about two parts clinkers, old broken bricks, and any hard refuse material that happens to be at hand, is worked in, and in this way are used up and got rid of; the material soon dries, and then is all faced with a quarter of an inch of cement. The top of the side walls is hollowed out so as to carry off the water without the aid of ordinary gutters. These concrete houses have a substantial appearance, and will no doubt be durable.

I have already indicated that those who grow for market such quantities of plants that are forced all through the autumn, winter, and spring months, are necessarily compelled to use much more artificial heat than is required in either private gardens or general nurseries. The houses here are well piped—all 4 inch: twenty-one of them, each of the same size, 130 feet long by 11 feet wide, have six rows of pipe, or 840 feet each—the wider houses proportionately more; there is in all 40,000 feet, or over 7½ miles.

Much has recently been said about garden boilers, and many who take an interest in the subject will no doubt feel curious to know how many, and what description of boiler is used. There are only seven, consequently they have over 1 mile and 100 yards each. I had an opportunity of seeing and examining how they did their work after dark during the severe frost last month, and can vouch that these immense lengths of piping were so hot that the hand could not be borne upon them for a moment; in fact, any one acquainted with the heating of garden structures could not fail the moment he entered the houses to notice the unmistakable sensation always present where the pipes are hot. The boilers are Mr. Beckwith's invention. They are completely different from any others that have ever come into use, so far as I have been able to ascertain, and do their work most effectually with very much less fuel than any that have come under my notice. The ground occupied by Messrs. Beckwith's place is flat and somewhat low, water standing, I am told, within 3 feet of the surface, but none of the stokeholes are drained, instead of which they are made watertight. Again cement is brought into requisition, and, as managed here, it gives certain evidence of its superiority over bricks. The stokehole, including the space required for the boiler to stand, is excavated, and the whole bottom and sides are then built up in one solid piece of concrete 12 inches thick—in fact it forms a concrete tank. The concrete for this purpose is made of one part Portland cement to five of the fine-sifted ballast. The stokeholes continue as dry and impervious to water as if they were hewn out of a solid piece of granite. Messrs. Beckwith, like a good many other people, have had enough of bricklayers at 9*d.* or 10*d.* per

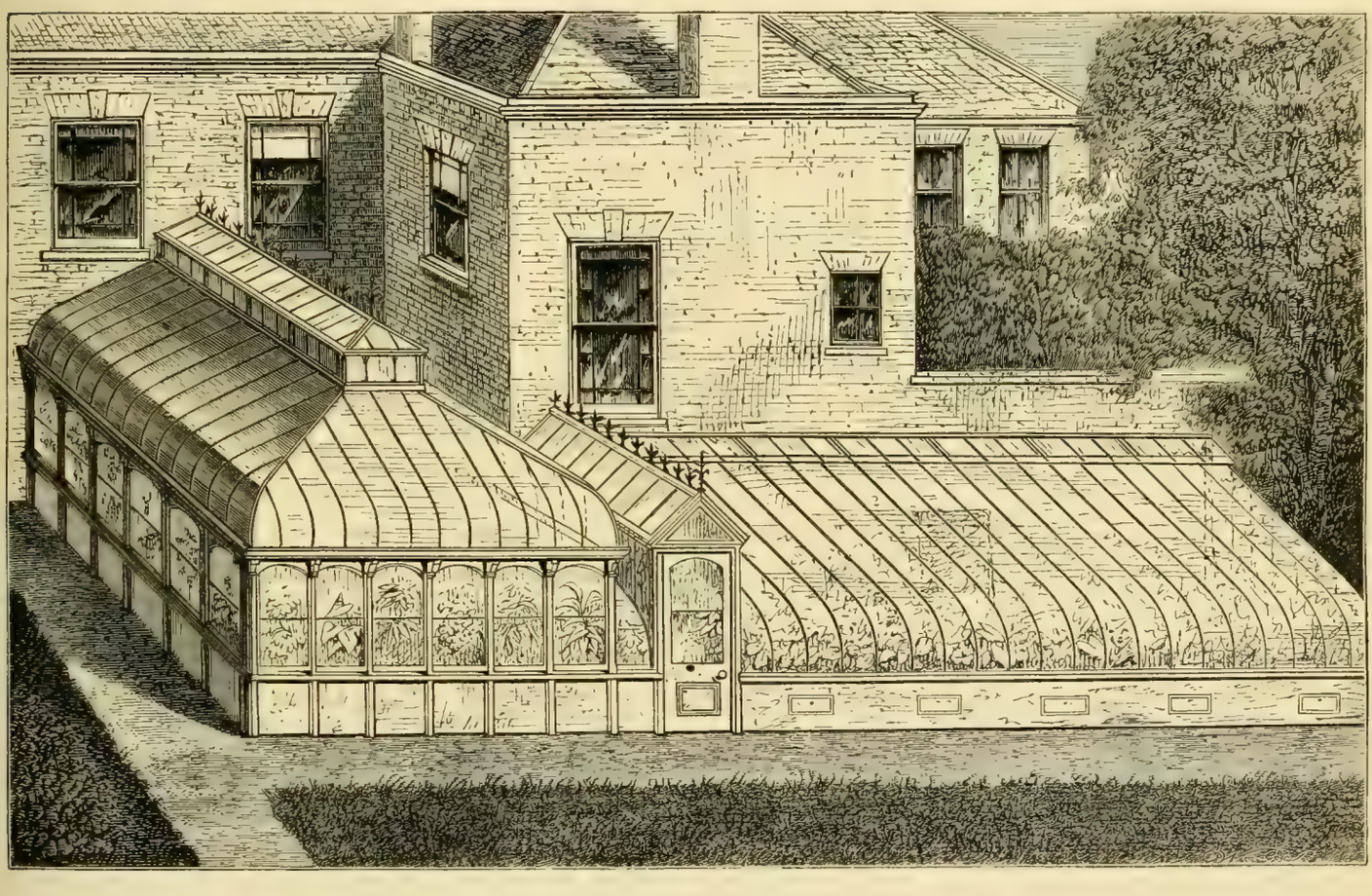

FIG. 45.—CONSERVATORY AT EAGLE CLIFF, GREENHITHE. (SEE P. 236.)

hour, with often very little exertion at these figures; and, despite predictions as to failure, resolved to try this description of concrete for a chimney shaft. It was made a strong erection, just upon 40 feet high, and the result is that it stands and looks as well as if built of stone. It cost, I understand, about half in labour and material what a brick chimney would have done.

The annual propagating and growing up to the standard here attained of the immense number of plants, with the preparation of such of these and the cut flowers that falls to each working day's quota for market, even with the advantages of the division of labour carried out in places of this description, nevertheless involves a vast amount of work, yet it is got through by thirty-one men and boys; but the number employed does not give an idea of the work done, for although the labour movement of the present day is so insidious as to leaven with its baneful presence almost every occupation, still it does not seem to have reached the market growers' establishments, nor is it likely to. *T. Baines.*

Forestry.

Thinning Scotch Fir Plantations.—I regret that Mr. Michie's details at p. 151 do not affect the question at issue, although interesting enough in other respects, and I must again ask Mr. Michie why he confines his observations to unsuccessful plantations, when he must surely be able to find more encouraging examples of good forestry within the bounds of the widespread plantations in Strathspey and on Dulnan-side, as well as at Cullen?

Having been the unintentional cause of this discussion, I can only hope its continuance may attract more general attention from practical men who have it in their power to throw light upon the subject, and if anything I have said is open to objection I shall be glad to arrive at the truth, even at the expense of my own expectations. At present the question, "Do woods pay?" is still undecided.

I have given instances from authentic sources that plantations of Scotch Fir have yielded an income during fifty years' growth equal to an annual rental of from 30*s.* to 40*s.* per acre; Mr. Michie has shown that woods managed and disposed of by him do not yield more than from £30 to £40 per acre during sixty years' growth. Doubtless many practical foresters have read Mr. Michie's statements in the *Gardeners' Chronicle*, and their opinion of his system of managing and valuing his woods would be of great use. I would especially ask their attention to the results of the plantation marked No. 4, planted in 1858 with Scotch and Larch, and thinned for the first time in 1869, when eleven years old, the cost of thinning being 5*s.* per acre, and the farm tenants being allowed the thinnings for their trouble in taking them off the ground. Now, by Mr. Michie's showing, there remained on the ground after this thinning at eleven years old only 589 trees per acre, and unless this was caused by numerous failures one sees no reason for removing so many trees, which would not have injured, but rather done good to their neighbours if they had been allowed to remain and been thinned out gradually until the trees stood from 15 to 20 feet apart. Then again the low price Mr. Michie gets for his timber has the effect of reducing the income to a very serious extent. As an instance he sells Scotch Fir trees containing 7 cubic feet at 6*d.* per foot, or 3*s.* 6*d.* each, whereas in other districts there is no difficulty in getting from 10*d.* to 1*s.* 2*d.*, and at present there is a marked improvement in the demand for timber of all kinds, as may be seen from recent sales.

Mr. Michie's example loses half its value by such miserable returns, but even more so by his admission that "he had no record of the date of the formation or planting of it, and only knew its early history from hearsay and its subsequent appearance;" and again he informs us that "the turf dykes were let down when the trees were about fifteen years old, and sheep admitted to graze among them at pleasure." In short the plantations must have been neglected during the most important stage of their growth, and could not have been expected to be much better than failures.

I have given in another publication for this month, the *Journal of Forestry*, a statement showing that after charging compound interest for fifty years at 5 per cent. on the rent of the land and on the cost of plants and planting, the extent of land being 20 acres, there is left after the land is cleared a surplus of £1500; and if the rate of interest is reduced to 2½ per cent. this surplus is increased to upwards of £2000, being equivalent to a yearly rent for fifty years of from 30*s.* to 40*s.* per acre. There are immense breadths of waste land of various kinds spread over the British islands, and a large proportion of them suitable for growing trees, much of it being on slopes needing almost no drainage, and in many cases already enclosed with turf dykes, requiring no outlay but the cost of plants and planting. What an increase to the value of landed property would take place were such lands planted with trees. If enclosures and drains are required, the surplus I have shown will bear a large reduction for such purposes, or any other extra expenses, and still leave a very gratifying augmentation to the value of the land before it was planted.

In conclusion, we have authentic results to show that plantations of Scotch Fir on congenial soil have yielded the return I have named, and I have no doubt of their doing so again, provided they are protected from ground game, and that the periodical thinning and pruning be directed by an intelligent forester. In such a case the trees will not be allowed to injure each other before being thinned, nor will they be encouraged, by thinning too soon, to throw out strong lateral branches, which retard the yearly upward growth of the tree by depriving the main trunk of its necessary nourishment. Be it remembered, that in the case under discussion we do not want picturesque trees, but trees which will grow soonest into money, and the best suited and earliest ready for the market. *Wm. Baxter Smith*, 4, *Salcombe Villas, Merton.*

Garden Operations.

FLOWER GARDEN, ETC.

No matter how beautifully situated or how perfect all other surroundings of a garden may be, if the walks are not kept clean and hard there is—to my mind at least—the one essential to full enjoyment lacking: hence the importance of keeping these in perfect condition, and no season is better suited than the present for a general overhaul of them in the matter of repairs, as the long severe frost has discovered to us the weak places; all such should be dug out and filled in with brick rubble or clinkers, the drains generally should be cleansed, and a fresh surfacing of new gravel be given to all parts that look anywise dingy. Under trees the gravel is apt to get green and moss-grown, and in such parts a sprinkling of salt will destroy the moss and impart brightness to the gravel. The general use of salt for cleansing walks is not to be commended, for, although it kills weeds when first applied, it acts as manure afterwards, and though another application would again destroy them, a too-oft-repeated dose renders the gravel "pasty" the whole of the winter season. Prior to the final surfacing and rolling down of the walks grass verges should be cut with an edging iron, and gappy places in Box or other edgings be made good.

As to lawns turfing ought not longer to be delayed; the turf is now soft and pliable and the roller has due effect, and the more rolling lawns can have just now the finer and firmer will be the sward the whole of the summer. Lawn grass seeds may be sown at any time now; on heavy soils a month hence would be better, to admit of a quicker germination through the soil being warmer, but on light sandy soils it is always desirable to sow early that the seeds may get a firm grip of the ground before a dry time sets in. Soils of every description that are intended for laying down as lawns should previously be well consolidated by treading and rolling, and the surface be rendered smooth and friable by repeated "pointing" and raking over. Ivy on buidings or screens should now, before new growth is made, be closely clipped in, its full beauty being obtainable only by thus yearly trimming it, and the practice also hinders the lodgment of vermin by keeping the growth close to the wall. Clematis, Wistarias, and all other deciduous climbers may now be pruned and tied; any that are to be planted should have immediate attention, and the same remark will apply to Roses of every section. A few of the earliest flowering kinds may be pruned, but the general stock will be best if not pruned for another month, and by that time the full extent of injury the frost has done will be visible, and they can then be pruned accordingly.

Summer bedding-out—by way of propagation of plants—must now start in earnest. Pot off Pelargoniums that have been wintered in store pots; we have not space to pot ours singly, so shallow boxes are used, and the compost being principally leaf-soil, they transplant from these with good balls, and the plan is in every way a success. Our standard variegated bedding kinds are the old Mangles' Variegated, May Queen, Lady Plymouth, Crystal Palace Gem, Rev. W. F. Radclyffe, Flower of Spring, and Sophia Dumaresque; of standard flowering kinds, Vesuvius, Bonfire, Waltham Nosegay, Jean Sisley, Christine, Master Christine, and Lord Palmerston. New kinds have been repeatedly tried, but the above old kinds have not yet been surpassed by any. Petunias, Verbenas, Ageratums, and Tropæolums, should be used but sparingly, as they are so soon injured by rains, but a few of each are indispensable in large vases and beds; cuttings put in now will make finer plants by May than the autumn-struck plants that have been kept for stock. Ageratum Cupid is a most desirable acquisition; it is of dense dwarf growth, free flowering, with plenty of substance in the flowers, and therefore not so easily injured by rain. Coleus and Iresine should have a moist heat of 65°, and cuttings will soon be produced in abundance. These plants give us colours that are indispensable in summer bedding, otherwise their tenderness would exclude their use; the only alternative, therefore, is to use them as sparingly as may be. We find Alternantheras much more easy of propagation and general management in regard to their preparation for bedding, and also slightly hardier than Coleus, that we use these more freely than either Coleus or Iresines. They should now be given a moist heat of 70° or 75°, and as soon as cuttings can be had make up slight hotbeds with leaves and litter, on which place ordinary forcing frames, then a few inches of leaf-soil, and on this about 4 inches of finely sifted soil—light loam and leaf-soil; insert the cuttings at a distance of 2 inches apart, and they will be no further trouble beyond watering and airing till they are to be transferred to the beds. There are three kinds only that retain their effectiveness throughout the season, viz., paronychioides, amabilis latifolia, and magnifica. Pansies, Violas, Calceolarias, and Gnaphaliums, are all amenable to cold frame treatment, and if crowded in these should be thinned out at once. Pansies and Violas may be increased by division when thus transplanting them.

Seeds of subtropical plants should all now be sown: some of the best were named in a former Calendar, and to these may be added Ferdinandas, Uhdeas, Aralias, Amaranthus, variegated Maize, Perilla, Chilian Beet, &c. Any plants of this class that have wintered in a cool place, and are now starting into growth, should be encouraged by top-dressing, or else repotting: the following are a few of the plants likely to need this attention:—Australian Dracænas, Ficus, Phormiums, Cannas, Sonchus, Palms, Yuccas, Agaves, and Caladium esculentum. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

It is seldom the misfortune of gardeners to approach the season when fruit trees are fast developing their blossom-buds with so much arrears of work on hand as is the case generally at the present time. To repeat the causes which have led to this result would be but to remind cultivators of unpleasant circumstances of which they are already but too well aware from personal experience. Planting arrangements have been upset so frequently that it is doubtful whether many important operations will not have to stand over until next autumn unless where the work is so far advanced that it must of absolute necessity be completed. We caught the opportunity of a few hours' dry weather to do a little planting which was of a pressing nature and found it very agreeable to have a good heap of soil in proper condition for performing the work. There is no use concealing the fact, that much planting remains yet to be done, and it will be of the first importance in planting standard and other fruit trees to provide them with soil into which the roots will ramify quickly and which also has the virtue of assisting root-growth to develope freely and rapidly in order that the trees may not come to a sudden standstill by-and-bye when Nature has expended the supplies with which she provided herself at the end of last autumn. There has been a constant drag upon these supplies, particularly where trees have been lifted for some time; and if they can be got to work at the root before the sun attains much more strength, the better it will be for future prospects. Violent winds are now prevalent, and strong stakes will need to be put firmly to each tree as it is planted. Procrastination is a bad doctrine to initiate in this respect; let the work be done at once, and let the roots be made safe by a warm mulching of litter into which cold or frost will not penetrate to any depth, and which will be open enough for the sun's rays to act upon the soil whenever this Divine blessing is bestowed upon us. There are other perhaps less important operations which will also require both skill and tact in working out projected alterations. Raspberries, Gooseberries, Black and other Currants, which from exhaustion of the soil or other causes it was contemplated to remove to fresh quarters, had better be done piecemeal as a security against the partial loss of crops which, although common, are notwithstanding

amongst our most indispensable requisites for various purposes of cooking. The work need not be abandoned altogether, but fresh plantations may be made, and enough of the old retained in their present positions to secure a supply of fruit for the present season. Having already referred in former Calendars to the necessity of pushing forward all kinds of pruning and nailing which can be executed in moderate weather, the burning question of the hour will soon be present with us, viz., the protection of fruit blossom. I have either practised or read of every invention that the human brain can devise as a panacea for this bugbear, which appears annually as regularly as the swallows, and is soundly threshed by half-a-dozen or more stalwart gardeners with fir boughs, bracken, fishing-nets, tiffany, and a whole host of other devices, which are all of them excellent in their way, but falling far short of producing the desired effect. There is no doubt about it, that practical gardeners are alive to their present position and do their best; but it is sheer nonsense for us to fold our arms and blame the dispensations of Providence for a state of things which we as a body do not meet with firmness, nor do we even state with decision and clearness the true remedy for averting this annual disaster. That each succeeding season is growing worse than its predecessor is an undisputed fact. Meteorological statistics, if they are worth anything, prove this, and modern fashion seems to swallow up in hothouses a large proportion of what in times past was expended upon walls. Look at garden walls all over the country for proof of this. They are many of them defaced, which causes damp to lurk in every crevice, and when this moisture becomes congealed is it any wonder that blossoms, which are already feeble enough through being produced from immature growth, should be chilled to inaction, if not to death? In future let us discuss the utility of having our fruit growing areas of the tender class more circumscribed and covered with glass, of glass copings, of better kept walls, and of selection rather than collection of fruit trees. These are the cardinal points in hardy fruit culture for gardeners to discuss more frequently than they seem disposed to do, and sooner or later the question will have to assume a practical shape, however reluctantly gardeners and their employers may approach it. *W. Hinds, Canford Manor.*

FRUIT HOUSES.

Figs.—The fruit on early started pot trees will now be approaching the most critical stage in Fig culture, and on this account great vigilance must be observed in the management of the roots. If the latter have taken possession of the new compost some means should be devised for insuring the passage of liberal supplies of manure-water to every part of the ball. The most simple and effectual way is to place bands of lead some 4 inches deep round the insides of the rims of the pots, for the reception of a little fresh mulching and water in sufficient quantity to penetrate the ball. Syringe twice a day when the weather is fine, taking care to wet every part of the wood and foliage, otherwise red-spider, after so much hard firing, will be sure to gain a footing, and prevention is always better than cure. On dull cold days a thorough damping of the surface of the bed and walls may be substituted for the afternoon syringing, as the foliage should be moderately dry before nightfall. Stop all side shoots and thin out useless spray where the trees have attained their full size, but allow the terminal shoots to grow on if the space will admit of extension without producing too much shade or overcrowding. If the roots have not found their way into the plunging material the latter may be turned and receive a few fresh leaves to keep the bottom-heat up to 75° or 80°, but when they once find their way through the sides of the pots disturbance must be guarded against as they will form one of the best safeguards to the fruit. Now we have mild gleamy weather a gradual increase in the mean temperature may be indulged in, but the gain should be derived from solar heat in preference to any great advance through the night. The above rules will also apply to succession-houses, in which the trees will now be making good growth. If trained on the long shoot or extension principle the young shoots should not be tied in too close, as Figs, when growing in light favourable situations, always enjoy a little freedom, and invariably set an abundance of second-crop fruit on short-jointed growths which are allowed to approach the glass before they are tied down. See that the inside borders are well mulched and watered, and encourage surface roots by keeping the top-dressing constantly moist. Syringe twice a day, and allow the temperature to range from 58° by night to 75° by day from fire-heat, and 80° to 85° after closing on bright afternoons. The pruning and cleansing in the latest house should now be finished, and advantage should, after the end of this month, be taken of bright days for closing early with sun-heat. In the pruning of these late houses, from which only one crop of Figs can be obtained, a little extra thinning will admit of an even spread of foliage without overcrowding or retarding the ripening of the fruit, and the young growths will be firm, short-jointed, and, under judicious management, properly matured before the end of autumn. *W. Coleman, Eastnor.*

Cucumbers.

A long continuance of severe frost, with an almost total absence of sunshine, has been succeeded by a spell of wet and windy weather, with a minimum of sunshine, which, although we had hoped that any change in the elements must necessarily have been a favourable one, is little, if any, improvement from a forcing point of view, upon that with which we have just dissolved partnership, let us hope, for eight or nine months hence. Under these circumstances, and in order to maintain a good steady supply of fruit, great care and forethought must be exercised in attending to the special requirements and general treatment of the plants. Keep the evaporating-pans filled with liquid manure, the ammonia of which is beneficial to the plants, and detrimental to insect life. By way of neutralising any superabundance of moisture that may arise in dung frames, make a dusting of new lime and dry soot over the surface of the bed, which will probably be the means of preventing the plants from "damping off." *H. W. Ward.*

Melons.

Those plants which received a suitable shift at the end of last month will now be ready for planting, if not already done, on the ridge in the Melon-house proper for trellis training. See that the plants are sufficiently moist at the roots before turning them out of the pots. The soil should be pressed firmly around each plant while being planted, taking care that the base of the plants is kept a little higher than the surface of the mound, in order to prevent the soil lying close round the collar from becoming too damp, which would cause canker in the stems of the plants. Fasten the sticks to which the plants are trained to the first wire of the trellis for support. Water in any shape must be applied with great caution during the present dull weather. Our earliest planting, which was made at the end of January in a hot-water pit upon a bed of Oak and Chestnut leaves, has not yet required any water at the roots. The planls have, however, been damped overhead on bright days (which, alas! have been few and far between), and shut up early in the afternoon with a temperature of 85°, running up to 90°. Whilst on the subject of watering I may remark, for the information of beginners, that the withholding or application of water to the Melon, as to other plants, must be determined by a variety of circumstances, the most essential being the means by which the bottom-heat is obtained—whether by hot-water pipes or by fermenting material. If by the former and more modern principle of supplying bottom-heat the plants, as a matter of course, require being watered at the roots frequently, even though the weather be dull and wet; whereas by the latter mode—fermenting material—they require no water during such weather, and comparatively little in the midst of summer, inasmuch as the bed of dung and leaves, or leaves only, as the case may be, upon which the plants are growing supplies the roots with a moist genial heat, and into this they can push *ad libitum*. On the other hand, where hot-water pipes are employed for this purpose, the circumstances are quite the reverse. Hence the advisability of exercising mature judgment—common reasoning—in the application or withholding of water, as the case may be, to the roots of Melons and Cucumbers. The above subterranean items, in connection with the vigour of the plants and condition of the weather, as also the stage of growth at which the plants have arrived, are the points by which to be guided in this important particular. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

Stoves.—Although we are now nearing the end of the second month in the year, a time when we expect to feel much of the sun's influence, that luminary is still hidden behind the clouds, and till these pass from before it, so as to afford a clear light and allow it to render some assistance by diffusing its rays, it is useless attempting to push forward the growth of plants by raising the temperatures in these structures, as any response made to an increase of heat under a dull leaden sky must be but feeble and enforced, whereas by waiting for the sun to aid, conditions are more natural, and the shoots they emit under such favourable circumstances will always be found to possess much greater strength and substance. Not only is it very important to keep the temperatures moderately low when there is an absence of light, but it is equally so that the atmospheric moisture should be regulated accordingly, as a lower degree of heat when accompanied by an excess of damp is very injurious. This being the case, syringing at such times should be suspended, and the paths and other surfaces only well sprinkled, from which wetting the air will take up quite as much as is good for the plants, especially if there happens to be any tan or other fermenting material in use in the house. Where means exist for applying anything of this latter kind it is always advisable to do so, as the steam arising from such a body is very congenial to the foliage of most things, and helps materially to keep down insects, most of which are only becoming too rife at this season, and more particularly mealy-bug, a pest that breeds at a great rate. To keep these under requires the strictest attention and a continual watching, as it is only by the closest vigilance when they once get into a house that plants can be preserved from their attacks, for, unlike thrips, spider, or anything else, they are not assailable by ordinary means, and, phœnix-like, seem to rise out of their ashes. For all this, however, it is well to burn the stakes and ties that have been used near them and replace with fresh ones, giving the plants a thorough cleansing at the same time, and removing carefully the surface-soil, that all may be free from any stragglers or their eggs. Roof climbers or any that may be grown in pots will now require seeing to, as all are on the move, and the useful Bougainvillea speciosa is just in that forward condition as to be seriously affected by greenfly, which at the particular stage the inflorescence is now in, get down amongst it in such a way as to cripple it and also disfigure it with their excreta, without being observed. To make matters safe it is always best to fumigate a few times before the plants get much advanced, and to follow the same up with a heavy syringing, taking care when doing so not to bruise or injure the tender leaf bracts that will soon push fully out in all their branches. To prevent these from falling off it is necessary to water with some amount of judgment, as a sudden access of wet at the roots so early often produces this effect, as does also an overdose of smoke, and more particularly is this the case if an inferior kind of tobacco-paper is used. B. glabra, being altogether different in habit from the species above-named, which flowers on the wood of the previous year, should now be thinned out and spurred in, that there may be sufficient room for the young shoots when they form, and if the plants are in pots the aim in pruning must be to provide a good frame, by leaving the branches best situate so that when tied in position the specimens may be well and regularly furnished throughout. The same remarks apply to Allamandas and Clerodendron Balfourianum, the whole of which, as soon as they are fairly started, should be shaken out and repotted in a mixture of good fibry loam and peat, using most of the former for the Bougainvilleas and Allamandas, which delight in a more holding and heavier soil. In training the young shoots of Dipladenias it will be found that they do far the best run up strings strained near the glass, in which position they get much more light and air, and consequently make a shorter-jointed growth, which by-and-by it will be an easy matter to transfer to the trellis intended to receive it, when it can be evenly distributed over the surface. In potting, a work that needs taking in hand at once, it is essential to the welfare of the roots of the plants that the soil in which they are to be put should be in proper condition—a state it may be brought into by being kept under cover in a warm dry shed where it can be spread out, chopped up, mixed and prepared to suit the requirements of the several kinds to be treated, which can then be passed through hand rapidly and returned to their quarters without any delay. When dealing with the more choice species, the soil used for them should have a good portion of the earthy matter beaten out, and plenty of sharp sand added, which will keep it in a sweet, porous condition for a long time to come. In the event of bright sunshine, plants that have been overhauled and disturbed by repotting will require shade, and it will be well therefore as far as possible to arrange them at one end, that their wants in this respect may be attended to without detriment to the others, as the majority for the present will be benefited by the solar rays, which help to build up and consolidate the tissues. *J. Sheppard.*

Watering Plants.—The necessity for giving water to plants at a temperature not lower than the atmosphere of the house in which they are grown, is a maxim generally held up as requisite one to follow. It is sound in principle, yet it is not in all cases necessary to follow it so exactly as is often urged, particularly when plants are making little growth. Where tanks or cisterns exist inside the houses, as when provision is made for catching, warming, and storing the roof-water the needful conditions in this matter will be present; but when, during protracted severe weather, water from such sources fails, and the supply has to be drawn from pumps and outside wells or cisterns, its temperature, frequently only slightly above freezing, will have a greater disparity to that of the roots of the plants to which it is given than there ought to be, and under such circumstances enough for the following day's supply at least should always be placed inside the houses the evening previous.

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Feb 23	Sale of 5000 Lilium auratum and various other Hardy Bulbs, at Stevens' Rooms.
TUESDAY,	Feb 24	Clearance Sale of Nursery Stock, at Ware's Nursery, Tottenham, by Protheroe & Morris.
		Sale of Roses, Fruit Trees, Camellias, and Azaleas, at 38, Gracechurch Street, by Protheroe & Morris.
WEDNESDAY,	Feb. 25	Sale of Nursery Stock, at Cattell's Nursery, Westerham, Kent, by Protheroe & Morris (two days).
		Sale of Hardy Plants and Bulbs, at Stevens' Rooms.
THURSDAY,	Feb. 26	Sale of Established and Imported Orchids, at Stevens' Rooms.
SATURDAY,	Feb 28	Sale of Hardy Plants and Bulbs, at Stevens' Rooms.

WE regret to find that the PROHIBITION with regard to the INTRODUCTION OF LIVING PLANTS into the colony of the CAPE OF GOOD HOPE, to which we referred last week, has really been enacted. The subjoined copy of the official notice suffices to show that the authorities at the Cape have no greater share of wisdom than their brethren in Italy and Spain:—

"*Colony of the Cape of Good Hope.—Government Notice.*
"January 29, 1880.

"On and after this date, and until further notice, the introduction into the colony of the Cape of Good Hope of Grape Vines or cuttings, or portions of Vines, plants, tubers, roots, bulbs, or portions thereof, is prohibited.

"By order of the Colonial Secretary, Cape Town.
"WILLIAM C. BURNET,
"*Cape Government Emigration Agent.*
"10, Bloomfield Street, London, E.C."

It is needless for us to point out the absurdity of this prohibition, except in the case of Vines. Any effort to convince the authorities of its absurdity would, however, probably be as futile as the prohibition itself will be to exclude the Phylloxera. The introduction of Vines or even of living plants of any kind from infected districts, might reasonably enough be forbidden, but to exclude Potatos or Dutch bulbs, or Eucalypti, or any other of the hundreds of useful or ornamental plants other than Vines is worse than stupid—it is to inflict a wholly uncalled for injury on the commercial interests and general welfare of the colony. The Vine-louse is not known to be injurious to any plant except the Vine. Other species there are which attack the Oak, &c., but these are quite distinct from the Vine-louse. No other plants but the Vines have suffered in the infected districts in France, Switzerland, and Italy. All attempts to make the insects live on the roots of other plants have failed. With reference to our own vineries, we have had during the last few years as good, and probably much more numerous opportunities of observing the Phylloxera than have fallen to the lot of most people in this country; and in no single instance have we seen or heard of the Phylloxera attacking any plant other than the Vine, and this in spite of the continual traffic going on between one house and another. A man treading on a Vine border where the plants are affected with Phylloxera might very probably convey on his boots, on his hands, or on his tools the eggs or the perfect insect from house to house, and thus infect other vineries. This, for aught we know, may have happened—it is indeed very likely to have occurred; but if the Phylloxera were, as it might of course be, introduced in the same manner into the stove or the Orchid-houses, no apprehension of any evil consequences need be entertained. The Cape Government, before enacting such a regulation, should have made enquiries as to the effect of the corresponding prohibition in Italy, and have ascertained whether the diligence of the Custom-house officers on the frontiers has been successful in preventing the entrance of the insect. Perhaps terrified by the edicts in question the insects have dropped their wings, and ceased to lay eggs; if so, how is it that, in spite of these enactments, the insect has made its appearance in the countries named? In any case, we do not think even a Phylloxera could fly the whole length of the Atlantic, a circumstance which may afford some comfort to the Cape authorities.

It should be noted that the enactment in question refers to the "Colony of the Cape of Good Hope" only. Whether the Governments of Natal and the Transvaal have adopted similar precautions or not we have at present no means of knowing.

THE experience of the last two seasons in the culture of HARDY FRUITS, especially Apples, the most generally useful of all kinds, which have been a greater failure than perhaps was ever before known in any two consecutive summers, will not have been without its use if those who give their attention to raising new varieties will profit by it. We frequently hear it said regarding this, as other hardy fruits, that there are a great deal too many sorts in cultivation—a statement which experience proves is quite correct. The fact that some of the great trade growers profess to have over a thousand varieties is at once suggestive that, so far as regards a great many of them, they simply differ in name, without being distinct in any other appreciable manner. Yet out of this maze of varieties, even in the last most unpropitious season, there are a few, but a few only, that have succeeded fairly in almost all parts of the kingdom. Such being the case, does it not indicate that the course hitherto followed by raisers, not alone of this but of other fruits, has been in the wrong direction? No doubt the greater portion of our Apples are simply what may be termed accidental seedlings; that is, the result of seeds sown that have been fertilised in the natural way, and not by careful crossing as practised in recent years by those who carry on this work with something like a system. But even with the raisers who have produced new kinds as a result of judicious crossing different varieties possessing merit, has the selection of the sorts to breed from been judicious? So far as the properties go in both dessert and culinary kinds, is there likely to be much more achieved in anything excepting an ability to bear freely in bad seasons like the two last have been? This we think is doubtful, and venture to suggest that the efforts of raisers would be most useful if the course followed were in the direction of bearing capabilities, and such as would be able to succeed in the worst summers our island is subject to. To accomplish this, the most likely plan would be to cross a few of the hardiest kinds that are often held in little estimation, with the best, but more tender varieties. In short, we want dessert Apples of the quality of the Ribston, Cox's Orange Pippin, and Margil, with the hardy never-failing constitution of Keswick Codlin and good keeping culinary kinds that can be depended on for bearing freely in adverse seasons. We have no doubt, if this ideal cannot be fully realised, it may be much nearer approached to than is now the case. There is plenty of room in this line, not only for the raisers of new Apples, but other hardy fruits likewise.

—— THE PINE-APPLE.—The Nanas, or Pine-apple, grows in the Straits of Malacca and Sumatra in great profusion with the most ordinary culture. Some think it inferior to those produced in hothouses in England, but this opinion may be influenced by the smallness of their price, which does not exceed *2d.* or *3d.* With equal attention it is probable they might be rendered much superior, and their variety is considerable. The natives eat them with salt. They are liable to make the mouth sore if the "eyes" are not carefully extracted. Another kind, known in the Straits of Malacca as the Mauritius Pine, is more rare and far superior to the former. Pine-apples evidently do not require much earth round their roots in their native habitat, for Mr. SIBBALD had one growing on the top of the roof of his Attap-leaf bungalow in Province Wellesley. It grew from a refuse portion which had accidentally been thrown there, and in process of time a very fine Pine appeared, as shown in fig. 46.

—— A SPRING SHOW OF FLOWERS AT CHISWICK.—It would seem as if something of the old glory that once surrounded Chiswick might again return after a lapse of many years; for it has been arranged to hold a spring show of flowers, &c., in the Vestry Hall, Turnham Green (close to the entrance to the Royal Horticultural Society's Gardens), on or about April 29. Mr. FRANCIS A. DANCER has taken an active part in promoting the show, assisted by Mr. A. F. BARRON, Mr. MAY, of Chiswick House Gardens; Mr. J. ROBERTS, Gunnersbury Park Gardens, and others. The proceeds are to be given to the West London Hospital, a valuable institution much in need of assistance. A preliminary circular, which has been sent to some of the leading inhabitants, sets forth that "it is somewhat remarkable that, whilst flower shows and exhibitions have been established in almost every parish throughout the length and breadth of the land, Chiswick, the home of the Royal Horticultural Society, the founder and originator of all such meetings, has had no flower show of its own, being in this respect far behind Acton, Ealing, Richmond, and neighbouring parishes, which have each their horticultural society and their flower shows, such exhibitions forming the most fashionable and enjoyable *réunions* of the season." There is every prospect that a most successful exhibition will be held about the time above-named. A subscription and guarantee fund has been started, and is receiving good support. A schedule of prizes is in course of preparation, and will shortly be issued.

—— THE EXPEDITION TO SOCOTRA. — Intelligence of the arrival of Professor BAYLEY BALFOUR at Aden on January 24, has reached Kew. In compliance with instructions from the Admiralty, Captain HERON, of H.M.S. *Seagull*, arranged to convey Professor BALFOUR to Socotra, and the latter hoped to start on February 1 or 2.

—— LUMINOUS FUNGI FROM THE ANDAMAN ISLANDS. — Little comparatively is known of the vegetation of the Andaman Islands. We hope soon to have a rich collection of fungi from its woods, which are described as of great beauty. We have just received the first-fruit in the shape of an extremely luminous Agaric, of a small size, but exceeding in brilliancy anything which has hitherto been observed. The cause of the luminosity is at present, we believe, quite unknown. Even the opportunities of examining the large Olive-tree Agaric of the South of Europe have been without result. The only instances of luminosity which have occurred at home have been confined to mycelia, in conjunction with decaying wood or fermenting leaves; but in the numerous cases which have occurred in tropical climates there has been no question as to decomposition. In that before us the specimens are quite young, and scarcely fully developed. We shall probably hear more about them. At present we purpose merely to give the name and characters of the species, which is certainly new to science:—*Agaricus* (*Pleurotus*) *Emerici*, n. s.—Pileus at first spathulate, quite smooth, dark brown; at length suborbicular, soon changing to white, with a slight tinge of yellow; minutely virgate; stem obsolete; gills of the same colour as the pileus, narrow interstices smooth. Pileus about ½ inch across, attached behind without any stem, either nearly flat or helmet-shaped, emitting a most brilliant light, the entire substance being luminous. The species was found by Major EMERIC S. BERKELEY, who is now located at Port Blair. *M. J. B.*

—— CARTHAGENA BARK.—News has been received at Kew of the safe arrival at Darjeeling of the four plants of Carthagena Bark, with which Mr. ADOLF BIERMANN left the Royal gardens on October 29. The plant taken out to Jamaica, in charge of Mr. MORRIS, has also safely reached its destination.

—— Gilbert's Cabbage Broccoli.—It will be remembered that at the December meeting of the Royal Horticultural Society in 1878 Mr. Gilbert exhibited specimens of a new Cabbage Broccoli, to which the Fruit Committee awarded a First-class Certificate, and which gave abundant promise of becoming a most valuable winter vegetable. We are glad to be able to state that at Burghley it has passed through the late severe weather without the slightest injury, and indeed at the end of January was, with the exception of Brussels Sprouts, the only thing alive in the way of greens. A sample received at that time proved on being cooked to be mild, tender, and delicious in flavour. The heads received were of nice size, very solid, and resembling in appearance a small Cocoa-nut Cabbage. Mr. Gilbert is to be congratulated on the possession of such a sterling acquisition.

—— Spite in the Vinery.—The recent outrage committed upon the Vines growing in Alderman Cox's vinery, at Brighton, shows that we have amongst us some people who are capable of vile acts and of whom we have little cause to be proud. It would be difficult to find amongst Afghans or Zulus the counterpart of the malicious individual who, because the worthy Alderman was unable to agree with him on the subject of vaccination, entered at night like a thief, and showed his poor spite by destroying his neighbour's Vines. Spite thus expressed is happily not of frequent occurrence, and therefore when so shown it calls for special comment. It is now ten years since a scoundrel wishing to vent his malice against a respectable, but to him offending neighbour, entered into his orchard in the dead of night, and with a sharp instrument cut down several dozens of fine fruit trees. Losses from other causes far heavier than this might be endured with equanimity, because in these are seen only causes beyond control and which evince no enmity. It is to be desired, in the interests of justice, that the miscreant may be discovered and receive a degree of punishment that shall suffice to deter others from following so cowardly an example.

—— Labelling Plants.—Success in gardening does not depend upon a given amount of labour being bestowed on the different subjects taken in hand, so much as it does on everything being done in due time, and above all upon getting all forward when there is a vacant season, so as to give full liberty for the carrying out of operations that require attention at a particular time. There is much to be done in a garden that needs no special time for its completion, but which can best be carried out through the winter, when there is most leisure. Few things contribute more to the pleasure derivable from the inspection of a collection of plants, large or small, than their being legibly labelled, so that those who see and take an interest in them, but who are not possessed of the technical capacity to know everything at sight, can satisfy themselves as to the name of any individual plant without inquiring. This is a matter that should receive attention in every garden each winter. Labels with numbers upon them should never be tolerated in a private establishment; they may answer the purpose so far as those connected with the cultivation are concerned, but beyond this they are useless.

—— A Yellow Marguerite.—Lately there have been several enquiries as to a yellow flowered Composite, very like, except in colour, the Pyrethrum or Chrysanthemum frutescens, of which the French are so fond, and not without reason. In a recent number of the *Revue Horticole* we find it stated that

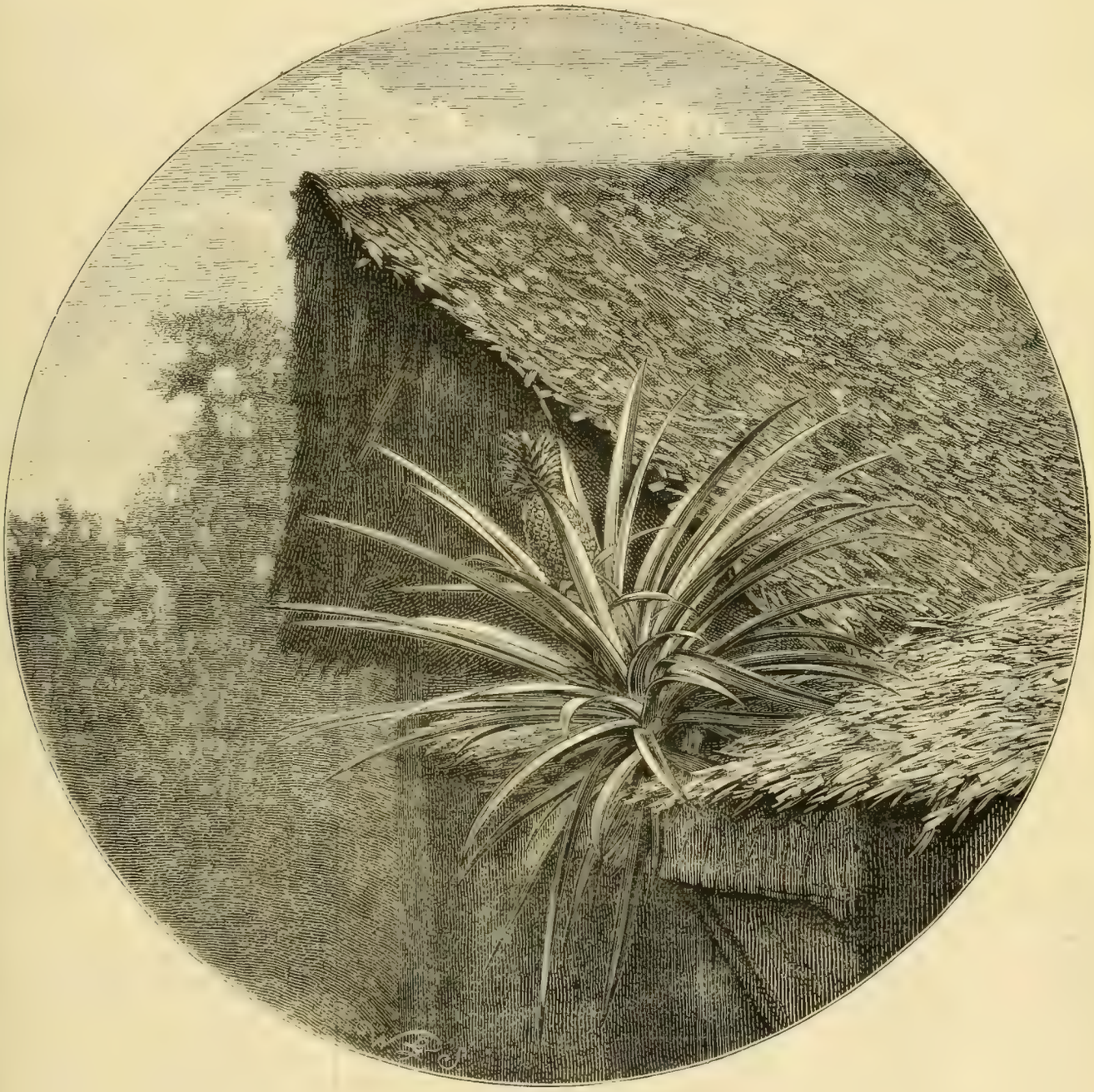

Fig. 46.—A pine-apple at home. (see p. 240.)

Chrysanthemum Golden Star (*Etoile d'Or*), (see *Gard. Chron.*, vol. xii., 1879, p. 594) was a seedling from C. frutescens, which originated either near Cannes, or near Lyons—for there is a conflict of testimony both as to the raiser's name and the place of origin. The appearance of the plant is almost precisely that of the Chrysanthemum frutescens, but the flowers are of a pale primrose-yellow. The common C. segetum is also grown, and made to flower at this season, if we may judge from specimens recently sent to us. It is of a deep golden-yellow, altogether unlike the preceding, and with the leaves scarcely at all cut.

—— Dasylirion glaucophyllum.—The plant figured by us from Handcross Park under the above name (p. 205) is a native of Mexico, and was described by the late Sir William Hooker in the *Botanical Magazine*, t. 5041. Mr. Baker, in the *Journal of Botany*, 1872, p. 298, inclines to the opinion that it is a variety of D. serratifolium, with narrower leaves and more glaucous foliage.

—— A Red Abutilon.—One of a batch of recent seedlings, raised by Mr. J. George, of Putney Heath, well deserves the foregoing appellation. The flowers are of large size and of a much greater depth and vividness of colour than that possessed by any variety in the Chiswick collection. It has been provisionally named Firefly, and we believe the stock has passed into the hands of Mr. H. Cannell, Swanley, for distribution. In regard to the parentage of this flower Mr. George states that he some time since flowered a small red variety which had a very lively shade of colour, and determining to make this a seed parent, it occurred to him to use on it the pollen of the single deep coloured Hibiscus, which, like the Abutilon, is included in the natural order Malvaceæ. Mr. George thinks the fine colour seen in his new variety, Firefly, is due to this happy inspiration of impregnation. It seems to show a marked advance amongst these useful and attractive greenhouse plants.

—— Saved from the Frost.—In the beautiful nurseries of Mr. Rogers at Southampton the following plants have stood the severity of the winter apparently unhurt:—Bambusa Metake, Aralia Sieboldii, the different varieties of Elæagnus, Osmanthus, and Chamærops Fortunei. In the same nurseries some beds are edged with Skimmia japonica, which are well berried; these are invaluable for winter decoration.

—— Jasminum nudiflorum. — This plant is very finely in flower just now in the house occupied by Mr. Wills, the gardener at The Firs, Bassel, Southampton. It is covered with its beautiful golden-yellow flowers, and has quite a spring-like appearance.

—— Orchids in Flower at Glasnevin.—The following is a list of Orchids in flower here:—

Angræcum eburneum
,, virens
Aerides giganteum
Cœlogyne cristata
,, flaccida
Cypripedium barbatum
,, Dominianum
,, Harrisianum
,, insigne
,, villosum
Cymbidium Mastersii
,, giganteum
,, pendulum
Cattleya Trianæ
,, ,, robusta, and several other vars.
Dendrobium nobile
,, speciosum Hillii
Goodyera discolor
Lælia superbiens
Lycaste macrophylla
,, flavescens
,, Skinneri, several vars.
Mesospinidium vulcanicum
Neottia picta maculata
Odontoglossum Alexandræ
,, ,, Bluntii
,, cordatum
,, cirrosum
,, Pescatorei
,, pulchellum
,, Rossii majus
,, triumphans
Oncidium pachyphyllum
Phaius maculata
Phalænopsis Schilleriana, several; the largest has over forty fully expanded flowers upon one spike
Vanda insignis

—— A New Banana.—The importance of the different varieties of Banana and Plantain to the inhabitants of tropical countries can hardly be overestimated. They are valued not only as a delicacy but as a staple article of food by many hundreds of thousands of people in every tropical land. In general characteristics the Plantain and Banana are very similar, and the trees producing them belong to the same genus; but the quality of the fruit differs very much in different kinds, and also varies according to soil, climate, and other circumstances. The fruit of the Plaintain is generally nearly twice as large as that of the Banana, and half-a-dozen Plantains will sometimes serve for a man's daily food, instead of bread. They can be made into a species of bread by boiling or roasting, and kneading into loaves, in which state they are more nutritious than wheaten bread. A new species of Plantain has lately been brought into notice in Trinidad, the plants having been grown from seeds brought from Fernando Po, and kept for several years past in the Trinidad Botanic Gardens. The variety is known as Musa vittata, and the fruit is said to be the best roasting Plantain known. The plant has hitherto attracted attention only as an ornamental plant, the leaves being prettily striped longitudinally with a pale greenish-white. The fruit is striped similarly to the leaf. The cultivation of Plantains and Bananas, and the collection and exportation of their fruits, are deserving of more attention than they receive at the hands of the colonists. The free growth of the plant and its profusion of fruit have tended to its neglect; but there is probably no tree that will give better returns for a little careful cultivation. *The Colonies and India.*

—— The Rainfall in Jamaica.—Mr. Hart informs us that the monthly rainfall at King's House, Jamaica, last year was:—January, 0.58 inch; February, 3.01 inches; March, 1.53 inch; April, 8.31 inch; May, 6.10 inches; June, 7.86 inches; July, 1.64 inch; August, 14.68 inches; September, 6.23 inches; October, 26.44 inches; November, 2.78 inches; December, 0.15 inch. Total, 79.31 inches. In four successive days, October 12 to 15 inclusive, 19.95 inches were registered. At the Cinchona plantation, 35.13 inches were registered for October; at Sarge Island, 46.29 inches; in Kingston, 31.24 inches, and at Uppark Camp, 40.12 inches.

—— Northern Florists' Societies. — An important general meeting of the members of the National Auricula (Northern Section), Royal National Tulip, and National Carnation and Picotee Societies (Northern Section), will be held at the old "Bull's Head" (off the Market-place), Manchester, on Wednesday next, at 3 o'clock, P.M., to arrange the dates of this year's exhibitions, to make up the schedule of prizes, to decide upon the plan of judging, and any other matter and work connected with the management of the National Florist Societies.

—— Cœlogyne cristata at Holloway.—Several fine specimens of Cœlogyne cristata, from 2 to 3 feet across, are now in flower at Mr. Williams', and are literally covered with flowers. This is a grand Orchid for winter decoration, the beautiful snowy white flowers intermixed with the graceful foliage make a pleasing contrast. The plant is very easy of cultivation. Mr. Williams grows them in the Odontoglossum-house, where they grow luxuriantly, and when flowering he brings them into the Cattleya-house, as, the cool Orchid houses being damp, the flowers are apt to become spotted.

—— Bean-cake Manure.—Dr. Hance explains (*Journ. Bot.* 1879, p. 102) that "Bean-cake is the *marc* or refuse of Soja Beans, from which the oil has been expressed," and is "a substance largely imported from Northern China as a fertiliser." The Bean-cake is used to manure the Cyperus tegetiformis, of which the China matting is made which is now so largely used in England.

—— "Revue Mycologique." — The second year of this useful publication has just commenced. Its Editor, M. Roumeguère, proposes now to add lichens to his programme, so that in future his publication will be devoted to the fungi and the lichens. M. Roumeguère is one of those who maintain the essential difference between these two groups; nevertheless this does not prevent him (nor, indeed, need it do so) from associating the two in one publication. Sixteen additional pages will be added to each quarterly issue.

—— The Schedule of the Royal Horticultural Society.—This presents some differences from its predecessors. It contains, in addition to the ordinary information, the list of members of the several committees, a calendar for 1879; the schedule of prizes of the great summer show, June 8 to 11; that of the Auricula Society's Show on April 20, of the Rose Show on June 29, of the Pelargonium Society on the same date, of the Carnation and Picotee Society on July 27, and of various special prizes offered by various seedsmen and amateurs. Little is said of the Scientific Committee, except that Botanical Certificates will be awarded by the Scientific Committee—an arrangement which has been proved not to work well. No mention at all is made of the Lindley Library.

—— Phalænopsis Schilleriana.—We recently had the pleasure of seeing a very beautiful display of flowers of this showy Orchid in the gardens of Mr. Winn, Birmingham. The plants were well grown, and were flowering most profusely. The blossoms were of a superior type, being very dark in colour.

—— Parliamentary Potatos.—When Mr. Nicoll raised his now famous Champion Potato he little thought that it would ever receive honourable mention in the House of Commons. That is an honour which, so far, seems to have been given to that variety only, but there is no telling what similar honours may be in store for other kinds. The holders of stock, however, have probably more reason to be grateful than even Mr. Nicoll for this prominence, because it is evident that one result of the Seed Potatos Bill, now passing through Parliament, will be to greatly enhance the price of many kinds, but especially of this particular variety. The Duke of Devonshire, as an active and generous Irish landlord, has already purchased an immense quantity of the Champion for distribution at nominal prices, and this fact shows, in relation to the question of supplying the impoverished Irish with seed Potatos, how strong the verdict of public opinion is in its favour. To send to the distressed districts sorts that will, as their predecessors have done, but result in the production of a crop of rottenness, is folly, and no doubt all those who are most concerned in the passing of the Irish Seed Potatos Bill and in the administration of its enactments will presently realise this. The two sorts that stand out so prominently amongst others for the comparative goodness and cleanness of their crops during the past most trying Potato season are Magnum Bonum and the Scotch Champion. No doubt some of the former will get to Ireland, but it is even yet comparatively scarce, and what stock is in the country will no doubt be needed, and kept here at such prices as will render its distribution under the operation of the Seed Potatos Bill very improbable. The Champion is, on the other hand, now being sold at one-third less cost —a very considerable item, and it can be had yet in large quantities. To expect that in the face of this Bill, and the expectant large demand for it that will inevitably follow, its price will not be increased, will be to expect something that is not found in human nature. If, however, the unfortunate Irish farmers can but have put into their possession a Potato that will give them large healthy crops, and bring them food and prosperity, the result will call forth our warmest congratulations. We are, however, bound to give expression to the doubt whether this and other so-called disease-proof Potatos will under all circumstances maintain their good character.

—— The Rosarian's Year-Book.—In spite of the announcement at the foot of the first page of the cover, the Editor is not always asleep, and we should say he was particularly wide awake when he compiled this little volume. The contents comprise:—"Memories and Hopes," by the Rev. Canon Hole; "On Pruning Roses," by G. Baker; "Winter Roses on the Riviera," by Dr. H. Bennet; "Cutting Roses for Exhibition," by Rev. Alan Cheales; "The Survival of the Fittest," by George Paul; "The Rose Weather of 1879," by E. Mawley; "Roses in a Very Small Way," by Rev. M. J. Fuller; "The Sorrows of a Local Secretary," by C. H. Hankey; "A Buddhist's Idea," by the Rev. E. N. Pochin; "New Exhibition Roses," by J. Hinton; "The Winter of 1878-9," by E. Mawley; "The National Rose Society in 1879," by the Editor. At some future time we may find space to extract some portion or other of these articles. The article by Mr. George Paul, on "The Survival of the Fittest," is particularly interesting and serviceable, as showing what "exhibition" Roses have survived from 1872 to the present. What a slaughter of the tender ones, but what sturdy vigorous survivors the left-standing Roses (headed by John Hopper) are. Among the survivors are Beauty of Waltham, Maréchal Vaillant, Boule de Neige, Mdlle. Thérèse Levet, Charles Lefebvre —all the Teas are dead. A curious circumstance

is that the smooth woody H.P.'s of the Jacqueminot race are more lasting than the spiny ones. This may be contrasted with Mr. Mawley's statement that the thorny and vigorous varieties resisted the prolonged cold far better than the smooth-wooded varieties. The whole paper is very suggestive and valuable, and is one that should not be dismissed with the scant notice we can at present give it. The meteorological papers of Mr. Mawley constitute, as they did last year, perhaps the most intrinsically valuable portions of the *Rosarian's Year-Book*, and afford evidence that the literature of the Rose need not, as it often does, consist of frothy nothings. The Buddhist's idea shows evidence also of that contemplation which is characteristic of Buddha.

—— Abies or Picea.—In some recent articles we have adopted the Continental usage of calling the Spruce Firs Piceas, and the Silver Firs Abies. This procedure has exposed us to some little criticism, on the ground that such changes are very embarrassing. It may be well, therefore, to state the grounds for our use of the terms in the above manner, as it is contrary to that adopted in most English garden catalogues. Our reasons are :—1. That the practice we have adopted is the correct one ; 2. That it is the one which we were aware was to be followed in the volume of the *Genera Plantarum* of Mr. Bentham and Sir Joseph Hooker, as referred to in another column—a work which is likely to remain as the standard authority on questions of identification and nomenclature for some years to come ; 3. That it is the one generally followed on the Continent ; and now that intercourse is so frequent, and foreign books are consulted by students as often as English ones, it is desirable to secure uniformity wherever possible or desirable. These, then, are the reasons which have weighed with us. It is not necessary for us to state the grounds on which our opinion rests ; they may be found in the work above cited, and indeed in most works devoted to Conifers.

—— Index Numbers.—We are requested by the publisher to recommend those of our readers who are desirous of preserving the numbers containing the Select Index of Plants from 1841 to the end of 1878, now in course of publication, to make early application for the numbers in question. The great cost and labour involved in the production of this index render it improbable that it will be reprinted.

—— Stealing Grapes.—On Monday, Feb. 9, at the County Police Court, Tamworth, a respectably dressed young man, named Harry Kenneth, an under gardener in the employ of Sir Robert Peel, M.P., was brought up in custody charged with stealing thirty bunches of Grapes from the vineries at Drayton Manor, on the 31st ult. The prisoner, who entreated the Bench to be lenient with him, and not to send him to prison, said he did not know how many bunches he took. Mr. Owen Thomas, head gardener at Drayton Manor, said on going into the vineries he missed about thirty bunches of Grapes. He asked four of the gardeners, as well as the prisoner, where the Grapes had gone to, and they all denied any knowledge of them. Further inquiries showed, however, that prisoner had borrowed a large box from one of the servants at the Manor, packed the Grapes in it, and sent them away by rail. He (Mr. Thomas) was prepared to prove that prisoner had sent two other lots of Grapes away as well. The market price of the Grapes, which were of first-class quality, was 4*s.* 6*d.* per pound, and the thirty bunches would weigh about 50 lb.—Prisoner said he was very sorry for what he had done. The case was dealt with under the Summary Jurisdiction Act, and the Bench ordered the prisoner to pay £5 fine, £10 the amount of damage, and the costs.

—— The Frost and the Plants. — It is full early to take stock of our losses at present ; but, on the whole, we think the injury done is likely to be considerably less than in 1860-61. Nor have we in this country suffered to the same extent as in Belgium and Northern and Central France, where the slaughter among Roses, Araucarias, Cedars, Hollies, Yews, and other plants, has amounted in many cases to extermination.

—— Cedrus Deodara Shedding its Leaves. —There are instances where specimens of this fine Conifer, standing alone and in exposed positions, show signs of having been hard hit during the recent severe frosts. They are shedding their leaves to such an extent that the soil beneath the trees looks as if covered with a deep covering of new mown short grass. The tops of some of the trees and the upper branches are almost denuded of foliage, and have a very bare look against the sky. It will be some time before the fullest evidence is forthcoming of the injury done to vegetation during the prevalence of the sharp frosts of December, 1879, and January of the present year.

—— West Glamorgan Agricultural Association.—Mr. Bernard Dyer, F.C.S., of 17, Great Tower Street, London, has been appointed Analytical and Consulting Chemist to the West Glamorgan Agricultural Association.

—— Bristol Chrysanthemum and Spring Show Society.—The tenth spring exhibition will be held in the Victoria Rooms, Clifton, on March 17 and 18.

—— Lee and Blackheath Horticultural Society.—The dates fixed for holding this Society's exhibitions are Wednesday and Thursday, June 23 and 24, and November 24 and 25.

—— The Borough of Hackney Chrysanthemum Society has decided to hold its next annual exhibition on Thursday and Friday, November 18 and 19.

—— Reading Horticultural Society.—The spring exhibition of this Society is fixed for May 20, and the autumn show for August 19.

—— Ealing, Acton, and Hanwell Horticultural Society.—Easter Monday, March 29, is the date selected for holding the spring exhibition of this Society. The summer show is to be held in the grounds of Manor House, Ealing, on July 7, and an autumn show will also be held on November 17.

—— Publications Received.—*Reports of the Tenant Farmers' Delegates on the Dominion of Canada as a Field for Settlement.—Permanent Pastures; their Formation and Improvement.* By Mr. Martin H. Sutton, of Reading. (12th ed. Hamilton, Adams & Co.) — *Delectus seminum, &c., St. Petersburg Botanic Garden*, 1879.—*Bulletin de la Société Botanique de France.—The Apricot :* its History, Varieties, Cultivation, and Disease. By D. T. Fish. (*Bazaar* Office, 170, Strand).—*Chelsea Window Gardening:* or Some Notes on the Management of Pot Plants and Town Gardens. By L. M. Forster (R. Bentley & Son).—*California and Colonisation.* By J. P. Whitney (J. B. Adams, 57, King William Street, E.C.).—*The Dietetic Reformer.—Our Water Supply:* a Discussion for and against the Fitness of Thames and River Water for Domestic Use (W. Trounce, 10, Gough Square, E.C.).

—— The Weather.—General remarks on the weather during the week ending February 16, issued by the Meteorological Office, London :—The weather was very changeable and unsettled over the whole country. On the 10th, 11th, and 13th the sky was moderately clear in most places, but on all other days the weather was dull, squally, and very rainy generally. The temperature was slightly above the mean value in "England, S." and "England, N.E.," below it over Ireland, and about the mean for the time of year in all other districts. Several slight frosts were experienced during night-time at the central, eastern, and northern stations. The wind was southerly (S.E. to S.W.) generally in nearly all places; over the S.E. of England, however, easterly to north-easterly breezes were reported at the commencement of the period. In force the wind was generally strong in the S.W., W., and N., and very frequently blew a strong gale, while on our eastern coasts it was moderate to fresh until the 16th ; a strong gale then blew over all parts of the kingdom. The rainfall was less than the mean in "England, N.W." and over Scotland, but more in all other districts. In "Ireland, S.," the "Midland Counties," and "England, S." the excess was rather large.

—— Gardening Appointments.—Mr. James Beale, late Gardener to Robert Smith, Esq., of Golding, Hertford, has been appointed Gardener to H. J. Barrett, Esq., of Langford Park, near Maldon, Essex.

FROM IRELAND TO BIARRITZ.

I left "the bonnie blythe blink o' my ain fireside" and Paddyland on February 9, in search of better climes, though indeed as to weather we in Ireland have had very much the advantage of our neighbours across the herring-pond. Our greatest frost during the winter was 18° (this in Co. Meath) ; we had hard on two months without rain to speak of. The 8th was lovely, a day that showed spring ready to write "her alphabet upon the sod in many-coloured flowers." Aconite and Snowdrops were up in hundreds, but I looked in vain for Dondia Epipactis, and only a Crocus here and there showed green. The sombre sky and drizzly rain of Monday made it easier to tear myself away from the prospective beauty of my spring garden. Only Myosotis seemed touched. Aubrietia, Iberis, Arabis, alpine Auriculas, Daisies, Erica carnea rubra (by far the most showy spring bedding Heath I ever saw), Santolina, and "Sedums in variety," as the catalogues say, looked as snug as possible. So did the Pansies : the Duchess of Edinburgh even graciously showed herself, her head a little bent, either in shyness at being alone in her glory, or in respect unto the elements. There was no Sunrise, though I have generally noticed these two Pansies in bloom together. Azalea mollis, Malus floribunda, some Spiræas, and other early flowering shrubs were in fullest bud, but for some I saw "Oh much I fear some ill unlucky thing." Everything flowered so late with us—Clematis Jackmanni, for instance, not till near September—and Roses went on until they could not be called "of summer." The frost came when the sap was high, and I fear many a gardener will walk this season amongst the graves of his flowers, like the representation in the last "Le don Quichotte"—I know not French politics enough to say to whom it refers, but truly a knight of a sorrowful countenance, wandering amongst the tombs of all good things. London was enveloped in fog, Paris perishingly cold, and even at Bordeaux sensation did not tell that we were in the sunny South.

I was struck with the cultivated look of the country between Paris and Bordeaux, every inch seemed made the most of, but it was a landscape in sepia, and I think, had I asked the hackneyed question, "Do you see any green in my eye?" I would not have been indignantly, or reproachfully, but anxiously wishful for an affirmative. I noticed as we steamed along the constant use, often in quite humble cottage gardens, of bell-glasses or *cloches*, stronger and of a different make from any I ever saw in England ; and I considered how useful they would be for the preservation of Parsley and other vegetable luxuries now that we seem to be in for Siberian winters. Most men near Bordeaux, when they sit in their porches, rest under their own Vine, and the queer gnarled stems thrown protectingly about would be admired even if imagination did not picture them as they will be—covered with leaves and great purple Grapes. We passed some grand Magnolia trees and big tufts of Pampas-grass, the sight of which last caused me to break the Tenth Commandment, for the cruel cold of the winter before last killed all mine down. Arundo Donax weathered it. On for a long bit after Bordeaux the country is sandy and covered with Pine woods, each tree tapped for its resin—a proceeding, I should think, highly destructive, but which does not matter, as they are mere sticks. Station-masters in these parts seem to fancy Forsythia viridissima : I counted splendid plants of it at three separate places in glorious flower. This was one of the things over which I shook my head forebodingly in my last walk round a Meath garden. The leaves, which should have fallen, were hanging brown and withered-looking upon the bushes, but, indeed, alas ! this symptom is not uncommon this year amongst my deciduous shrubs.

A bright blue sky was over us when we reached Biarritz, and that warm sunshine greeted us which gladdens the hearts of all things living. We had to unpeel as we preceded the omnibus from the little station, and on a hedgerow bank I picked the first wild Violet 1880 had sent me.

"Yes, the sun is hot," said my companion, English to the backbone ; "but the Violets should be coming up at home." Perhaps : but home could not give us the hot sun or the soft balmy breeze that yet, with a touch of tonic in it, blew upon our faces. The weather here is simply delicious, and it is delightful to sit upon the sands and watch the big waves break themselves

up upon the rocks in huge mountains of spray. There are sea-birds here, which sit upon the water, twelve of them often together, motionless, as if dead, allowing themselves to sway with the swell of the sea, but diving energetically, after the fashion of a tufted duck, when a big wave comes. I think I can make out through my field-glass a white patch each side of the head, otherwise they are entirely black. Their duckings under are most highly amusing to watch.

I have not made out the fashionable resort of the English here—certainly not the beach, which we have to ourselves, bar Spanish children, who ask for Cabbage and are satisfied with cash—"Donnez moi petit chou," is their cry—and packs of lean, hungry, starved, "belong-to-nobody" looking dogs, all of them curs of the very lowest degree. When the feeling of *dolce far niente* shall have worn away I mean to make expeditions after the flowers I am assured we shall find in our walks *partout*, and then you shall hear again from *A*.

GARDENERS' ROYAL BENEVOLENT INSTITUTION.

Report of the Committee for the Year 1879.—Your committee have again the pleasure and gratificaiion in presenting their report. During the past year nine pensioners have died, one leaving a widow, who, in accordance with the rules (having produced the necessary certificates, to the satisfaction of your committee), succeeded to a pension of £12. In the same period, seven pensioners have been added, and a further addition of nine will be made this day. The pensioners added in January last were all placed on the list without election, they or their husbands having been subscribers to the institution for over fifteen years. This was in strict accordance with the rules.

On this occasion the nine pensioners who will be added have (or their husbands) been subscribers, and they also will be placed on the list without any trouble or election; and this course your committee have reason to know meets with the support and approval of a large number of the subscribers, more particularly those who cannot, by any possibility, be recipients of the charity.

These additions ought to bring home to the minds of gardeners the advantages of the Institution, and the assistance they could receive (in the event of their being subscribers) in their declining years, should want and distress overtake them, as among the number of applicants are several who have been constant and warm supporters of the Institution, occupied good positions (one was many years a member of the committee), and never imagined that they would ever require the aid of the Institution. These facts speak for themselves, and require no comment.

In obedience to the unanimous resolution of the last general meeting, empowering the committee "to take such steps as they might consider necessary to bring the Society and its benefits more immediately before the gardening world and the public generally," your committee instructed the Secretary to proceed to the provinces, and interest, if possible, the large and influential nurserymen and seedsmen in its behalf, by becoming stewards for the anniversary dinner, and by their issuing an appeal to their friends and connections.

The thirty-sixth anniversary dinner took place, as usual, in the summer, under the most disadvantageous circumstances, on which occasion Mr. Serjeant Cox occupied the chair, with his usual ability; it was, however, very numerously attended by many representatives of the large nursery and seed firms, the leading horticulturists and the public; and the result, taking into consideration all the circumstances, was a grand success, as in this last year of gloom, great depression, distress in trade, and bad weather, when most other societies of a similar nature have suffered very materially in their annual income, and in many cases have had to trench upon their reserve funds, this Society, thanks to the exertions and influence of the stewards, has not only increased the amount of its reserve fund by £300, making the total amount £12,000 in the Three per Cent. Consols—thus placing the Institution on a firm and secure basis, and having a sure guarantee that all its engagements can be met—but it has been enabled to increase its payments to the pensioners to £1043 13*s.* 4*d.*, the largest amount ever yet paid in one year. Great efforts were made by the stewards and your committee to increase the annual subscriptions; and although, on the last occasion, your committee congratulated the subscribers upon receiving the largest amount ever recorded, viz., £802; this year the annual subscriptions have been increased to £878. For the eminent services rendered to the Society by the stewards the committee beg to tender them their warm and sincere thanks.

Your committee regret to announce the loss of several of their kind and liberal benefactors; among them may be named the Baron Lionel de Rothschild, William Wilson Saunders, Esq., and Mr. Serjeant Cox. Their places will not easily be supplied.

Your committee beg to announce a legacy of £15 from an old gardener, the late Mr. William Lennett, of Norwood. This they consider most pleasing, coming, as it does, from one for whose benefit the Society was instituted.

In conclusion, the committee earnestly hope that the members will continue to use their influence among their friends, and will not relax in their exertions to make the year 1880 more successful than the year now passed away.

The number of pensioners is as follows:—36 men, at £16 per annum; 36 women, at £12 per annum—total, 72: to be increased to 81.

Edwd. R. Cutler, *Secretary*.

Statement of the Receipts and Payments of the Gardeners' Royal Benevolent Institution, for the Year ending December 31, 1879.

Dr.	£	s.	d.	£	s.	d.
To balance, 1878				445	10	7
Annual subscriptions	878	11	0			
Donations received at, and in consequence of, annual dinner ..	433	13	6			
Advertisements	46	12	0			
Legacy from the late Mr. Lennett	15	0	0			
	1373	16	6			
Dividends on stock..	£349	10	0			
				1723	6	6
				£2168	17	1

Stock in 3 per cent. Consols, standing in the names of Robert Hogg, William Hurst, and John Lee, Esqs., £12,000.

Cr.	£	s.	d.
By pensions	1043	13	4
Secretary's salary	130	0	0
Printing	79	1	0
Stationery	18	19	8
Hire of committee-room	4	5	0
Advertising	4	4	0
Postages, travelling expenses, and sundries ..	68	1	5
Expense of annual dinner	65	7	2
Book of cheques	2	10	0
	£1416	1	7
Purchase of £300 Consols	297	0	0
	£1713	1	7
Balances—viz.:—			
With treasurer at bankers .. £436 9 8			
With secretary 19 5 10			
	455	15	6
	£2168	17	1

Audited January 12, 1880. James Gray. John Lee.

Home Correspondence.

Bedding Out.—It was with great pleasure that I read your leader in the *Gardeners' Chronicle* (p. 176) on the important subject of the bedding-out of summer flowers, as latterly a great many hard things have been said about both it and its patrons. It required considerable courage on your part to give a distinct note clear and ringing above the dismal howling there has been of late in treating of the subject in question. All gardeners, to say nothing of their employers, have been treated as though they were in an advanced state of lunacy, and ought to be forthwith confined with as much despatch as possible, and all for what? Just because they did as all true gardeners should, and as all real lovers of Nature do—strove to the utmost to bring the effects of fields of colour where it was possible their employers should be able to enjoy them in the quietude of their own homes. What is more enjoyable than to walk amongst multitudes of flowers bright with colour heightened by massing and contrast, and all looking so well cared for, and growing so happily in unison—no straggling, every plant seeming to just fill its allotted space, and where all else seems perfect; then comes in addition a waft of delicious fragrance—the fragrance of sweet, pure, bright flowers, which is eagerly breathed in the refreshing coolness of early morning or in the balmy softness of evening during summer. However beautiful herbaceous and alpine flowers may be, they cannot be used to give the effects of beds of colour near a mansion and under the windows, where alone flowers can be enjoyed from under the balcony or from the inside shade of the boudoir during the fierce heat of a summer's day. Any alpine or herbaceous plant which can be made, by no matter how much trouble on the part of the gardener, to carry a constant bloom or which possesses a constant and distinct leafage or a stately or graceful habit, is eagerly sought after and used to give variety. No lady or gentleman or true gardener would ever cut down, or even wish to cut down or destroy, a stately tree, such as a Cedar of Lebanon, to make room for a few fleeting summer flowers; and no true lover of Nature would do away with our Snowdrops, Aconites, Crocuses, Violets, Daffodils, Daisies, Buttercups, and Bluebells, and all the host of treasures which Nature has placed in such bountiful profusion in our English woods and meadows and hedgerows, which are the delight for all ages of children, and in the gathering of which they receive never-forgotten pleasure. I do not envy those whose childhood and youth have been passed in large towns, and who consequently cannot in this way enjoy their childhood over again, as those can do who are happy enough to have been brought up in or about our noble English mansions or secluded country villages, where all, rich and poor, equally enjoy gathering flowers from Nature's bounteous store. *W. Denning.*

Broccoli.—It would be interesting to know how Broccoli generally has stood the severe weather. I have given six varieties a trial, and will briefly state the results. Out of a bed of 250 plants of Veitch's Self-protecting I did not cut one, they are all killed down to the ground. Snow's Winter White came off a little better, I have about seventy plants out of a bed of 250. Osborn's Winter White has stood the best, only about thirty plants being killed out of a bed of 250. Sutton's Improved White Sprouting has stood very well, I have only about sixty plants out of a bed of 250 killed. Of Sutton's Reading Giant I have 160 plants alive out of 280 planted. Sutton's Protecting has stood very fairly; I have about 110 out of a bed of 250 plants. I should like to hear the experience of others, which may be of benefit to us the next winter. Our soil is a stiff cold clay. *H. S. James, The Gardens, Fairleigh Castle, Bath.*

Roses.—Out of over 2000 Roses I have only seen two dead plants—ground plants. I pity Brier standard Rose growers: no doubt they have lost considerably. If Roses are grown on Briers they should be ground plants or seedling Briers, which, as far as I can judge from the few I have got, are beyond all praise. Manetti stocked Roses are best for dry ground, and Brier stocked Roses for moist ground. It is curious but true that in severe winters the old Rose wood dies, but the new twigs resist the frosts. In 1860-1861 I pointed this out to Mr. Henry Taylor, of Fencote, Bedale, Yorkshire, and he wrote back saying that "sap was a non-conductor both of heat and cold." He is the raiser of Taylor's Yorkshire Hybrid Potato. As regards Rose stocks and Rose lands, Roses have likes and dislikes, and experience must find out what they like and dislike. In my opinion Mr. Prince deserves the thanks of Rosedom for introducing Roses on the seedling Brier. Almost all mine are on the Manetti stock, with which I am still delighted. *W. F. Radclyffe, Feb.* 14.

Odontoglossum Londesboroughianum.—When I had the pleasure of visiting the beautiful collection of Orchids belonging to H. J. Buchan, Esq., Southampton, in November last, a plant of this species was flowering in perfection; and to my agreeable surprise, when I called again on February 12 the same spike was still existing with a quantity of its rich golden flowers quite fresh. Mr. Buchan informed me that the spike had been in flower ever since October, and had produced no less than forty flowers. This speaks well for the lasting qualities of this grand Odontoglot, which is worthy a place in the most select collections. There are very many other varieties in flower here, amongst which are fine varieties of Odontoglossum Alexandræ, Masdevallia, and Miltonia. These are all in grand condition, reflecting great credit on Mr. Osborne, under whose charge they are grown. *Alfred Outram.*

Galanthus Elwesii.—In the autumn I bought a dozen bulbs of this Snowdrop, and planted them in the coldest part of my garden within 9 feet of a north wall which is 10 feet high. Yesterday (February 13) at 3 P.M. the sun had not reached them, so they were still ice-bound. In spite of these unfavourable circumstances, the buds are fully developed, and have been so for a week or more, and seem to be only waiting for the sun to reach them to fully expand the blossoms. The buds are fine, and very pure in colour. I fancy they are whiter than any other Snowdrop. Nivalis, plicatus, and Imperati, in situations where they get the full benefit of the sun, are but just above the soil; and close to these is a bulb of Elwesii I bought in 1878, which is equally behind. Does drying off the bulbs induce early blooming? I trust that many of your correspondents who take an interest in hardy bulbs will make notes of any peculiarities they may discover this season in their Snowdrops, and then give your readers the advantage of them. *Jae Aye.*

The Tree Pæony.—I was much interested in reading Mr. Robert Fortune's article on the Tree Pæony in the *Gardeners' Chronicle* of February 7. There used to be an old specimen in the kitchen garden at Newton Don in Berwickshire, one of the coldest localities in the South of Scotland. From what I knew of this particular specimen I have always been under the impression that the Tree Pæony was hardy. There are a few plants here. One close to the house is protected throughout the winter, as Lord Haddington has doubts as to its hardiness. Two

plants I lifted three years ago from an out-of-the-way border and planted in the kitchen garden have never had any protection, and are now pushing fresh growths. These two plants grew so vigorously that last spring I cut them back. Other plants in shrubberies make little progress. The whole of the plants have one feature in common, and that is, that the points of the shoots die back a few inches every year. Mr. Fortune appears to be of the opinion that there is only one species of the herbaceous Pæony which can be made use of for grafting the Tree Pæony on. Is that opinion correct? It would be interesting to know that any one of the varieties of the herbaceous Pæony in cultivation would do as a stock. *R. P. Brotherston, Tyningham, N.B.*

Daphne Blagayana.—This pretty hardy evergreen shrub, which was described by Freyer in the *Flora* for 1838, is a native of the Carniolan and Styrian Alps, where it blossoms about the month of May. It was found in 1837 by Count Blagay, to whom it is dedicated, on Mount Lorenziberg, near Biellichgrätz in Carniola, and it has been also gathered on Mount Goestingerberg, near Gratz, in Styria. It is said to grow, in company with Erica carnea, in calcareous soil; and from its dwarf spreading habit will doubtless be a suitable plant for an artificial outdoor rockery. Though somewhat spare of foliage as hitherto seen in the cultivated state, its little heads of creamy white flowers seated within a circlet of leaves terminating each branch, give it a distinct and very pleasing character, and its powerful fragrance will make it specially welcome as a garden plant. We first met with it at the quinquennial show held at Ghent in April, 1878, where it was exhibited by M. Van Houtte, at a time when it was scarcely if at all known in this country, at least in the cultivated state. It then attracted considerable notice as a sweet-scented hardy evergreen, of small stature, and when shown on the 10th inst., at South Kensington, by Messrs. Veitch & Sons, of Chelsea, it was very rightfully awarded a First-class Certificate. The aspect of the plant, leaving the flowers out of view, bears some resemblance to that of young plants of D. Laureola, and the stems are described as being often simple, and scarcely a span high. Messrs. Veitch's examples formed neat little spreading bushes with several branches, which were bare of foliage at the base, but furnished at the ends with a tuft of sessile, leathery leaves, in the centre of which the flower-heads were nestled. The leaves are sparse, obovate, or oblong-lanceolate, attenuated at the base, plane, and as well as the branches glabrous. The heads contain numerous flowers accompanied by silky bracts; the flowers are slightly hairy, the four lobes ovate-oblong obtuse, a couple of lines in length, creamy-white, and they are succeeded by fleshy, white, semi-transparent berries. The heads of flowers are described as being as large as a Walnut. This new form of a very interesting and popular genus, while not for a moment comparable in merit with such fine species as D. sinensis (indica) or D. odora, is not without value in its own particular way. It may be said of this, that it is neat in habit, hardy in constitution, an early bloomer, and evidently capable of being accelerated by heat, its pretty little floral tufts being well adapted for bouquets, and possessing an aromatic sweetness which may be regarded as one of its crowning merits. Altogether the plant may be considered as an acquisition amongst dwarf hardy evergreen, sweet-scented, early-blooming shrubs. *T. M.*

Fig. 47.—Daphne Blagayana.

The Clean and Sooty Kettle.—It is a curious but instructive fact, that most housewives favour the opinion held by Mr. Challis, which gives the preference to a soot-begrimed kettle over a new or clean one to obtain a quick boil. This is either based on a fallacy, or it has a practical substratum of fact to support it. Is it not the case that an iron utensil coated with soot is more readily absorbent [retentive?] of heat than is one free from this incrustation, and if it be so the result which the housewife asserts is explained. Naturally no one would favour an incrustation of outrageous thickness, but this does not exist on any pot or kettle that is now and then brushed over, as all tidy housewives should serve them. With boilers, where a tremendous fire is playing about their surfaces, a thick coating of soot is almost impossible, and such incrustation as may be found will exist in all kinds of boilers that are subject to fire and smoke, but that it presents any obstacle to the free heating of the boiler is most improbable. What destruction of the metal goes on proceeds much less from the action of the fire than from the effect produced by the alkalies and other mineral ingredients found in the water, and which gradually eat away the inner surface of the boiler. No well tended iron pot or kettle ever suffers one tithe from fire that it does from the action of water, unless the utensil is carelessly left exposed to the action of the fire in an empty condition. As showing how little the fire really affects the outer surface of a kettle, it may be quoted as a well known fact, that a kettle filled with water in a boiling condition may be lifted from the fire and stood on the open hand without producing pain. I have now on the fire near which I am writing an iron kettle, holding about 3 quarts, which has been in constant use in my household for more than twenty-five years. The steam, most probably, has somewhat damaged the point of its spout, and from time to time has corroded the rim of the lid, so as to render a new one necessary; but scrape the sooty incrustation on its sides, and it is found there as perfect as ever, and yet I am sure so constantly has this kettle been used, that it has been employed to boil water upwards of 18,000 times, and yet it is a long way to be preferred to a new one. *A. D.*

—— I hope the answer Mr. Challis has obtained from the Editors about boiling his kettle will be satisfactory to him, and that by taking the soot off he will now be able to get an earlier breakfast, for we have it on undisputable authority that it will boil quicker if freed from its sooty deposit. As to the information he gives for my "special consideration" with reference to coke being a comparatively expensive fuel for either tubular or other forms of boiler, I should say that much depends on the district one happens to be placed in, for if near the pit's mouth no doubt coal is the cheapest, but anywhere else the cost will be much in favour of coke, which, as I said, gives out a fierce heat and does not foul the flues, and must therefore be far preferable to fuel, that does. *J. S.*

Newspapers as Protectors.—During this severe winter the early Potatos under glass here have been effectually saved by spreading sheets of newspapers over them. Others have lost all their crops who did not do this, and we are thus warranted in trusting to these means on frosty nights. These papers are easily laid on; they do not weigh so much as to hurt; they are easy to remove (at times); and are cleanly protectors. Indeed, there is no reason why a double tier, with say a foot interval between the upper and lower tiers, should not be sufficient to save many tender flowers also. The papers could be laid on twine, or wire, so as to include enough air-space to double their effect. I also use them in the fruit-room, and over choice seed Potatos, with equal success. Half-a-crown's worth of newspapers can be made to save many times their value of plants or flowers—the more so as they last very long. *Thos. C. Bréhaut.*

Manure Heaps.—Throughout any market garden district there is no commoner object than a huge heap of stable manure, reeking with steam and emitting a malodorous perfume. The owners, unable to comprehend the enormous waste that is going on, pride themselves that the manure is being nicely rotted, and that presently it will come out short and solid. But what is lost in the interim? As the process of putrefaction goes on, accompanied as it is by fermentation, the most nutritive properties of the manure are eliminated, and in time it is found that the solid remains are manure in name, but have lost nearly all their properties. Wherever a strong perfume is emitted, there it may be assumed is a waste going on of the very ammonia which forms the most valuable feature of the manure. In a majority of cases not only has the fermentation eliminated all the nutritive properties, but also all the juices; so that when in time it is carted on to the land it is little better than old thatch. If manure be applied to the soil when fresh the soil gets all its benefits, but in the system mentioned above the air gets that which the land so sadly needs. *A. D.*

A Seedling Cactus. — In the summer of last year I was much surprised with one of a batch of Cactus seedlings that flowered with me along with many others, and which produced one bloom only; but that was a striped one, like a Carnation. Whether it will be a permanency will have to be proved by again flowering it. I have never heard of such before in the Cactus tribe, but I do not know what others may have seen or heard of. I have some very beautiful ones in the darker shades and tints, and very grand flowers. I have a great many more yet to flower, so I may expect something peculiar, as they were fertilised with pollen of some of the dwarfer kinds, and I think the seed parent was C. Greenii, or cœrulea grandiflora, one of the most beautiful of the Cacti. In pinks, Phyllocactus speciosus elegans and speciosus grandiflorus, and Edwardsii, are the best as yet; but there are others very nice and distinct. The Phyllocactus are very fine and beautiful flowers, of rich shading and tinting. *J. S. C.*

Rose Stock Pruner.—Allow me to say, in answer to "S. B.," that he does not appear to have quite caught the idea I endeavoured to sketch. Our pruners measure, handles and all, just 22 inches long, and I find that in practice the operator usually grasps the handle about half-way up, and so his objection about the length of handle necessary for lever power falls to nought; and further, the power of this primitive machine, as he calls it, is limited altogether to the capacity of the blades to hold, and any stock too large for them is considered useless, and consigned to the wood-heap. The method of harnessing is done in this way: It should be assumed that all the pressure is downwards, and this is overcome by the bench the instrument rests on; there is a slight but continuous lateral motion, and the object of the straps is to overcome that—therefore we securely fasten the leather straps to the bench in such a way that each one forms a loop, and these two loops form a sort of socket into which one of the handles of the instrument is thrust; it is then ready for work. The point your correspondent has failed altogether to see is this—that so soon as the work is finished the handle of the instrument can be withdrawn, and it at once becomes the portable and adaptable tool I claim it to be; in fact, the long-handled scissors, the essential part of the machine, are only so while Rose stocks are about; whereas the arrangement of blades, wheels, and a handle, as figured, considerably longer than that of my instrument apart from its bench, is useless, and when the Rose stock season has passed must be put

away to rust (this is what usually happens to such things) until the season returns. One word more, and this the result of my own practice: a skilful man can with my machine manipulate the stocks as rapidly as a second person can hand them to him. *T. Smith.*

Brussels Sprouts.—The finest growing Brussels Sprouts I have ever seen have been in the autumn for the past three years at Heckfield, where Mr. Wildsmith has invariably had a patch in grand condition—stems from 30 to 36 inches in height, wonderfully stout, and covered from top to bottom with splendid Sprouts. These have resulted from sowing in rows where they are to remain, thus avoiding transplanting, and that is no doubt a most important matter in relation to this valuable vegetable. The best time to sow is when the weather is open, towards the end of February, in very shallow drills, the soil being well pressed down, and if birds are troublesome the rows may be protected with a few lengths of cotton. From 2½ to 3 feet is the customary width between the rows, the soil being previously trenched and well manured. Of course there are many plants to be thinned out, and these can be utilised in other quarters, where they may serve to produce a quantity of smaller Sprouts for later consumption. *A. D.*

Uprooting of Conifers.—Mr. Culverwell's advice and practice, p. 182, in surface-dressing large Conifers as a means of adding vigour and stability, all must admit to be sound and good, and, as Mr. Rust has it at p. 215, hits the right nail on the head; but I much doubt if Mr. Rust himself has made as good a hit in advising Conifers to be planted high (above ground level I take it), simply for the sake of being able to surface-dress them so as to enable them to better resist the force of the storm. Unless the situation is low and wet I would never plant Conifers or any surface-rooting trees above the natural ground level, as in hot dry summers they are apt to suffer much in their young state for want of moisture. Mr. Culverwell, like Mr. Frost and many others who pride themselves in the noble specimens they have taken such pains in cultivating, prepared the soil thoroughly by deep trenching, &c., before planting; and on ground thus prepared Conifers will not usually require surface-dressing until they have attained a good size, say fifteen or twenty years' growth. I think Mr. Rust is far off the mark in predicting death to trees of this age, by a reasonable amount, say 1 or 2 feet, of soil being placed close round the collar or stem of the tree; and I venture to suggest that there must have been some other cause for the death of the Sycamore or Beech tree he describes as having died the same summer after being so treated. I only wish it was possible to kill a large deciduous tree by simply mounding soil around its trunk—the doom of one that is darkening my window would soon be sealed. Some years ago I had much of this tree-surfacing to do in levelling a large tract of lawn containing Beech, Sycamore, Oaks, and Scotch Firs. One of these trees had as much as 4 feet of soil firmly raised round its trunk, extending a considerable distance beyond its roots, and the remaining nine or ten trees had from 1 to 3 feet of soil thus added. I watched these trees very closely for several years after, and I fully believe the addition of soil did good to them, at any rate their foliage was green and vigorous during a hot dry summer that soon followed, whilst most of the trees around them suffered much in their foliage for want of moisture at the root. *Thos. Keetley, Darley Abbey, Derby.*

—— Mr. Rust has done well in sounding a warning note as to soiling up the stems of Conifers and other trees, many of which are frequently injured thereby; but as to surface-dressing, the benefit from that is considerable, for when judiciously applied it encourages the top roots to spread, and by the extra weight it affords helps to steady the trees and keep them in an erect position. The beauty of all Conifers is much advanced by planting them on raised mounds, which, though small at first, may be added to as growth proceeds, and if not made too circular or formal the undulations thus afforded to lawns or pleasure grounds add greatly to their appearance, while if level or unbroken they have a tame look like a flat meadow, that the eye runs over without seeing any lines to admire. Not only do trees look much better, and the ground more natural, when laid in a wavy form, but the trees grow much faster from having a richer soil to feed on, as when planted high they are comparatively independent of the poor stuff below, which they only penetrate for the sake of an increase of moisture and a more secure anchorage, to enable them to hold their own against storms when they come. *J. S.*

Peach Twigs and Galvanised Wire. — I notice that in the report of the meeting of the Royal Horticultural Society, Mr. Hudson, of Gunnersbury House, Acton, sent some shoots of Peach trees that had, according to the statement in the *Gardeners' Chronicle*, apparently been injured by galvanised wire, and it would be interesting, therefore, as well as profitable to many to know whether the trees from which the shoots were taken are indoors or out [Indoors], for, if outdoors, the injuries are much more likely owing to the late summer and winter, which between them have settled the fate of many Peaches and Nectarines. It is impossible to look over trees of these anywhere without seeing the deplorable consequences of the frost on the unripe wood, which I fear will be more apparent later on than now. We have a good deal of our wall surface covered with galvanised wire, and, as I have stated frequently before, I have never seen any ill effects from it at any time of the year, neither can I trace any now; and so convinced are we of its great utility in preserving the bricks, and of its harmless nature, that we are at the present moment putting up more. Our experience of it is not of short duration, as we have had it in use both in and out for Peach training for many years, and I have never seen a cankered shoot except where bruised by pressure under tight tying. This is a matter easily avoided, and if trellises are made as ours are, summer tying may be done away with, as twigs of Privet answer all the purposes of training, and with them it does not take a quarter of the time to put the shoots of a tree in their place. *J. S.*

Orchid Culture (see p. 213).—Having had experience in growing Orchids at home, and in collecting them abroad, and having been a passive agent in the use of cocoa fibre and leaves in their cultivation, I have come to the conclusion that such advice as given by the writer referred to should, like doctors' physic, be well shaken before taken. In lofty or large houses required to be kept warm, cocoa fibre may be used with advantage in severe weather if put down near the heating medium, and if kept moist it gives off a genial moisture, which counterbalances the drying heat of the pipes during the night, but if kept wet enough to prevent its becoming a harbour for woodlice it soon becomes black and unsightly. If doing no good, it at least is doing no harm. With regard to decaying leaves, every one connected with the profession knows the genial heat and moisture they give off, and I am an advocate for their use in any structure where they can be employed with safety, but in an Orchid-house it is simply putting in a nursery and refuge for many insects injurious to the plants, and any beneficial result arising from their use would be, in my opinion, more than balanced by the ravages of the shoal of slugs and other pests. I have still a lively recollection of hours spent at all times of night hunting for slugs, and being well overhauled in the morning, when, in spite of all possible care, some of our best roots and most promising flower-spikes have been found to be eaten through. Again, the unsightliness would be an obstacle in most establishments. The plan has not even the plea of being natural, for Orchids, and especially epiphytal Orchids, are found on isolated trees and rocks, and on the outskirts and openings in the forest, and by the sides of rivers and lakes, where the air is comparatively free, but rarely in the thick depth of the forest, or jungle, where the atmosphere is redundant with the odour of decaying vegetable matter. *W. Chapman.*

Rules for Heating Conservatories. — Mr. Makenzie's letter in last Saturday's *Gardeners' Chronicle* concludes his correspondence under the heading of "Art in the Conservatory and Greenhouse" with some pleasant remarks on my late lecture, reported in your pages, and his allusions, of course, have given me satisfaction; but I must not therefore hesitate to remark that he himself has failed to contribute anything fresh on the subject. He has only told us what was already well known about the branch of the subject to which his critical remarks more especially refer, viz., the proper modes of calculating the quantity of hot-water pipes required for heating conservatories. The substance of his letters resolves itself into two counts. Firstly, that all the rules I gave could possibly be made conflicting, and secondly, that I had cribbed them without acknowledgment from Hood's work on *Heating and Ventilation*, a book to which he says he, in common with all engineers and horticulturists, is indebted. Permit me to say with reference to the last indictment that personally I had never seen a copy of Hood's volume till one day last week, and that instead of borrowing from any printed rules I consulted an experienced horticultural engineering friend whose advice I coupled with my own practical knowledge of the matter; and should it be found that such combined information agrees with what was already known by experts, I cannot see that there is anything to cause surprise if the rules thus recommended correspond somewhat with those set forth perhaps years ago in standard works on the subject. Mr. Makenzie's first count, however, is not so readily answered, and I can but regret that he has made no attempt himself to solve the difficulty which he has thus brought forward. He simply laughs at me, saying, "Ha! ha! your rules are conflicting." But surely this is a very commonplace thing for so able a correspondent to do unless he furnishes me with a better and more reliable rule. I am not an engineer, neither do I pretend to be a horticulturist, but as an architect I have spared no pains to find such data as should be easily read as a rule to be more generally applicable and yet as concise and simple as those already referred to. I care not how drastically criticised my rules may be, provided my critics will furnish better ones themselves, for which no one would thank them more than I. Will not some of your practical and experienced readers who have not yet spoken, answer my question by giving a better rule by which the proper quantity of hot-water piping may be secured for working without waste and needless outlay? Reliable information is certainly needed on this point by very many besides myself. *Maurice B. Adams, A.R.I.B.A., Bedford Park, Chiswick, W.*

Aquatic Plants.—I was glad to see attention called at p. 177 to that beautiful class of plants, the aquatics. The setting of water in which they are enclosed and mirrored adds greatly, to my mind, to their natural beauty. In addition to those which you have noticed allow me to mention, as well worth attention, the double variety of Arrow-head, which forms beautiful spikes of flowers; Calla æthiopica, with its majestic clusters of leaves and tall white flowers; and Aponogeton distachyon, which is in flower almost the whole year round, and seeds and forms new plants with the greatest freedom. All these seem to be perfectly hardy and quite unaffected by frost, except, of course, such portions of the plant as are exposed to the air. Fresh-water plants are much addicted to rambling, and I should advise those who grow many kinds in one pond to plant them in stations or pots; by this means they can be kept under control, or they are apt to grow into tangled intermingled masses and the stronger plants will destroy the weaker. Two plants I have failed to grow—the flowering Rush, Butomus umbellatus, and the Water Soldier, Stratiotes aloides: I should be much obliged if any correspondent would give me any hints on the cultivation of these plants. In my part of Sussex there is iron in almost all the water, and lime is almost absent from the soil. The first is irremediable, I have endeavoured to remedy the latter by adding chalk, but the flowering Rush will not grow. One defect may be admitted to exist in water plants, viz., that there is little variety of colour—almost all being either white or yellow; this has led me to wish that some one who has the power of doing so would try whether our Water Lily can be hybridised with the blue or pink varieties from the tropical rivers. This would be painting the Lily, but how beautiful our common Nymphæas would be if shaded with red or blue: the flower is larger and finer than those of the coloured varieties would seem to be. Perhaps I am suggesting an impossibility, but success if attainable would be a great gain to the lovers of aquatics. *Sapexiensis.* [The Swedish Nymphæa albo-rosea just meets your want. Eds.]

The Establishment of Cinchona Plantations in Jamaica.—The article at p. 728, vol. xii., appears to indicate that the ex-Superintendent of Cinchona plantations in Jamaica lays claim to the sole credit of establishing the culture of the various species of Cinchona in Jamaica. That he had a share, and a large one too, in contributing to the success of the project cannot be denied, but when he takes the entire credit for what is now a successful venture, to the disparagement of an old and able public servant (now departed), he invites criticism as to his assertions therein put forth. Mr. Thomson says in his article, quoting from his own report (wherein he describes occurrences rather minutely which took place two years or more before his arrival in this island), that "the Secretary of State for India authorised the collectors to transmit seeds simultaneously to Jamaica." At whose suggestion, I would ask? Can Mr. Smith tell us that? or is the extract from one of Mr. Wilson's letters sufficient? Writing in 1860, he says:—"I am glad to hear that the Indian Government has taken up the subject of the introduction of quinine-producing plants into India, but I think they have done wrong in not making this island a central depot for the plants." This shows what he thought the island capable of. In another letter:—"Sir W. Hooker has been in communication with our Governor on the subject, and I have freely promised to give all the assistance I can in establishing a plantation on the hills." That he was well aware what elevation was required is also evident from his letter, saying, "I shall require a field of 60 acres at 4000 to 5000 feet." Why the spot selected should have been lower, was possibly for reasons over which he had not sufficient control. The site doubtless proved unfortunate (1863), but was nothing done in the way of selecting another site until 1867, when Mr. Thomson says "I selected sites for plantations"? What was Mr. Wilson's capacity when he wrote in 1865 "the Cinchona plantation is

thriving"? Why this silence of your correspondent of this period? If the site above Bath failed in 1863, where was the tree "in flower, 10 feet high," in 1865 (of which Mr. Wilson wrote), planted? Under whose superintendence was this plantation established? We learn at this period that Mr. Thomson was Mr. Wilson's assistant. That the task of carrying out the work initiated by Mr. Wilson did fall into the hands of Mr. Thomson, and that credit is due to him for the manner in which the undertaking was carried on, no one disputes. The experience gained while working under his predecesors served him in good stead, and he was thus enabled to avoid the errors, and adopt those conditions necessary to successful cultivation as a final result of his and his predecessor's experience; but to lay claim, as he appears to do, to the sole credit of establishing Cinchona cultivation in Jamaica, is considered absurd by one who in truth and honour wishes to see "honour given to whom honour is due." *Gyges.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, FEBRUARY 18, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
Feb.	In.	In.	°	°	°	°	°	°	°		In.
12	29.73	−0.06	50.8	30.6	20.2	41.3	+ 2.4	35.9	82	WSW: WNW	0.03
13	30.00	+0.20	48.4	32.8	15.6	40.2	+ 1.3	32.9	74	WSW: W.	0.00
14	29.69	−0.12	43.5	33.6	9.9	39.0	+ 0.2	36.7	92	S.S.W.: E.S.E.	0.10
15	29.46	−0.35	47.5	40.5	7.0	43.2	+ 4.5	40.6	90	S.: S.E.	0.08
16	28.88	−0.94	53.0	42.6	10.4	46.8	+ 8.1	45.1	95	S.E.: S.S.W.	0.33
17	29.03	−0.79	49.2	38.4	10.8	42.5	+ 3.8	38.6	86	WNW: W.	0.15
18	29.20	−0.62	52.0	42.1	10.8	46.9	+ 8.1	43.6	89	WSW: W.	0.14
Mean	29.43	−0.38	49.3	37.2	12.1	42.8	+ 4.1	39.1	87	W.: S.W.	sum 0.83

Feb. 12.—Overcast, dull till 11 A.M. Fine and bright after. Cloudless at night. Little rain before 10 A.M.
— 13.—A very fine clear day. Light breeze. Cool.
— 14.—A dull, overcast day. Frequent rain in morning and evening.
— 15.—Dull till noon, fine and bright till 2 P.M. Dull after. Frequent rain after 4 P.M.
— 16.—Dull and wet in morning. Fine in afternoon and evening. Overcast at midnight. Occasional showers in afternoon, and again after 11 P.M. Strong wind.
— 17.—A fine bright day. Mild. Heavy rain and strong gale in early morning. Cloudless at night.
— 18.—Fine and bright till evening, then wet and dull. Strong wind. Rain before 9 A.M., and after 7 P.M.

LONDON: *Barometer.*—During the week ending Saturday, February 14, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.49 inches at the beginning of the week to 29.66 inches by the evening of the 8th; decreased to 29.18 inches by the evening of the 9th; increased to 29.86 inches by the evening of the 11th; decreased to 29.79 inches by the morning of the 12th; increased to 30.24 inches by noon on the 13th; decreased to 29.84 inches by the afternoon of the 14th; and increased to 29.88 inches by the end of the week. The mean reading for the week at sea level was 29.73 inches, being 0.43 inch below that of the preceding week, and 0.23 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 50¾° on the 12th to 42½° on the 11th; the mean value for the week was 46¼°. The lowest temperatures of the air observed by night varied from 30½° on the 12th to 36½° on the 8th; the mean value for the week was 33½°. The mean daily range of temperature in the week was 12¾°, the greatest range in the day being 20¼° on the 12th, and the least 9°, on the 8th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Feb. 8, 40°.6, + 1°.5; 9th, 40°.1, + 1°; 10th, 40°.3, + 1°.3; 11th, 38°, — 1°; 12th, 41°.3, + 2°.4; 13th, 40°.2, + 1°.3; 14th, 39°, + 0°.2. The mean temperature of the air for the week was 39°.9, being 1° above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 103¼° on the 13th, 97° on the 12th, and 85¼° on the 9th; on the 11th the reading did not rise above 50°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 25° on the 12th, 27° on the 11th and 13th, and 28° on the 10th. The mean of the seven lowest readings was 28¼°.

Wind.—The direction of the wind was S.W. and S., and its strength moderately strong.

The weather during the week was generally fine (especially so on Friday) though dull at intervals, and the sky cloudy.

Rain fell on four days during the week; the amount measured was 0.60 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, February 14, the highest temperatures of the air observed by day were above 51° at Truro, Bristol, and Sunderland, and below 48¼° at Brighton, Norwich, Wolverhampton, Hull, and Leeds; the mean value from all stations was 50¼°. The lowest temperatures of the air observed by night were below 30° at Wolverhampton, Nottingham, and Sheffield, and above 34° at Plymouth and Norwich; the mean from all places was 31¼°. The extreme range of temperature in the week was above 21° at both Truro and Nottingham, and below 16° at both Brighton and Norwich; the mean range from all stations was 19°.

The mean of the seven high day temperatures was above 48° at Truro, Plymouth, Bristol, and Sunderland, and below 45½° at Brighton, Norwich, Wolverhampton, Bradford, and Leeds; the mean value from all places was 47°. The mean of the seven low night temperatures was below 34° at Blackheath (London), Wolverhampton, and Nottingham, and above 36° at Truro, Plymouth, Brighton, and Norwich; the mean from all stations was 35°. The mean daily range of temperatures was above 14° at Truro and Nottingham, and below 10° at Brighton, Norwich, and Leeds; the mean daily range from all places was 12°.

The mean temperature of the air for the week from all stations was 40½°, being 1¾° lower than the value for the corresponding week in 1879. The mean temperature was above 41½° at Truro, Plymouth, Bristol, and Sunderland, and below 39½° at Wolverhampton, Bradford, Hull, and Leeds.

Rain.—Rain fell on every day of the week at Bradford, and on five or six days at most other places. The heaviest falls were 1.18 inch at Truro, and three-fourths of an inch at Bristol, Bradford, and Sheffield; and the least falls were 0.27 inch at Cambridge and 0.35 inch at Leeds; the average fall over the country was six-tenths of an inch.

The weather during the week was tolerably fine, though wet, and the sky generally cloudy. A little snow fell at Bradford on the 8th inst.

SCOTLAND: *Temperature.*—During the week ending Saturday, February 14, the highest temperatures of the air observed by day varied from 50° at Glasgow, to 46° at Dundee; the mean from all places was 48¼°. The lowest temperatures of the air observed by night varied from 27° at Aberdeen and 28° at Paisley, to 32° at Edinburgh; the mean value from all stations was 29¾°. The mean range of temperature from all places was 18½°.

The mean temperature of the air for the week from all stations was 39¼°, being 3¼° higher than the value for the corresponding week in 1879. The mean temperature was above 40½° at Glasgow, and below 38° at Perth.

Rain.—The heaviest fall of rain was 1 inch at Greenock, and the least fall a quarter of an inch at both Edinburgh and Leith; the average fall over the country was half an inch.

DUBLIN.—The highest temperature of the air was 51¾°, the lowest 25½°, the extreme range 26¼°, the mean 39¼°; and the fall of rain 0.47 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

ABIES—PICEA: *W. B.* Spruce Firs are true Piceas; Silver Firs are true Abies. Spruce Firs (Piceas) are known by their branches being rough, with projecting spurs supporting the leaves, by their leaves being more or less four-sided, by their cones being pendulous, and by the scales of the cone being persistent. Silver Firs (Abies) are known by their branches being smooth, their leaves flattish, their cones erect, their cone-scales deciduous. There are other more recondite differences, which we need not now detail.

BRAMBLES: *Enquirer.* You would have to cut and come again very often before succeeding.

CAMELLIA: *J. C.* Many thanks; the appearance is due to the branching of the stem within the flower. We have frequently seen it.

CHALK: *Enquirer.* Yes; especially if the land is at all heavy.

DENDROBIUM GIBSONI: *C. R.* A fusion of the flower-stalks without other change.

EPACRIS: *W. C.* The following are good and distinct sorts:—Epacris hyacinthiflora, and hyacinthiflora candidissima, Vesuvius, Tauntoniensis Kinghornii, and Lady Panmure.

ERICAS: *W. C.* For six distinct Heaths of tolerably free growth, take E. Bergeana, metulæflora bicolor, Parmentieri rosea, perspicua nana, odorata, and ventricosa coccinea minor.

INSECTS: *Veto.* Send specimens for identification.

NAMES OF PLANTS: *C. E. F.* 1, Cupressus Lawsoniana; 2, Cupressus Goveniana; 3, Juniperus recurva; 4, Cupressus Lambertiana; 5, specimen insufficient.—*T. A. Glover.* 1, Rhododendron præcox, or one of the other early hybrids crossed with davuricum; 2, Blechnum occidentale; 3, Senecio mikanoides, the German Ivy; 4, Asplenium præmorsum.—*A. P.* 2, Chameranthemum Beyrichii; 3, Asplenium præmorsum; 4, Lastrea quinquangulare; 5, Asplenium flaccidum. The others are too imperfect for determination.—*C. R.* 3, Cacalia, or Kleinia articulata; 4, Farfugium grande; 5, Deutzia gracilis; 6, Begonia Rex; 7, Begonia Duchess de Brabant; 8, Cyrtomium anomophyllum.—*Enquirer.* It is probably one of the seedling forms of Ceanothus azureus.—*J. B. S.* The evergreen tough-stalked Madeira form of Cystopteris fragilis, which you will find under the name of Sempervirens. It is a very distinct and interesting plant.—*Z. I.* Casuarina equisetifolia.—*J. Day.* 1, Hardenbergia monophylla; 2, probably a Thibaudia; 3, Acacia armata; 4, Pittosporum tenuifolium; 5, Jasminum grandiflorum.—*Chapman.* The orange-red Habrothamnus is H. fasciculatus.

PINUS DOUGLASII: *Enquirer.* Yes; if the soil is not wet as well as heavy.

CATALOGUES RECEIVED:—William Fell & Co. (Hexham), Spring Seed Guide.—Charles Wilson (Saltisford, Warwick), Select Catalogue of Garden, Farm, Flower Seeds, &c.—Vilmorin-Andrieux & Co. (Quai de la Megesserie, Paris), Catalogue of Seeds of Hardy and Exotic Trees and Shrubs, &c.—E. B. Spence (8, Victoria Road, Darlington), Garden, Agricultural, and Floral Seed Catalogue.—M. Bruant (Boulevard Saint Cyprien, Poitiers, Vienne, Isère, France), Catalogue of New Begonias, Zonal Pelargoniums, Petunias, Verbenas, &c.

COMMUNICATIONS RECEIVED—G. W. M.—H. H.—E. M.—T. C.—H. C.—C. F.—C. Ross.—P. B. C.—M. J.—C. Y. M.—G. D.—C. L.—C. & L.—W. & Sons.—J. R. J.—C. N., Antibes (with thanks).—H. C.—M. Y.—A. F. B.—J. G.—W. B.—R. T. C.—J. H.—S. J.—C. S. S.—A. W.—J. P.—J. J.—H. S.—F. Corrin (next week).—W. J. (next week).—J. D.—T. C. C.

Enquiries.

He that questioneth much shall learn much.—BACON.

BIRD SCARERS.—A correspondent writes to ask whether no one manufactures a cheap, strong, useful "garden mirror" (it ought to be glazed, so as to reflect on both sides) for hanging, to revolve by a string, among Strawberry beds, to scare birds? He preserved all his fruit last year by means of suspended mirrors; but the rain and sun destroyed the frames speedily, and they had to be renewed. Why not manufacture a garden mirror in a waterproof and sun-proof frame? No other bird-scarer seems of the slightest good where birds are numerous. He once erected a windmill rattle in his garden, and in less than a week observed a bird sitting upon the machine gravely inspecting its mechanism.

CRINUM RIPARIUM.—I should be pleased if some one would give me a hint how to treat this plant with a view to getting it into bloom during September and October. *Ignorance.*

SEED SAVING AND STORING.—Can any of your correspondents inform me of any work which treats especially on the saving and storing of seeds? *W. R.*

Markets.

COVENT GARDEN, February 19.

A general rise has taken place in our market in all sorts of first-class goods, late Grapes more particularly being in good demand, and St. Michael's Pines realising better prices. American Apples are reaching us in unsound condition, a few good samples making high prices. Trade generally better. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Lemons, per 100	3 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– ..	Pears, per dozen	3 6– 6 0
Grapes, per lb.	4 0– 8 0	Pine-apples, per lb.	2 0– 3 0

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0–10 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz.	3 0– 4 0
— English, p. 100	15 0– ..	Mint, green, bunch	2 0– ..
— French, per bun.	7 0–25 0	Onions, per bushel	8 0– ..
Beet, per doz.	1 0– 2 0	— Spring, per bun.	0 6– ..
Brussels Sprouts, lb.	0 6– ..	Parsley, per lb.	1 6– ..
Cabbages, per doz.	1 0– 2 0	Peas, per lb.	1 0– ..
Carrots, per bunch	0 8– ..	Potatos (new), per lb.	0 3– 0 9
— French, per lb.	0 6– ..	Rhubarb (Leeds), per bundle	0 9– ..
Cauliflowers, per doz.	2 0– 5 0	Seakale, per punnet	3 0– ..
Celery, per bundle	1 6– 4 0	Shallots, per lb.	0 6– ..
Chilis, per 100	3 0– ..	Spinach, per bushel	5 0–15 0
Cucumbers, each	1 6– 3 0	Tomatos, per dozen	3 0– ..
Endive, per score	4 6– ..	Turnips, new, bunch	0 6– ..
Garlic, per lb.	0 6– ..		
Herbs, per bunch	0 2– 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 130*s.* to 190*s.* per ton. German produce is making from 6*s.* to 7*s.* per bag.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ficus elastica, each	2 6–15 0
Azaleas, per dozen	18 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz. ..	6 0–18 0	Fuchsias, per dozen	9 0–15 0
Bouvardias, per doz.	12 0–24 0	Hyacinths, per doz..	6 0–12 0
Cinerarias, per doz..	9 0–15 0	Myrtles, per doz. ..	6 0–12 0
Cyclamen, per dozen	12 0–30 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	9 0–12 0
Dracæna terminalis	30 0–60 0	Primula, single, per dozen	4 0– 6 0
— viridis, per doz...	18 0–24 0	Solanum, per dozen..	9 0–24 0
Erica gracilis, per dozen	9 0–18 0	Tulips, 12 pots ..	8 0–12 0
— hyemalis, p. doz.	9 0–24 0		
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 0	Mignonette, 12 bun.	6 0– 9 0
Arum Lilies, per dozen	4 0–12 0	Narcissus, Paper-white, 12 spikes ..	1 0– 1 6
Azalea, 12 sprays ..	1 0– 3 0	Pelargoniums, 12 spr.	1 6– 3 0
Bouvardias, per bun.	1 0– 4 0	— zonal, 12 sprays	0 9– 1 6
Camellias, per doz...	1 0– 6 0	Poinsettia, 12 blms...	3 0– 9 0
Carnations, per dozen	1 0– 3 0	Primula, double, per bunch	1 0– 2 0
Cyclamen, 12 blms..	0 4– 1 0	— single, per bunch	0 6– 1 0
Epiphyllum, 12 blms.	0 6– 1 0	Roses (indoor), doz.	4 0–12 0
Eucharis, per doz. ..	5 0– 9 0	— Roses, Fr., doz.	2 6– 6 0
Euphorbia, 12 sprays	3 0– 6 0	Spiræa, 12 sprays ..	1 0– 2 0
Gardenias, 12 blms..	12 0–24 0	Tropæolum, 12 bun.	1 0– 3 0
Heliotropes, 12 sp. ..	0 6– 1 0	Tuberoses, per dozen	4 0– 6 0
Hyacinths, 12 spikes	4 0– 9 0	Tulips, 12 blooms ..	1 0– 1 6
— small	3 0– 6 0	Violets, Fr., per bun.	1 6– 2 6
— Roman, 12 spikes	1 0– 2 0	White Lilac, Fr., per bundle	4 0– 8 0
Lily of Val., 12 spr.	0 9– 2 0		

SEEDS.

LONDON: *Feb.* 18.—Messrs. John Shaw & Sons, 37, Mark Lane, state that a slightly improved general inquiry has prevailed during the last few days, but has not yet developed itself into much actual business. With regard to American red Clover, stocks are rapidly augmenting, and values, in the absence of demand, continue to shrink. The total depreciation from top prices is now very considerable. The shipments this season from New York have been:—To Great Britain, 38,321 bags; to the Continent, 68,921 bags. In Trefoil there has lately been rather more doing. Alsike is cheaper, but fine white is not over plentiful. Italian keeps steady. Of Sainfoin there is a great scarcity. Spring Tares realise full prices. Bird seeds met with no attention. For Haricot Beans there is an increased request.

CATTLE.

At Copenhagen Fields on Monday the very wet weather caused a depression in the trade, yet choicest quality beasts, being scarce, were cleared off at a slight advance. Inferior kinds met with a very dull sale, and were not any dearer. There was a fair demand for sheep, considering the weather. Prices improved for best qualities, but inferior could not be quoted higher. Good calves continue to be scarce and dear. Quotations:—Beasts, 4*s.* to 4*s.* 8*d.*, and 5*s.* to 5*s.* 10*d.*; calves, 5*s.* to 6*s.* 8*d.*; sheep, 4*s.* 8*d.* to 5*s.* 4*d.*, and 5*s.* 10*d.* to 6*s.* 8*d.*; pigs, 3*s.* 8*d.* to 4*s.* 8*d.*—On Thursday supplies of beasts were short, but equal to the demand, which ruled heavy at previous prices. Sheep were a slow sale at the above-noted rates; calves and pigs marked previous currencies.

HAY.

Tuesday's Whitechapel Market report states that there was a short supply, but the trade remained dull, and prices were as follows:—Prime Clover, 100*s.* to 125*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 95*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 37*s.* per load.—On Thursday a moderate supply of fodder was on sale. There was rather more inquiry for best hay and straw, but prices were without change.—Cumberland Market quotations:—Superior meadow hay, 98*s.* to 105*s.*; inferior, 40*s.* to 75*s.*; superior Clover, 117*s.* to 126*s.*; inferior, 75*s.* to 95*s.*; and straw, 34*s.* to 40*s.* per load.

POTATOS.

The Borough and Spitalfields Markets reports state that the trade has remained inactive, but as the supplies are limited prices are without much change. Scotch Regents, 140*s.* to 160*s.*; do. Champions, 150*s.* to 170*s.*; Lincoln Champions, 150*s.* to 170*s.*; Victorias, 160*s.* to 180*s.* per ton. German reds, 6*s.* 6*d.* to 8*s.*; Belgian kidneys, 6*s.* 6*d.*; and French whites, 6*s.* per bag.—During last week 19,713 bags were received at London from Hamburg, and 4550 bags from Rotterdam, but the receipts from other ports were inconsiderable.

COALS.

The following are the prices current at market during the week:—East Wylam, 16*s.* 3*d.*; Bower's West Hartley, 14*s.* 9*d.*; Bebside West Hartley, 14*s.* 9*d.*; West Hartley, 14*s.* 9*d.*; Walls End—Hetton, 16*s.*; Hetton Lyons, 14*s.* 6*d.*; Hawthorns, 14*s.* 9*d.*; Lambton, 15*s.* 6*d.*; Original Hartlepool, 16*s.*; Wear, 14*s.* 6*d.*; South Hetton, 16*s.*; Tunstall, 14*s.* 6*d.*; Vanes, 14*s.* 6*d.*; Tees, 15*s.* 9*d.*; Chilton Tees, 15*s.*; South Hartlepool, 15*s.*

Government Stock.—On Monday the closing prices of Consols were, for the account, 98⅛ to 98¼, and 98 to 98⅛ for delivery. On Tuesday 98⅛ to 98¼ was the closing price for delivery, and 98 3/16 to 98 5/16 that for the account. Wednesday's final quotations were, for the account, 98⅜ to 98½, and 98¼ to 98⅜ for delivery. On Thursday the closing price was 98¼ to 98⅜, for both delivery and the account.

LAWN MOWERS — LAWN MOWERS.

New and Improved Machines for 1880.

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PATTERNS ARE THE BEST.

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(and all respectable Ironmongers in Town or Country).
MANUFACTORY: BANBURY, OXON.

SUTTON'S

PARIS, 1878. PARIS, 1876.

CHOICE HAND PICKED.

PRIZE MEDAL. PRIZE MEDAL.

SEED POTATOS

CARRIAGE FREE.

THE BEST SORTS,

AT MODERATE PRICES.

POTATOS FOR FORCING.
POTATOS FOR EARLY CROP.
POTATOS FOR MAIN CROP.
POTATOS FOR LATE CROP.
POTATOS FOR THE FARM.

Sutton's Descriptive List gratis and post-free.

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FISHER, SON & SIBRAY,
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NURSERYMEN, SEEDSMEN and FLORISTS,
HANDSWORTH, SHEFFIELD.
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FOR CHOICE and RARE ALPINES,
Best Hardy Border Perennials,
Copious Selection of Best Annuals,
Interesting and Exclusive Novelties.
Selected Strains of Florists' Flowers, &c.,
See the SEED CATALOGUE and SUPPLEMENT, for present season, of
W. THOMPSON,
SEEDSMAN, TAVERN STREET, IPSWICH.

MARÉCHAL NIEL ROSES
ON SEEDLING BRIER.

FINE SPECIMEN PLANTS,
in 8-inch pots, trained for immediate flowering,
3s. 6d. each, 36s. per dozen.

Established in 4½-inch pots,
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(LIMITED),
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The Largest Rose Gardens in England

CRANSTON'S NURSERIES,
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(*ESTABLISHED* 1785.)

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By John Cranston.
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VINES—VINES—VINES.
W. G. CALDWELL AND SONS can still supply extra strong Fruiting CANES, at 4*s.* 6*d.* each, of the following varieties:—Black Hamburgh, Madresfield Court, Foster's Seedling, Mrs. Pince, Lady Downe's, Muscat of Alexandria.
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ROSES, LAURUSTINUS, LAURELS,
all uninjured by frost.
Extra fine CHERRIES, CURRANTS, GOOSEBERRIES, PEARS, PLUMS, CONIFERÆ, &c.
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JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.
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AN INVESTMENT.

That Timber Growing will be found to be a profitable application of the soil, and a sound investment to Capitalists in the future, is being made obvious by the increasing demand for Wood, and its anticipated scarcity in places abroad.

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FOREST TREE NURSERIES, ABERDEEN, SCOTLAND.

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FIFTY ACRES of FRUIT TREES.—Apples, Pears, Plums, Cherries, Peaches, Nectarines, Apricots, and other Fruit Trees, as Standards, Dwarfs, Pyramids, Bushes, Cordon and Trained Trees, in great variety, all full of vigour and warranted true to name. Descriptive Price List, containing a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their Synonyms, Quality, Size, Form, Skin, Colour, Flesh, Flavour, Use, Growth, Duration, Season, Price, &c., for a penny stamp.

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ABIES MENZIESII, fine, transplanted, 9 to 15 inches, 12s per 100.
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PINUS AUSTRIACA, 2-yr., very fine, 3s. 6d. per 1000.
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NICOTIANA LONGIFLORA.—A deliciously fragrant plant with pure white flowers; one will scent a whole house; easily cultivated, almost perpetual bloomer. Packet of seeds, with cultural directions, price 7d. Stamps with order.—W. J. MARSH, Woodbridge, Suffolk.

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CHERRIES, strong Standard sorts, good heads, 75s. per 100.
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HOLLIES, 1 to 1½ foot, 16s. per 100; 1½ to 2 feet, 30s. per 100; 2 to 3 feet, 45s. per 100.
POTATOS, Myatt's Kidney, £10 10s. per ton.

STRONG FOREST TREES.
ALDER, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
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J. PEED AND SONS beg to call special attention to the undermentioned NEW COLEUS, which obtained two First-class Certificates from the Royal Horticultural Society in June and July last. They are quite distinct from any other varieties yet sent out, and are pronounced the most beautiful yet in commerce:—

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The five for 21s.

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The twelve for 42s., or 5s. each.
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LIMES, 10 to 12 feet, 15s. per dozen, £5 per 100; 12 to 15 feet, 18s. per dozen.
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The whole of the above have strong straight stems and good bushy heads, and cannot be surpassed.
CATALOGUES of General Nursery Stock post-free, and Special Offers made for quantities.
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POTATOS.—Myatt's Ashleaf, Old Ashleaf, Rivers' Ashleaf, Veitch's Ashleaf, and Rector of Woodstock.
J. HOUSE is prepared to make a very low offer to intending purchasers.
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Sealed packets of the above, containing three varieties, 100 seeds each, 2s.; mixed, 150 seeds each, 1s.; with full directions as to culture, "J. C. C.'s" notice, &c. Post-free payment in 1d. stamps. May be obtained through any good Seed Firm, or direct from the Grower. R. H. POYNTER, Seed Merchant and Nurseryman, Castle Green, Taunton.

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AURICULAS (alpine, fine), 3s. per dozen, 20s. per 100
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ALL FINE CLEAN GROWN PLANTS.

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,, ...	3	to	4	,,	19s. ,,
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,, ...	1½	to	2	,,	14s. ,,
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,, Mountain	3	to	4	,,	22s. ,,
,, ...	4	to	6	,,	30s. ,,
BROOM	1½	to	2	,,	14s. ,,
,, ...	2	to	3	,,	17s. ,,
BUCKTHORN	12	to	18	inches	10s. per 100
,, ...	2½	to	4	feet	20s. ,,
CHESTNUT, Spanish ..	1½	to	2	,,	16s. per 1000
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ELM, Scotch	1	to	2	,,	14s. ,,
,, ,, ...	3	to	5	,,	30s. ,,
HOLLY, 2-yr. and 3-yr., mixed					6s. ,,
HORNBEAM	4	to	6	,,	28s. ,,
LIMES	2	to	3	,,	8s. per 100
,, ...	3	to	4	,,	12s. ,,
,, ...	4	to	5	,,	17s. ,,
,, ...	5	to	6	,,	40s. ,,
MAPLE, English and Norway	3	to	4	,,	30s. ,,
OAK, Evergreen, three times transplanted ..	2	to	3	,,	25s. ,,
,, Evergreen, do., do ..	3	to	4	,,	50s. ,,
,, Evergreen, do., do.	4	to	5	,,	100s. ,,
POPLARS, Black Italian, Balsam, and Ontario ..	3	to	4	,,	20s. per 1000
PRIVET, Evergreen ..	1½	to	2	,,	15s. ,,
,, ,, ...	2	to	3	,,	24s. ,,
QUICK	9	to	15	inches	9s. ,,
,, ...	12	to	18	,,	14s. ,,
,, ...	18	to	24	,,	20s. ,,
,, ...	2	to	3	feet	24s. ,,
SYCAMORE	3	to	4	,,	25s. ,,
,, ...	4	to	5	,,	40s. ,,
THORN, Black	1½	to	2	,,	18s. ,,
WHIN or GORSE ..	18	to	24	inches	15s. ,,
,, ...	2	to	3	feet	20s. ,,
WILLOW, Bedford and Huntingdon	3	to	4	,,	20s. ,,

SEEDLINGS.

ASH	1-yr.	£6	0	0	per 100,000.
AUSTRIAN PINE ..	2-yr.	12	10	0	per 100,000.
CORSICAN PINE ..	2-yr.	15	0	0	,,
LARCH	1-yr.	6	0	0	,,
,, very fine ..	1-yr.	1-yr.	0	9	0 per 1000.
,, very fine ..	1-yr.	2-yr.	0	13	0 per 1000.
,, 15 to 26 inches,	2-yr.	2-yr.	0	17	6 per 1000.
,, 20 to 30 inches ..			1	5	0 per 1000.
SPRUCE	2-yr.	6	0	0	per 100,000
,, ...	3-yr.	7	10	0	,,

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TRINITY NURSERIES, EDINBURGH.

Potato Disease——Potato Disease.

THE FAMOUS SCOTCH CHAMPION,
ACKNOWLEDGED BY EVERYBODY TO BE
the best Disease Resisting variety grown.
Price List free on application.
QUANTITY OF OTHER VARIETIES
Applicants will please state quantity and kind required.
PUBLIC INSTITUTIONS, HOTELS and FAMILIES, supplied with Table Potatos.

A Large Quantity of Carrots, Mangels and Swedes, for Horses and Cattle, for Sale.

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Wholesale Potato Merchant,
252 and 253, BROAD STREET, BIRMINGHAM.

VEGETABLE & FLOWER SEEDS
SEED POTATOS. TOOLS &c
BEST QUALITY = CARRIAGE FREE.
PRICED CATALOGUE = POST FREE.
JAMES DICKSON & SONS
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108 EASTGATE ST. **CHESTER**

Genuine Seeds.

CATALOGUE Gratis and Post-free, on application.—FLOWER SEEDS, VEGETABLE SEEDS, FARM SEEDS, of the best quality, true to name and reasonable in price.

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THE FOLLOWING to offer Cheap, the ground being required for other purposes:—

THORN QUICK, 500,000, transplanted.
LARCH, 2 to 4 feet.
SPRUCE, 1½ to 3 feet.
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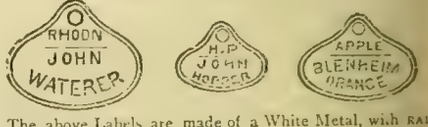

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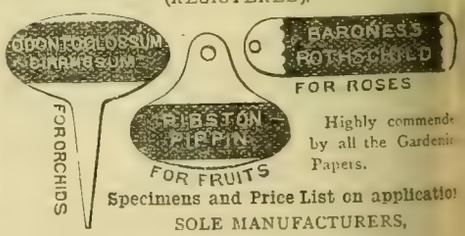

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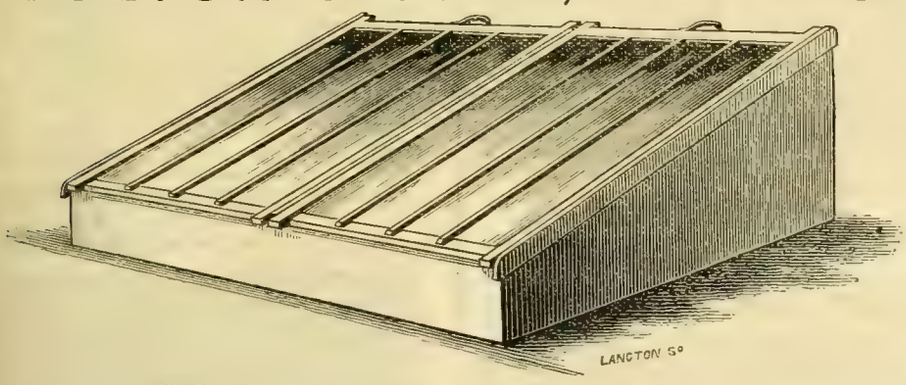

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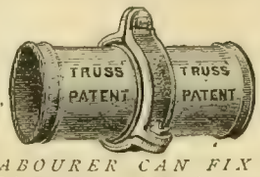

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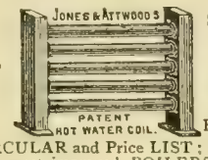

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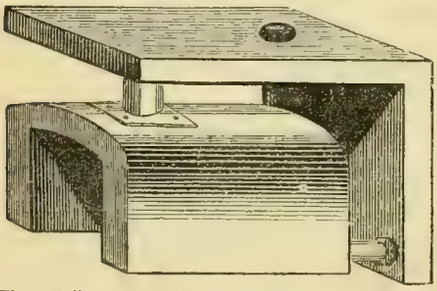

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20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
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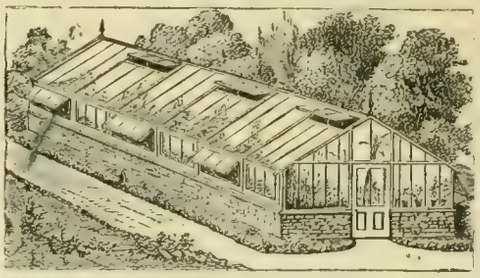

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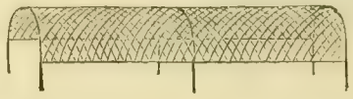

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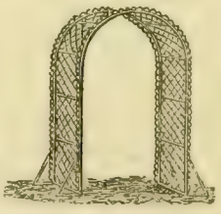

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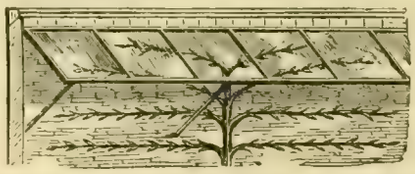

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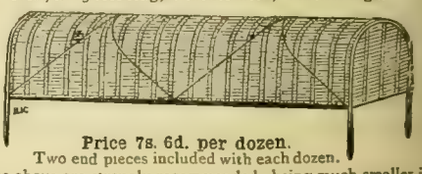

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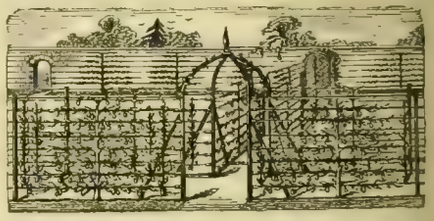

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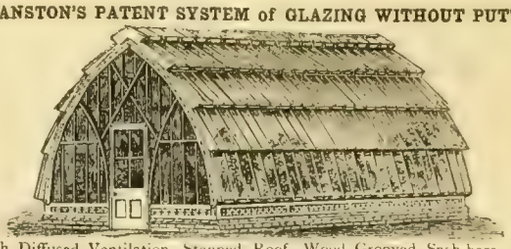

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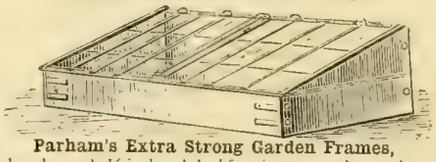

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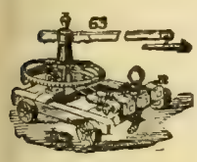

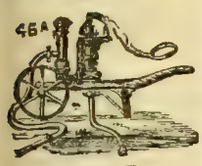

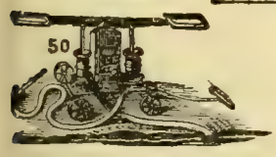

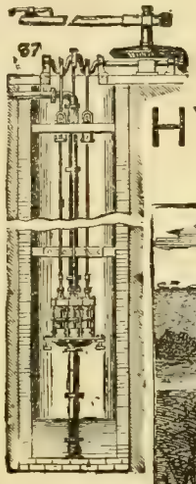

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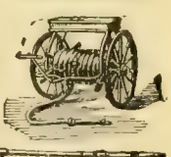

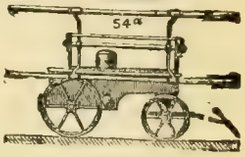

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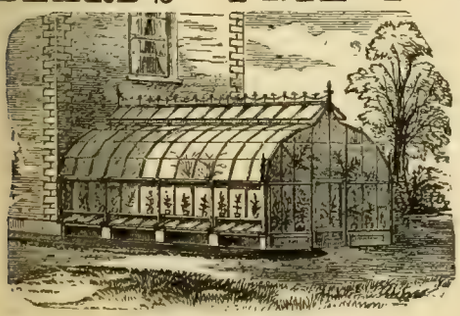

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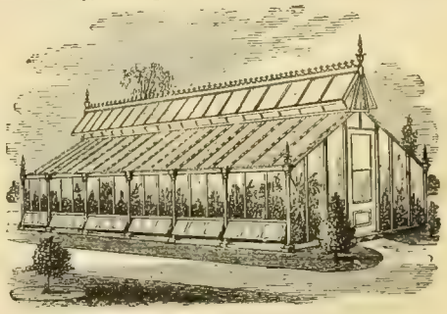

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H. J. VAN HULLE, Botanical Gardens, Ghent, Belgium.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS at Post-offices, as all Letters so addressed are opened by the authorities and returned to the sender.

Head Gardener and Inspector

WANTED, for a West-end Square.—Age not over 40; height not under 5 feet 10 inches. Undoubted character. Wages 25s., and a small residence.—Apply by letter, with testimonials, to S. G. C., Mr. Maze, Florist, 4, Portobello Terrace, Notting Hill Gate, W.

Gardener, Head Working.

WANTED, at a Private Asylum, a strong, active, trustworthy, married Man, who thoroughly understands Kitchen and Flower Gardening. He would be required to live at the entrance lodge, and his Wife to attend to the Gate.—Apply, stating age, number of family, last situation, and wages required, to Dr. TATE, The Coppice, Nottingham.

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GARDENER (UNDER), in a Nobleman's or Gentleman's Garden.—Eight years' experience. Two years' good character from present employer.—Address, T. RYDER, Head Gardener, Brookdale Hall, Newton Heath, Manchester, who will be pleased to give full particulars respecting the above.

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FOREMAN, in a good establishment.—Age 25; ten years' experience in all branches of the profession. First-class testimonials.—C. H. P., The Gardens, Bishop's Wood House, near Ross, Herefordshire.

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To Nurserymen.

NURSERY FOREMAN, MANAGER, or TRAVELLER.—Good experience Indoor and Out.—H., Messrs. Hurst & Sons, Seed Merchants, Leadenhall Street, London, E.C.

NURSERY FOREMAN.—Mr. J. WELLER, who is retiring from business, can with confidence recommend his Foreman to any Nurseryman requiring a thoroughly trustworthy competent man.—Address, stating particulars, wages, &c., to W. BEALE, Rectory Nursery, Crystal Palace Road, East Dulwich, S.E

JOURNEYMAN, in a good establishment.—Age 22; good reference.—W. P., The Gardens, Whilton Lodge, Northamptonshire.

JOURNEYMAN, in a Gentleman's establishment or Nursery.—Age 22; good reference.—C. H., 2, Hartfield Villa, Hartfield Road, New Wimbledon, Surrey.

JOURNEYMAN, in the Houses.—Age 21. Six years' experience. Bothy preferred. Good character. —E. UNSTED, Hillfield, Reigate, Surrey.

JOURNEYMAN, in a Gentleman's establishment.—Seven years' experience. Good character from present situation, four years' previous good recommendation.—A. GORDEN, Norman Court Gardens, Dean, Salisbury.

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IMPROVER, in the Houses, in a Nobleman's or Gentleman's establishment.—Age 19; strong and active. Good character.—H. BURGESS, The Gardens, Balls Park, Hertford, Herts.

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Dr. Hassall says—"Soft and Mellow, Pure, well Matured, and of very excellent quality."

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NEW SCARLET and PURPLE PRIMULAS.

Why grow the old ordinary kinds when you can have the colours nearly as bright as the Zonal Pelargoniums?

	Per pkt. s.	d.	
SWANLEY RED.....	5	0	These are totally away from all others, and even superior to the Chiswick Red and rubro-violacea which were awarded First-class Certificates last November.
SWANLEY PURPLE..	5	0	
SWANLEY CRIMSON	2	6	

My Primula-house can now be seen. The finest collection ever brought together.

The Editor of the *Gardeners' Magazine* says the crowning glory of the group is the great Single Red, the colour deep and rich, with a fine fiery glow.

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THE HOME FOR FLOWERS.
SWANLEY, KENT.

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IMPERIAL FERTILISER
FOR
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40 YEARS of INCREASING SUCCESS.

Perfection in Artificial Manures for all Plants on British Soil and Conservatories.

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Is a highly-concentrated Manure, and is admitted by all practical Men who have tried it to be the very best ever offered to the public. Some Manures give beauty of bloom at the expense of the plant's vitality, causing a consumption of the plant's stamina and roots, in order to produce, as it were, a hectic flush of short duration; whereas in every case the bloom on a plant nourished on our Imperial Fertiliser is a proof of sound health.

It also gives abundant growth to Vegetables, and fertility to all.

RESPONSIBLE AGENTS WANTED.

1 cwt., **16s.**; ½ cwt., **9s. 6d.**; ¼ cwt., **7s.**; 14 lb., **5s.**; Tin, **1s.**

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GYDE'S AMAZONAS SANA COPIA POTATO MANURE
(REGISTERED)

Is a high-class Fertiliser. It is also a great Preventive of Disease, and by using a fair quantity will increase the size and yield twofold.

We wish to call attention to the extract below, from *Farm Journal*, Jan. 17, 1880:—

EXTRACT.

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Supplied in 1 cwt. Bags.
Price, £12 per ton; 12s. 6d. per cwt.

Carriage paid on orders of 5 cwt. and upwards within 100 miles of the Works.

Post-office Orders to W. TRINDER,
STROUD CHEMICAL MANURE WORKS,
STROUD, GLOUCESTERSHIRE.
Cheques crossed County of Gloucester Bank.
SPECIAL QUOTATIONS TO LARGE CONSUMERS.

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THE FOLLOWING IS REGISTERED AS
CARTERS' TRADE MARK.
(See "Trade Mark Journal")
Infringements will be proceeded against.

CARTERS' PARIS GOLD MEDAL LAWN GRASS.
1s. 3d. per lb.; 25s. per bushel.

Ordinary Lawn Grass ..	.. 1s. per lb.,	20s. per bush.
Grass Seeds for Park Lands	.. 1s. ,,	; 20s. ,,
,, ,, Tennis, Croquet, and Cricket Grounds		20s. ,,
,, ,, Renovating Old Lawns ..	.. ..	25s. ,,

"HOW TO MAKE A LAWN."
Write for CARTERS' PAMPHLET on this subject, sent gratis and post-free.

CARTERS' 12s. 6d. BOX is suitable for
A COTTAGE GARDEN.
Sent on receipt of Post-office Order for 12s. 6d.

CARTERS' 21s. BOX is suitable for
A VILLA GARDEN.
Sent on receipt of Post-office Order for 20s.

CARTERS' 31s. 6d. BOX is suitable for
A MEDIUM-SIZED GARDEN.
Sent on receipt of Post-office Order for 30s.

CARTERS' 42s. BOX is suitable for
LARGE GARDENS.
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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 *to the end of* 1878," *to secure them at once.*

The following is a List of those already published:—

1879.—Oct. 11.	1879.—Dec. 13.
,, 25.	1880.—Jan. 10.
Nov. 8.	,, 24.
,, 15.	Feb. 7.
,, 29.	,, 21.

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS at Post-offices, as all Letters so addressed are opened by the authorities and returned to the sender.

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THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL BOTANICAL and HOTICULTURAL SOCIETY of MANCHESTER.
The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1880 will open on MAY 14. ONE THOUSAND POUNDS in PRIZES. Spring Exhibitions at the Town Hall on March 16 and 17, and April 27 and 28. For Schedules, &c., apply to the undersigned,
BRUCE FINDLAY, Curator and Secretary.
Royal Botanic Gardens, Manchester.

INTERNATIONAL POTATO EXHIBITION.
President, The Right Hon. the Lord Mayor of London.
The SIXTH ANNUAL EXHIBITION will take place at the Crystal Palace, on September 22 and 23. Schedules of Prizes and all particulars may be obtained on application to
J. A. McKENZIE, Secretary.
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CAN SUPPLY GOOD PLANTS, full of flower, at the very cheapest rate, either by the dozen or 1000. For the most correct and complete descriptions respecting them see H. CANNELL'S FLORAL GUIDE, post-free for twelve stamps.
The Home for Flowers, Swanley, Kent.

NEW CATALOGUE for 1880.—All intending purchasers of Greenhouse and Stove Plants, Herbaceous Plants, Florists' Flowers, Indoor and Outdoor Plants generally, should look through our CATALOGUE and compare our Prices before purchasing elsewhere. See also last week's large Advertisement.
WM. CLIBRAN and SON, Oldfield Nursery, Altrincham.

Orchids, Bulbs, &c.
THE NEW PLANT and BULB CO. beg to announce the arrival of their first Consignment of ORCHIDS from New Granada. Special LIST (No. 46) containing full particulars of the above, with LIST of New and Rare Bulbous and other Plants, is now ready. Post-free on application. Lion Walk, Colchester.

New Rare and Choice Hardy Perennials.
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FLOWER SEEDS (containing 100 separate packets) 2s., carriage paid; half 1s. 3d. If not worth six times the amount, or if unsatisfactory, money returned. Agents wanted everywhere immediately to fill up spare time.
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CHAMPIONS, 11s. per cwt., £10 per ton.
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H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.
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Important.
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SALES BY AUCTION.

Lilies and Orchids.—Monday next.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, a consignment from Japan of some thousands of fine BULBS of Lilium auratum, a case of Lilium auratum rubro vittatum, Lilium Krameri, and a quantity of Japanese Iris (the native drawings of which will be shown at the sale), including several new beautiful varieties; a splendid assortment of English-grown and Californian Lilies, amongst them L. neilgherrense, Brownii, giganteum, and pyrenaicum; 200 double Tiger Lilies, AMARYLLIS, CARNATIONS, PICOTEES, HARDY PLANTS and BULBS; 3000 large roots AMERICAN TUBEROSES; 300 dried bulbs CYCLAMEN PERSICUM; 300 SPIRÆA PALMATA, DAHLIAS, CHRISTMAS ROSES, &c.; together with 150 lots of choice established ORCHIDS, from private collections, for unreserved Sale.

Catalogues at the Mart, and 98, Gracechurch, E.C.

Teddington.

Expiration of Tenancy at Lady Day next.

CLEARANCE SALE of the remainder of the well-grown NURSERY STOCK, including a variety of Coniferæ and Evergreen Shrubs, 2000 fine Limes, 1000 Horse Chestnuts, and other Ornamental trees; 600 Fruit trees, and other Stock.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, on the Premises, the Teddington Park Nursery, Waldegrave Road, five minutes' walk from the Strawberry Hill Station, on TUESDAY, March 2, at 12 o'Clock, by order of Mr. R. Laing.

May be viewed. Catalogues had at Mr. Laing's Nursery, Twickenham; and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Horsell, near Woking Station, Surrey.

WITHOUT RESERVE.—IMPORTANT SALE.

MESSRS. PROTHEROE AND MORRIS are instructed by Messrs. H. & C. Cobbett, to SELL by AUCTION, at their several Nurseries at Horsell, near Woking Station, on TUESDAY, March 2, and following days, at 12 o'Clock precisely each day, several Acres of first-class NURSERY STOCK, in excellent condition for removal, consisting of a large quantity of Border Shrubs, 2000 Limes, 8 to 12 feet; 1000 fine straight Planes, 8 to 10 feet; 4000 worked Thorns, 8000 Chestnuts, and thousands of other Ornamental and Forest Trees; 40,000 Seedling Green Hollies, 2000 Golden and Silver Variegated Hollies, 3000 Cupressus Lawsoniana, 2000 English Yews, 4000 American Arbor-vitæ, 1000 bushy Portugal Laurels, and large quantities of other small Coniferæ, 6000 Rhododendrons, including the best named varieties; 3000 Green Box, 28,000 Manetti Stocks, 1000 Standard and Half-standard Roses, and many thousands of Ornamental and Flowering Shrubs too numerous to mention.

May be viewed. Catalogues obtained on the Premises, or of the Auctioneers and Valuers, 98, Gracechurch Street, London, E.C., and Leytonstone, E

Brentwood, close to the Station.

CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, by order of Mr. Mann, on the Premises, The Nurseries, Brentwood, on FRIDAY, March 5, at 12 o'Clock, the remaining well-grown NURSERY STOCK, comprising Cedrus Deodara, 3 to 10 feet; Cupressus, 3 to 5 feet; Green Hollies, from 3 feet; Piceas, Laurels, Aucubus, and other Evergreens, choice Rhododendrons, an assortment of Standard and Dwarf Roses, 1600 Manetti Stocks in dormant bud, &c.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

N.B. Messrs. P. & M. are instructed to offer the whole of the FREEHOLD BUILDING ESTATE EARLY in MAY, in convenient plots. Plans and Particulars may be had when ready at the Auctioneers' offices.

Special Unreserved Sale of Orchids in the City.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, March 15, at half-past 11 o'Clock precisely, between 400 and 500 lots of ESTABLISHED ORCHIDS, from various private Collections.

Catalogues may be obtained on the Thursday prior to the Sale.

Cheltenham.

HIGHLY IMPORTANT SALE of probably the grandest collection of STOVE and GREENHOUSE SPECIMEN EXHIBITION PLANTS ever submitted to public competition.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without the slightest reserve, in the large Pittville Pump Room, Cheltenham, Gloucestershire, on WEDNESDAY, March 31, and THURSDAY, April 1, at 11 for 12 o'Clock precisely each day, by order of Ed. Pilgrim, Esq., who is giving up exhibiting, the whole of the unrivalled collection of SPECIMEN EXHIBITION PLANTS, which have ben exhibited with unprecedented success at the leading shows throughout the country. Amongst the Stove and Greenhouse specimens may be mentioned twelve remarkably fine Anthurium Scherzerianum, large-spathed varieties, a matchless plant of Cordyline indivisa with sixty-six leaves, several magnificent Crotons, unsurpassed for rich colouring and perfect training; fifteen grand Ixoras, including a noble plant of Pilgrimii, and nine smaller plants (being the entire stock of this splendid novelty). Also an extensive assortment of Specimen Cape Heaths and Indian Azaleas, containing a great number of matchless plants, and consisting of the choicest Exhibition varieties; also fine examples of Lapageria alba and rosea, Allamandas, Dipladenias, Bougainvilleas, &c.; also a large assemblage of remarkably handsome Palms and Cycads, many of which are the grandest examples in Europe; several large Exotic Ferns, embracing twenty unapproachable Specimen Gleichenias, also several fine Todeas, Cyatheas, Alsophilas, together with a few established Orchids; likewise Two newly built GREENHOUSES, HOT-WATER PIPING, STOCK BRICKWORK, and two well-made Exhibition VANS, with all modern improvements, made to travel by road or rail.

The stock may be viewed any day prior to the Sale. Catalogues may be had (price 6d. each, returnable to purchasers) of Mr. HAMLET, Head Gardener, Fern Lawn, Pittville, Cheltenham; and of the Auctioneers, Estate Agents, and Valuers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

Choice Lilies and Other Roots.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 1, at half-past 12 o'Clock precisely, a large Importation of the rare and beautiful LILIUM POMPONIUM, many varieties of the beautiful IRIS KÆMPFERI, from New Jersey; a quantity of CAPE BULBS, consisting of Amaryllis, Hæmanthus, Brunsvigia, Phædrassia, Pancratium, Aponogeton, and many others; a few plants of a new RHEXIA, from Florida; also CALADIUM ERYTHRINA HERBACEA, and others; a Collection of ENGLISH-GROWN LILIES, consisting of giganteum, Browni, Humboldti, Washingtonianum, eximeum, Wilsoni, pardalinum, Krætzeri, and many other first-class varieties; a quantity of PLANTS from California, consisting of Lilium Washingtonianum, Humboldti, Calochortus, Cyclobothra, Triteleias, Brodiæas, Erythroniums, &c; 6 oz. of SEED of EUCALYPTUS AMYGDALINA, a quantity of BULBS of Lilium Melpomene and Lilium album Krætzeri, 1000 Lilium Medeoloides, 4000 Bulbs of Lilium Krameri, 1000 Bulbs of Lilium auratum, from Japan; Gloxinias and Begonias, a Consignment of AMERICAN TUBEROSES.

On view the morning of Sale, and Catalogues had.

Hardy Plants, Roses, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 3, at half-past 12 o'Clock precisely, 3000 first-class named Standard, Half-Standard, Dwarf, and Climbing ROSES; a Consignment of CONIFERS, RHODODENDRONS, and other HARDY TREES and SHRUBS, from Surrey; HERBACEOUS PLANTS, FRUIT TREES, VINES, GLADIOLI, LILIUMS, SPIRÆAS, LILY of the VALLEY, &c.

May be viewed the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 4, at half-past 12 o'Clock precisely, a collection of good established ORCHIDS, in the most perfect health and condition. In it will be found many very rare species and several fine specimens suitable for exhibition, among them Lælia purpurata, 3 feet through, with eighty pseudobulbs and leads and five flower-sheaths; Cypripedium villosum, 2½ feet through, with forty growths; Odontoglossum Alexandræ, twelve bulbs and four leads; Dendrobium thyrsiflorum, upwards of thirty pseudobulbs and showing flower-spikes; Cypripedium Harrisianum, 1½ foot through, with eleven growths; Cattleya Mossiæ, 2 feet through, with forty pseudobulbs and leads and four flower-sheaths; Arundina bambusæfolia, the best specimen in Europe of this rare and pretty Orchid; Cypripedium pardinum, with twenty-five growths; Cattleya Warneri, with upwards of thirty pseudobulbs and growths and two flower-sheaths; Cattleya citrina, masses with from sixty to 120 bulbs; Odontoglossum vexillarium, very fine and strong; and among the rare kinds will be found Odontoglossum baphicanthum, Epidendrum antenniferum, Calanthe pleiochroma, Oncidium globuliferum, Sarcanthes Hartmanni, Cœlogyne Parishii, showing five flower-spikes; Dendrobium Schrœderi, Trichosma suavis, Masdevallia tovarensis, Pescatorea Dayana, Bulbophyllum Beccari, Oncidium superbiens, Chysis aurea, Epidendrum Parkinsonianum, Luisia platyglossa, Sophronites violacea, Dendrobium Linawianum, Masdevallia bella, Odontoglossum Chestertoni, Oncidium Gardneri, Dendrobium Boxalli.

On view the morning of Sale, and Catalogues had.

Valuable East Indian Orchids.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 8, at half-past 12 o'Clock precisely, a very extensive importation of EAST INDIAN ORCHIDS, consisting of the finest lot of Vanda cœrulea ever brought to Europe, and collected by Mr. W. B. Freeman in a new locality: the plants are full of growths, one mass having not less than twenty-four, and in most perfect health, with sound green leaves. The sale also contains a grand lot of the rare and beautiful DENDROBIUM FREEMANI, Rchb. f., many of them in bud and flower and mostly with flowering growths all in perfect health. Also an importation of AERIDES FIELDINGI (Foxbrush), in splendid masses; ODONTOGLOSSUM VEXILLARIUM, VANDA TERES, MORMODES PARDINUM, various CŒLOGYNES, and other ORCHIDS.

May be viewed the morning of Sale, and Catalogues had.

Important Collection of Orchids.

MR. J. C. STEVENS has received instructions from Captain Edwards to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY, and FRIDAY, March 17, 18, and 19, at half-past 12 o'Clock precisely each day, the entire COLLECTION of ESTABLISHED ORCHIDS formed by the late Mr. Serjeant Cox, at Moat Mount, Mill Hill, near Hendon, and comprising good plants of nearly all the known varieties.

On view the mornings of Sale, and Catalogues had.

WANTED, a Small FLORIST BUSINESS, or COTTAGE and LAND suitable for such. Z. M. COX, Caterham Valley, Surrey.

FOR DISPOSAL, a high-class NURSERY and SEED BUSINESS, good Dwelling House, Shop, and 32 acres of Land. Market Town in Yorkshire. Established eighty years. The whole or part may be taken, or the Seed Business alone would be disposed of. Details of PROTHEROE AND MORRIS, 98, Gracechurch Street London, E.C. (4832).

To Nurserymen, Gardeners, and Others.

TO LET, NURSERY PREMISES, at Edmonton.—About Two Acres of Ground, with Glasshouses, Pits, and convenient Dwelling-house. For particulars apply to Mr. MAPLE, 335, Essex Road, N.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

The Best Frame Cucumber.

SUTTON'S DUKE OF CONNAUGHT. Remarkably handsome, and the finest white-spined variety known. Perfectly level, from 22 to 26 inches in length, very uniform, with a bright green skin, well covered with bloom, spine scarcely discernible, and the fruit very little ribbed, wonderfully small handle, and decidedly superior for exhibition.

1s. 6d. and 2s. 6d per packet, post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

Special Offer to Farmers, Gardeners, and Others.

GEE'S SUPERIOR BEDFORDSHIRE GROWN SEED POTATOS, CABBAGE, and SAVOY PLANTS, &c.

F. GEE has fine stocks of the above, which have been grown carefully on new land, fine samples, free from disease, and such that he can highly recommend to all who require a change of seed. They can be supplied in almost any quantities (if unsold) as follows (put on G.N. rails.) for cash with orders:—

	Per Peck of 14 lb.	Per Bush. of 56 lb.	Per Cwt. of 112 lb.	Per Ton.
	s. d.	s. d.	s. d.	£ s.
EARLY ASHLEAF KIDNEY, true dwarf top, improved stock	..	..	15 0	14 0
MYATT'S PROLIFIC ASHLEAF, fine sample	2 0	7 0	12 0	11 0
EARLY ROSE and CLIMAX.—Fine quality and productive sorts / LATE ROSE and PEERLESS	2 0	7 0	12 0	12 0
NEW BEAUTY of HEBRON.—Splendid quality, very handsome, wonderfully productive, and one of the finest disease-resisting varieties. Very promising	2 6	9 0	16 0	15 0
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RHUBARB, spendid for Planting, large Victoria, Early Scarlet, and Prince Albert, 2s. to 4s. per dozen; 10s. to 20s. per 1000. Price varying according to size.

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SUTTON'S EARL OF BEACONSFIELD Oval shape, flesh pale in colour, singularly sweet and juicy, and possesses a delicate aroma; rind thin, but beautifully netted.

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ABIES DOUGLASII, post-free, 2s. 6d. per ounce.
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The above are all of crop 1879, and collected from Trees rown in Scotland, and may be fully relied on for purity and ardiness.
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Snowflake	Paterson's Victoria
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OUR ONE GUINEA COLLECTION of the above, consisting of ten pairs Show Carnations, r pairs Picotees, six pairs Pinks, and twelve old Crimson ove Carnations, strong well-rooted plants, to name, for- rded, Package and Carriage free, on receipt of Cheque or ost-office Order.
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TREES for AVENUE, PARK, or STREET PLANTING.
CER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
HESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
" Horse, 14 to 16 feet, girting 8 to 10 inches.
" Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
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LANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
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A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
OPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
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They have straight stout clean stems, and handsomely rnished well balanced heads, and from frequently transplanting e splendidly rooted. They are without doubt the finest stock Avenue Trees to be met with in any Nursery in Europe.
The girt of the stems is taken at 4 feet from the ground, and t at the base, which is often deceptive.
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PRIMROSE, double: crimson-purple, 6s. per dozen, 45s. per 100; yellow, 3s. per dozen, 20s. per 100; lilac, 2s. 6d. per dozen, 16s. per 100; white, 3s. per dozen, 20s. per 100
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Grand exhibition plants, the delight and admiration of all who saw them, and the most beautiful greenhouse plants grown.
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LIMES, 10 to 12 feet, 15s. per dozen, £5 per 100; 12 to 15 feet, 18s. per dozen.
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The whole of the above have strong straight stems and good bushy heads, and cannot be surpassed.
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SPANISH CHESTNUT, 3 to 4, 4 to 5, 5 to 6 feet.

ALDER, 4 to 5, 5 to 6, 6 to 7 feet.	HAZEL, 2 to 3 feet.
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The five for 21s.

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Phœbe	Miriam	Brookwood
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The twelve for 42s., or 5s. each.
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ALDER, 3 to 4, 4 to 5, and 5 to 6 feet.
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OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
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FOREST TREE NURSERIES, ABERDEEN,
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DISEASE-RESISTING
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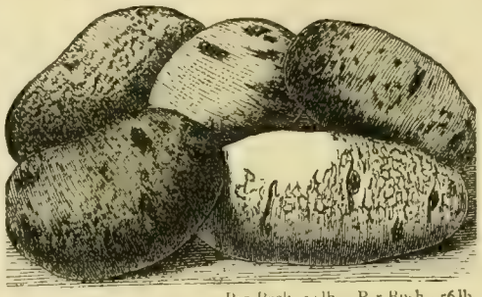

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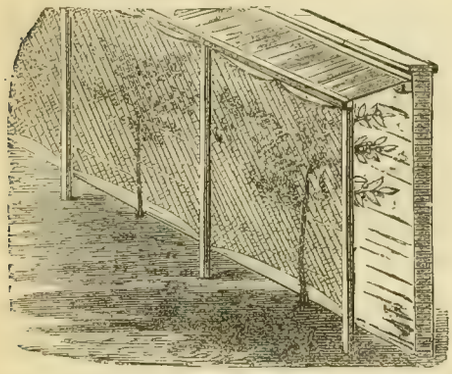

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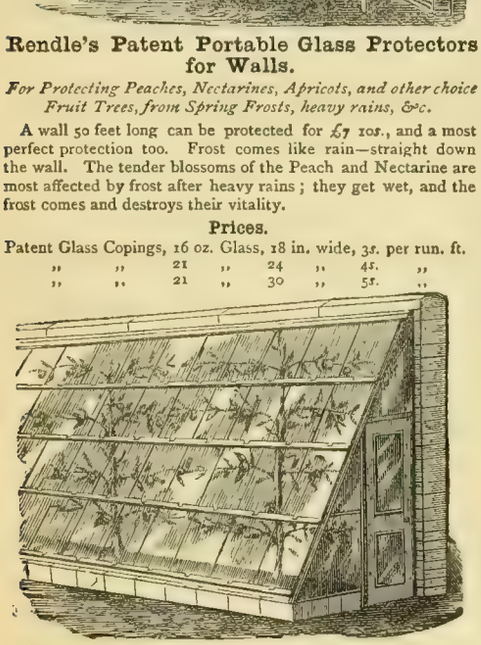

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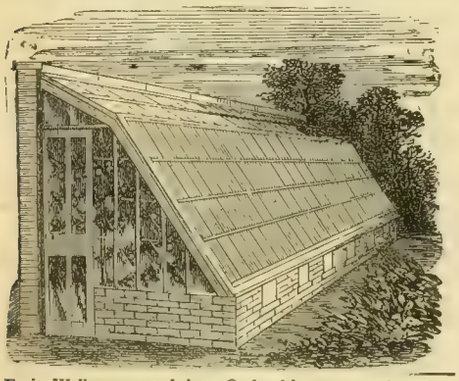

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THE
Gardeners' Chronicle.

SATURDAY, FEBRUARY 28, 1880.

VEGETATION OF THE KURAM VALLEY, AFGHANISTAN.

WE have more than once alluded to the collection of dried plants brought home, towards the end of last year, from Afghanistan, by Dr. J. E. T. Aitchison. At the meeting of the Linnean Society on Thursday, the 19th inst., that gentleman read a paper on the vegetation of the Kuram Valley, a district which he traversed and botanised by different routes on the outward and homeward journeys of the expedition to which he was attached. The Kuram River, if we may so term it, for it consists in the upper and middle parts of its course of three or four parallel streams, besides their numerous lateral affluents, is a tributary of the Indus, rising near Shutargardan to the south, and a little eastward of Cabul. It is separated from the valley of the Cabul River by the principal ridge of the Sufaid Koh Mountains, which is in about 34° N. latitude.

The part of the country explored by Dr. Aitchison covers about a degree of longitude, lying, roughly speaking, between 69° 30′ and 70° 30′; and it is an elevated, mountainous generally well-watered region, possessing a rich and varied vegetation. This, however, is only a general statement, for in some parts of his journey he came upon arid tracts, where the flora consisted mainly of prickly undershrubs and herbs, such as species of Astragalus, Acantholimon, Cousinia, &c.; and the range of altitude was from about 2250 feet to upwards of 15,000 feet. The climate, as may be inferred from the geographical position, is temperate and continental—that is, characterised by a wide difference in the summer and winter mean temperatures. A hot dry summer favours the development of many plants that would not flourish in our moister, cooler climate, although they all belong to essentially temperate types that could withstand the cold of our winters.

Dr. Aitchison commenced collecting in April and continued until the middle of the autumn, and in an area of something like 50 or 60 miles long by, say, 10 miles in its greatest width, he collected nearly a thousand species of flowering plants and Ferns. Considering the circumstances under which the work was done, we may perhaps assume that he did not collect more than two-thirds of the species that actually exist within the area indicated. On the other hand, the majority of the species overlooked would be either rare or of small dimensions, so that the collection he has made doubtless well represents the flora of the region, and includes all the characteristic plants. In consequence of having to start for Afghanistan again early next month, Dr. Aitchison has been unable to work up his collection critically; but with the assistance of Mr. Baker, Mr. Hemsley, and others, he has determined the genera and the species of a very large percentage of his plants, and descriptions have been drawn up of the most interesting novelties. We

can only find space for some of the more interesting features of Dr. Aitchison's paper. It may be mentioned, by way of explanation, that the region explored by Dr. Aitchison had not been previously botanised, though Griffith, who accompanied the expedition of 1839-40, made a complete circuit of it, having travelled from the Punjab, by way of Shirkapur, Quettah, and Candahar, to Cabul, and thence down the valley of the Cabul River by way of Jellalabad and Peshawur back to the Punjab.

Griffith estimated the number of species collected by himself at about 1500, and this collection represented nearly all our previous knowledge of the flora of Afghanistan. The numerous difficulties and disasters attending the expedition reduced Griffith's collection to so broken and fragmentary a condition that many of the specimens of undoubtedly undescribed species were insufficient for description. Dr. Aitchison's ollection, numbering many thousand specimens, arrived at Kew in a perfect state of preservation, and besides the new species it contains, it largely supplements the imperfect material of many species represented in Griffith's collection. It is noteworthy that although a large number of the same species occur in both collections, it is just the characteristic genera of the Western Asiatic flora that are represented by different, often undescribed species. Thus all the species of Acantholimon collected by Dr. Aitchison are new, and different from those collected by Griffith; and the majority of the most striking at least of Dr. Aitchison's novelties belong to such genera as Astragalus, Oxytropis, Cousinia, Nepeta, Sedum, Saxifraga, Pleurospermum, Cotyledon, Eremurus, &c.

The time being so short, Dr. Aitchison could not extract nearly all the interesting facts his collection supplies, but he hopes to return with more material, and then work it all up together in a thorough manner. Broadly, the flora of the region he explored may be said to consist of three principal elements, namely, the Himalayo-Chinese, the Levantine (including Persian), and the endemic. What proportions these elements bear to each other has yet to be worked out. With the exception of a Poplar, which may be a new species, or only a small-leaved variety of Populus nigra, no new species of tree was discovered. Among new shrubs, two Rhododendrons, a yellow Rose, a Clematis, and a Polygonum, are noteworthy. The Rose is, in many respects, not unlike R. pimpinellifolia, but the prickles are all of one kind, instead of large ones interspersed with smaller bristly ones, and the flowers are yellow. This Rose, Dr. Aitchison says, is one of the commonest shrubs in some parts of the country. The flowers are only about an inch in diameter, but they are exceedingly numerous, and are borne on short lateral shoots all along the branches. In foliage the two Rhododendrons are so much alike that it is difficult to distinguish them without close examination, yet one is poisonous to cattle, whilst the other is harmless. Both of them have small flowers, and will not be sought after on account of their ornamental character. Not so with the Clematis, a specimen of which, as well as of several other novelties, was exhibited at the Linnean Society's rooms. Associated with foliage very like the Central Asian variety of Clematis alpina, it has large lemon-coloured flowers 5 inches in diameter when fully expanded. Unfortunately no ripe seed of this plant was collected.

Among bulbous or rather tuberous-rooted plants is a fine new yellow-flowered Eremurus, nearly twice as large as E. aurantiacus. The leaves of the latter Dr. Aitchison mentioned form an excellent vegetable, equal, if not superior in flavour to Asparagus. Many of Dr. Aitchison's notes on the uses of plants are teresting, none more so than that the tuberous root of a Nepeta, N. raphanorrhiza, which is a delicious vegetable. Another interesting object exhibited was a specimen of the bark of Pinus Gerardiana (Wallich), the outer layers of which are deciduous, falling away in plates, leaving a beautifully variegated and figured surface. In conclusion, we wish Dr. Aitchison a safe return, laden with botanical specimens. He expects to be in Cabul by the middle of May, so he may be early enough to collect spring-flowering bulbous plants on the route, should collecting be practicable.

New Garden Plants.

OCTOMERIA SAUNDERSIANA, *n. sp.* *

A curious little gem, with a very thick terete subulate leaf, exceeding 2 inches in length, standing on a much shorter stem. Flowers ochre-coloured, with three longitudinal purple stripes on the sepals and petals. Lip ochre-coloured, with a disk and calli mauve, and a mauve streak in front, and numerous similarly coloured dots around. Column white on the back, with three mauve stripes, and the anterior surface also mauve. It is of Brazilian origin, and flowers now (January, 1880) for the first time in the Hamburgh Botanic Garden. I had it from the late Mr. Wilson Saunders, and I am pleased to name it in memory of our lost friend, who had the warmest heart for horticulture and systematic botany. *H. G. Rchb. f.*

ANGRÆCUM HYALOIDES, *n. sp.* †

This plant is in growth a miniature of Angræcum citratum according to the remark of Mr. Harry Veitch—the leaf sent by him—very thick, cuneate oblong with an oblique acute point giving evidence of this. It has a very short and small peduncle, with a single small hyaline flower having ligulate sepals and tepals, an oblong lip and a filiform, rather clavate spur surpassing in length both the sepals and ovary. There are a few more bracts, which are triangular and very short. Whether it will finally bear a few flowers at once or at distant periods cannot be said, though the latter seems the more probable. The pedicel is green at its base. Anther and pollinia ochre-coloured. The whole pollen apparatus is decidedly what I should expect in a "tip-top" Angræcum. It was imported from Madagascar by Messrs. Veitch, and claims a place amidst the "gems." *H. G. Rchb. f.*

LÆLIA PERRINII (*Lindl.*) NIVEA.

I have seen this but once previously, in Herr Consul Schiller's collection near Hamburgh. It has pure white flowers, with a purple end to the lip, and thus looks very pretty. When decaying it takes a very light rosy hue. The same variety has appeared after a very long interval in the collection of M. Massange, Baillonville, near Marche, grown by the skilful and enthusiastic cultivator, Mr. Wilcke. *H. G. Rchb. f.*

PELARGONIUM MRS. CANNELL.

THIS, as described in the last number of the *Florist and Pomologist*, is a striking advance in the true Ivy-leaved section, being "the largest and by far the best shaped flower yet obtained. It is a plant of vigorous growth, and therefore well adapted for growing on into a specimen. The flowers are large in size, perfect in form, stout and durable in substance, and produced in bold, well-filled trusses, while the colour is a deep mauve-like lilac or purple, beside which all the other similarly coloured sorts look pale and ineffective." To Mr. Church, a hybridist of some years' standing, is the credit due for raising the variety, which Mr. Cannell will in due time send out.

* *Octomeria Saundersiana.* n. sp.—Caule secundario vix pollicari; folio tereti apice subulato, antice canaliculato, ultra duos pollices longo; floribus geminatis (nunc fasciculatis?); sepalis triangulis tepalis subæqualibus; labello trifido, laciniis lateralibus triangulis dorso obtusis, lacinia media oblonga acuta, parce undulata, carinis geminis inter lacinias laterales; columna clavata, incurva.—Sepala ochracea, striis purpureis ternis. Tepala æqualia. Labellum disco postice violaceo-purpureum, antice stria mediana violaceo-purpurea, guttulis violaceo-purpureis circumjectis, ceterum ochraceum. *H. G. Rchb. f.*

† *Angræcum hyaloides*, n. sp.—Pusillum, habitu Angræci citrati; foliis cuneato-oblongis oblique acutis; racemis brevissimis; flore uno evoluto, bracteis 2—3 superioribus omnibus triangulis brevissimis; sepalis tepalisque oblongo ligulatis obtuse acutis; labello oblongo, calcari filiformi apice clavato ovarium pedicellatum excedente; pollinarii caudicula simplici.—Ex Madagascar, importatum a cel. Veitch. *H. G. Rchb. f.*

NEPENTHES BICALCARATA.

WITH reference to the remarkable Pitcher-plant introduced to Messrs. Veitch's nursery by Mr. Burbidge, and of which we gave an illustration at p. 201, we are now in a position to publish additional information, received by us from Mr. Burbidge. The details given by that observant naturalist are of very great interest as throwing light on the possible causes of the singular organisation in question, or, at any rate, as illustrating the interdependence of insects, plants, and animals. The substance of Mr. Burbidge's note, together with an illustrative specimen, was read before the Linnean Society at its last meeting.

"The stalk of the lower bag or ampulla-shaped pitcher is swollen and hollow, and in their native country, most of them are perforated by a species of black ant, which forms its colonies in the old and dry pitchers, and continually visits the fresh ones, so far as I could determine, for the purpose of obtaining food and water, since these fresh pitchers contain a miscellaneous collection of dead and decaying insects of many kinds. I noted that they also visited the uppermost pitchers which are frequently extended at a distance of 20 to 50 feet overhead in the trees up which this species climbs, its stout stem being like that of a Grape Vine. As the point grows up through the branches the prolonged mid-rib 'takes a turn' around the nearest branch, and so the weight of the stem, leaves, and ewers of water is supported in mid-air, and a perfect shower bath of water and a torrent of ants is the result of tearing them down. The ants cut the little round hole, and I believe that the swelling of the pitcher-stalk is consequent on this operation on their parts, of which there are many other instances in the vegetable kingdom. As these pitchers are perfect traps to creeping insects of ant-like character by reason of the incurved ridges round the throat of the pitcher, these black ants ingeniously perforate the stalk, and so obtain their supplies, and provide a means of exit in case of need. We have something analogous to this in the bees, which bite a hole at the base of the flowers of the Broad Bean, the Kidney Bean, and those of the narrow-tubed Achimenes. If you will look over the series of pitchers in Messrs. Veitch's museum at Chelsea, you will find many of the pitchers with their stalks thus perforated and swollen. The finest pitchers are those borne on offshoots or side breaks from the portion of the main stem which lies along the ground, where it becomes covered with moss and fallen leaves. These breaks grow up to a height of 2 or 3 feet, bear splendid leaves 2—3 feet long and 4—6 inches broad, of a fresh green colour, and every one is terminated by a splendid pitcher, which being partly full of water (derived from the leafy watersheds above) is borne down to the ground and rests partly, sometimes wholly, buried in the moss and leaves which cover the earth like a carpet, and form with the tropical heat a fine propagating bed for seeds, and for the growth of Ferns and lowly forest herbs and fine-foliaged plants. The top pitchers, like those of N. Rafflesiana, and other species of Nepenthes, are different in shape and position on their stalks to the lower ones. In this case they are cylindrical.

"Now a word as to the walrus-tooth-like prickles or spurs which lie concealed under the heart, or rather kidney-shaped lid of the urns. There is found in the Bornean forests, in the locality where this fine Pitcher-plant grows, a little animal called by the natives 'Tamperlilie,' and by the few Europeans who have ever seen it alive the Spectre Tarsier (Tarsier spectrum). It is a most singular and interesting creature, about the size of a large rat. Its head is singularly like that of a small kitten, the eyes being very large and full; the body is monkey-like, the tail slender and as long as the body, but bushy at the tip like that of the lion. Its feet are monkey-like, the second and third fingers shorter than the others, all are thin and bony, and have curiously enlarged disc-like tips, reminding one of the enlarged ends of the climbing tendrils of the Virginian Creeper. This little creature is an insect eater, and knowing that the pitchers of Nepenthes so very frequently contain entrapped insects, visits them pretty regularly. In the case of N. Rafflesiana the insects imprisoned in their unarmed urns are readily removed, but not so in the case of N. bicalcarata, as the sharp spurs are so placed that the Tarsier is sure to be pricked by them and pretty sharply too, if its head is placed under the lid for the purpose of inspecting the interior.

"The main question is of what use are the living ants, and the entrapped insects so universally found in all Pitcher-plants as they exist in their native habitats, and what end is this one species of Nepenthes made to serve as the nest of a peculiar species of ant. To suit its requirements not only is its very structure modified but especial precautions are taken to ward off the insect-eating 'Tamperlilie.' I repeatedly saw this animal amongst plants of Nepenches bicalcarata, and shot one or two specimens, and

the fact of its frequenting Nepenthes in quest of insects is well known to the more intelligent of native forest hunters.

"Borneo is indeed a country of many wonders. Beccari found there a parasitic plant which never fully developes itself until bitten by a large red ant. They make their nest in the swollen stem, and thence rush out to repel all intruders. A compromise is made for mutual benefit. I met with the same plant in the Labuan jungles, and often amused myself by hitting the swollen stems in which the ants hive themselves, in order to see them rush forth in great anger, searching hither and thither in quest of the foe.

"In the same island of Labuan is a bird called by the natives 'Burong Bukaka,' the Halcyon Caromanda, or great red kingfisher. Mr. Low sent eggs of this bird to the British Museum, and it is thus alluded to in the *Proc. Zool. Soc.* 1879, part. ii., p. 331:—'Burong Sakak, the large red or crimson kingfisher. The nest is said to be pendulous, and invariably to be accompanied in the same mass by a bee which is peculiarly vicious, so that the nest can only be robbed after destroying the bees; in the case of these eggs they (the natives) set fire to the whole unluckily. The nesting of this kingfisher in a bee's nest seems to be a point of some interest.'

"In crossing the Tawarau River one eventful day, when bent on a long and tedious inland expedition, Mr. Peter Veitch and I found a Rubiaceous plant, the young growth of which was much swollen, hollow, and infested with ants. There are dried specimens of this plant now in the Royal Herbarium at Kew.

"The Schomburgkia tibicinis, or Cow's-horn Orchid of Honduras, is another case in which ants make to themselves living tabernacles."

With reference to the Myrmecodia, alluded to in Mr. Burbidge's letter, it is a plant inhabiting the Eastern Archipelago, and is known to afford a residence to colonies of ants. Some excellent examples of the swollen underground stems of M. armata and M. glabra, recently sent from Borneo to the British Museum by Mr. H. O. Forbes, were exhibited by Mr. J. Britten at the same meeting of the Linnean Society. These, a series of both young and old plants, all—even the seedlings—bore evidence in tunnelled galleries of the ants' (Pheidole javana, Mayr.) industry and habitation. M. Beccari, who has studied Myrmecodia in its native localities, asserts that the presence of the ants is an essential to the plants' existence, for unless the young plants are thus attacked by the ants they soon perish. Sir Joseph Hooker mentioned that they formerly had a growing specimen of Myrmecodia at Kew, which, however, did not live long, but he was not prepared to say that the absence of the above burrowing ant would account for the non-successful rearing of the Kew importation.

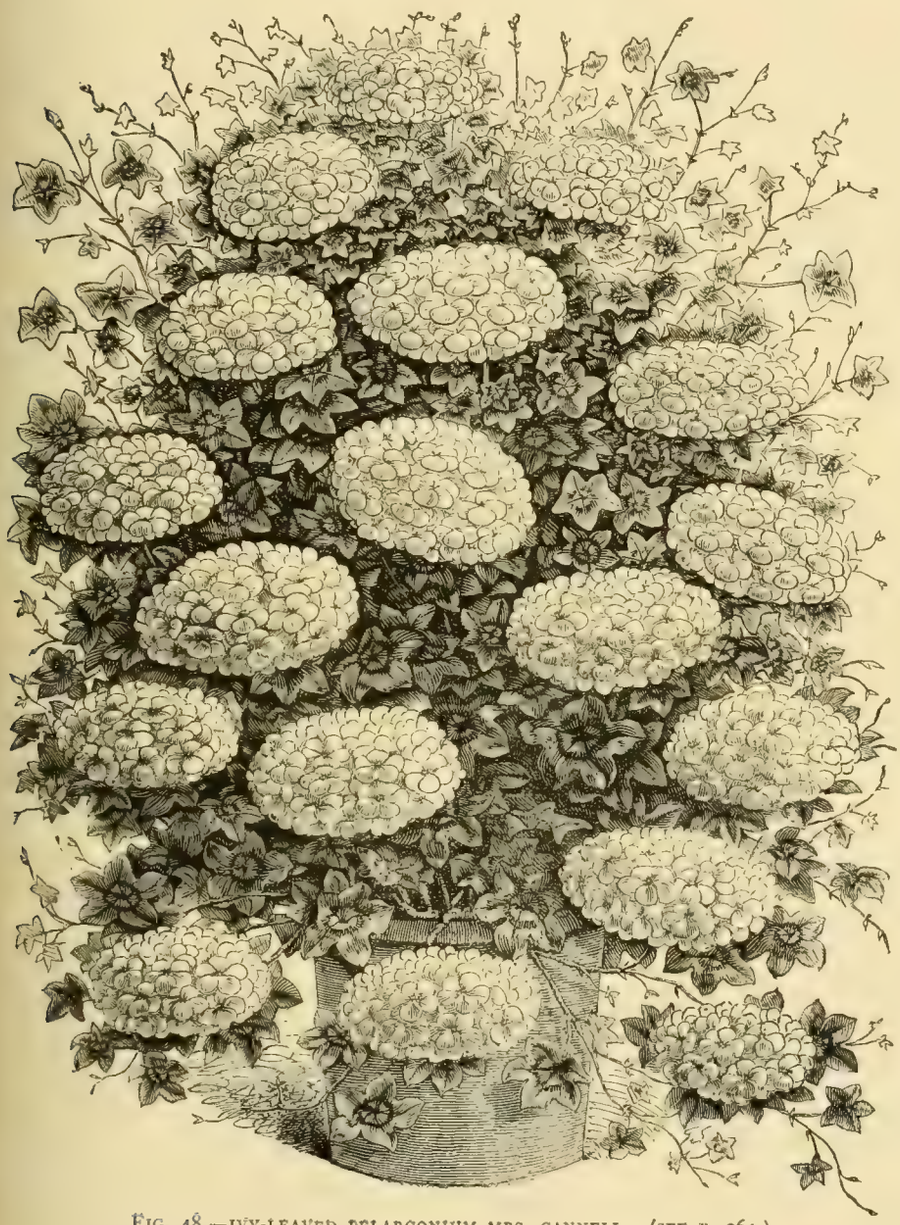


Fig. 48.—Ivy-leaved Pelargonium Mrs. Cannell. (see p. 264.)

A Large Order for Seed Potatos.—The Duchess of Marlborough's committee have instructed Messrs. T. McKenzie & Sons, 34, Dawson Street, Dublin, to supply 1200 tons of Scotch Champion Potatos, to be distributed amongst the distressed and suffering tenantry of the West of Ireland. *Gardeners' Record.*

AMERICAN ROSES.

A monograph of Roses which are of American origin has, I believe, never before been attempted; not, perhaps, because there has been a want of interest in the subject, but because of the inherent difficulty in procuring reliable data. To discover the parentage of the various varieties, and the names of the raisers, has been an arduous undertaking, and I regret not being able to present a complete record; this, however, was hardly to be expected. Two classes have had their origin in America, the Prairie and Noisette Roses. These two classes give the most valuable climbers which we have, though our Transatlantic brethren do not take very kindly to the former. Besides these two classes, many varieties in other groups have had their origin in this country, several of which are leading sorts in all Rose catalogues of prominence, but our chief contributions must be considered the Prairie and Noisette varieties, as introducing new and very important groups.

The Prairie Rose (Rosa rubifolia) is indigenous to this country. Seeds of this were sown about 1836 by Messrs. Samuel & John Feast, of Baltimore. The seedlings from this sowing were then fertilised by some of the best Roses grown at the time, and from this lot came Baltimore Belle and Queen of the Prairies. The Messrs. Feast, together with Joshua Pierce, of Washington, have raised nearly all the varieties of this class possessing any merit. Though inferior in quality to the Tea Noisettes, their hardiness and vigorous habit make them of great value when the more beautiful Noisettes are too tender to be made useful. As an indication of their popularity we may state that, next to the Remontant Roses, H.P., more plants are annually sold of the Prairie than of any other class. Baltimore Belle when in blossom gives a display of which any one may be proud, whether the flowers are viewed individually or in the mass. It is much to be regretted that no further development of this really valuable class has been made. There is no reason why we should not succeed in obtaining a new class of hardy climbers which shall, in a great measure, combine the good qualities of the Hybrid Perpetual, Noisette, and Prairie Roses. By patient study and care this may be done; who is there that will do it? To accomplish this desired result the Prairie varieties might be made the seed parents, and fertilised by different varieties of Remontant and Noisette Roses known to be good seed-bearers, and that are otherwise desirable sorts.

A few years ago Mr. Henry Bennett, of Salisbury, England, commenced a series of experiments in the production of new Roses by artificial fecundation; selecting a number of sorts among the Tea and Hybrid Perpetual groups, and seeking, so far as possible, to combine and blend the several good qualities possessed by each. He has in this way founded a new, and what will certainly prove to be a very valuable class of Roses—the Hybrid Teas. Indeed it is my opinion that this group of Hybrid Teas will, by the improvements which are certain to be made, soon constitute our most popular class of Roses. What has been accomplished by Mr. Bennett is very good evidence, to my mind, of what can be done by us, in producing a class of hardy H.P. Climbing Roses.

In the list of American Roses there are several varieties with which I am unacquainted, and the descriptions, therefore, are those of the raisers, or, where in a few instances it was not possible to obtain these, they are described by reliable parties acquainted with the varieties. Whenever possible, both the name of the raiser, and the year when the variety was first sent out, are given.

Prairie Roses (Rosa rubifolia.)

These possess great vigour of growth, bloom late in the season in large clusters, and though the individual flowers lack many of the desirable features found in other classes, none are more effective in the mass. Anna Maria (raised by Samuel Feast, of Baltimore, Md., 1843), colour blush or pale pink, full flowers; has very few thorns. Anna Eliza (Williams), dark purplish-red. Baltimore Belle (Samuel J. Feast, 1843), white, with blush centre, of good full form. This seems to have some Noisette blood, which makes it a little tender in very severe winters; it is, however, the most beautiful and sought-after of the class. Eva Corinne, pale blush. Gem of the Prairies (raised

* Extracts from a paper read before the West New York Horticultural Society, at Rochester, January 29, 1880, by Mr. H. B. Ellwanger.

by Adolphus Burgess, of East New York, 1865), a hybrid between Queen of the Prairies and Madame Laffay (Remontant); rosy-crimson, occasionally blotched with white. Jane, rosy-blush, double and finely shaped. King of the Prairies (Samuel Feast, 1843), pale rose. Gracilis (W. Prince, 1845), rose, varying in hue. Linnæan Hill Beauty, white or pale blush. Madame Caradori Allan (S. Feast, 1843), bright pink, semi-double. Milledgeville, pale blush, tinged with flesh. Miss Gunnell, pale pink. Mrs. Hovey (Joshua Pierce, of Washington), pale blush flowers, becoming almost white; resembles Baltimore Belle, but of rather hardier habit. Mrs. Pierce (J. Pierce, 1850), blush. Pallida (S. Feast, 1843), blush, much resembling Superba. Perpetual Pink (S. Feast, 1843), rosy-purple. Pride of Washington, deep rose; small flowers, but distinct and double. Queen of the Prairies (S. Feast, 1843), bright rosy-red, frequently with white stripe; foliage large and quite deeply serrated. Ranunculiflora, small, blush flowers. Superba (S. Feast, 1843), pale rose, changing to blush. Triumphant (J. Pierce, 1850), deep rose, double and compact. There have been a few other varieties in commerce, but the above constitute those which have most commonly been grown, and are the only ones now propagated. The most valuable are—Anna Maria, Baltimore Belle, Gem of Prairies, Mrs. Hovey, Queen of Prairies, and Triumphant.

Noisette, or Champney Roses.

Rosa Noisettiana, or Rosa Champneyana, or Rosa moschata hybrida. The Noisette Rose is a product of America, and obtains its name from Philippe Noisette, a florist of Charleston, South Carolina. John Champney, of Charleston, from the seeds of the White Musk Rose, fertilised by the Blush China, raised a variety which was called Champney's Pink Cluster. A few years after this, Philippe Noisette, from the seed of Champney's Pink Cluster, raised the Blush Noisette, and this he sent to his brother, Louis Noisette, of Paris, under the name of Noisette Rose. The true name, therefore, for this class should be the Champney, but the change cannot now be made. This group is naturally of vigorous growth, nearly hardy, and produces large clusters of flowers; but, through hybridisation with the Tea section, the original characteristics have in part disappeared.

The varieties now generally grown are less hardy, and have nearly lost the clustering tendency; but the flowers have much more substance, and are far more beautiful. America (Prof. C. G. Page, of Washington, D. C.; sent out by Thomas G. Ward, 1859): growth vigorous; flowers large, creamy-yellow, with a salmon tinge; a cross from Solfaterre and Safrano. Beauty of Greenmount (James Pentland, of Baltimore, 1854), rosy-red. Champney's Pink Cluster (John Champney), very vigorous; flowers pink, semi-double. Cinderella (C. G. Page, 1859), rosy-crimson. Dr. Kane (Pentland, 1856), growth free; flowers large, sulphur-yellow; a shy bloomer on young plants; in the South it is highly esteemed. Isabella Gray (Andrew Gray, of Charleston, South Carolina, 1854), growth free; flowers large, golden-yellow, full and fragrant; on young plants it does not flower fully, and often opens badly; a seedling from Cloth of Gold. Nasalina (A. Cook, 1872), "of vigorous growth; flowers pink, of flat form, very fragrant; a seedling from Desprez." Tuseneltea (Anthony Cook, of Baltimore, 1860), "pale yellow; a seedling from Solfaterre." Woodland Marguerite (J. Pentland, 1859) growth vigorous; flowers pure white, freely produced. There have been other American varieties of this class, but I am only certain of those above named. We hope our Southern rosarians will introduce some new types and colours of Noisettes; almost the only ones of value we now have are shades of yellow and white. In the South many Noisettes seed freely, and great improvements might easily be made by resorting to manual fecundation. I see nothing to prevent the obtaining of the same shades among the Noisettes that we have among the Hybrid Perpetuals.

Bourbon Roses.

Charles Getz (A. Cook, 1871), a hybrid; "growth very vigorous, making a good climber; quite hardy; colour deep pink; very fragrant." George Peabody (J. Pentland, 1857), growth moderate, colour purplish-crimson; a probable seedling from Paul Joseph. Oplitz (A. Cook, 1871), "a hybrid; growth moderate, colour fiery red; a seedling from Gloirie des Rosomenes." Renno (A. Cook, 1868), named after General Renno, of Philadelphia; colour deep pink. Setina (Peter Henderson, 1859), identical with Hermosa, from which it is a sport, except that it is of stronger growth.

Bengal Rose.

James Sprunt (Rev. James M. Sprunt, 1856), sent out by Peter Henderson, 1870; like Cramoisie Superieur, but of vigorous growth, making an excellent climbing sort.

Hybrid Perpetual Roses.

Belle Americaine (Daniel Boll, of New York), deep pink colour; flowers small, but of fine form. Madame Boll (Daniel Boll), sent out by M. Boyeau of Angers, France, in 1859; growth vigorous; foliage very large and handsome, of a pale green colour; spines numerous; flowers large or very large, form flat, colour carmine-rose; a free autumnal bloomer and very hardy—perhaps the most hardy in the class. One of the most superb Roses for the garden. Madame Trudeau (Daniel Boll, 1850), deep rose, double and well formed. Charles Cook (A. Cook, 1871), scarlet-crimson. Contina (A. Cook, 1871), rosy-pink. Il Defense (A. Cook, 1871), shining red, Camellia form, thornless. La Brilliante (A. Cook, 1872), brilliant red; raised from Napoleon III. Rosalina (A. Cook, 1871), rose colour. Souvenir de President Lincoln (A. Cook, 1869), dark velvety crimson. These are the only varieties I can name of American origin, though others have been raised. Mr. Boll, now deceased, who was by birth a Swiss, produced a number of seedling Hybrid Perpetuals of merit; several of these were sold to parties in France, who sent them out as their own. Among these was Madame Boll. It would be interesting to know, whether any among them besides Madame Boll are now famous.

Tea Roses.

American Banner (George Cartwright, of Dedham, Mass., 1877), sent out by Peter Henderson in 1878; a sport from Bon Silene; growth moderate, foliage quite small and leathery; flowers carmine, striped with white. The form and fragrance of the flowers seem the same as in the old variety, but in habit they are entirely distinct. It will perhaps be popular as a novelty, but it has no intrinsic merit to make it valuable, and we cannot commend it. Caroline Cook (Anthony Cook, 1871), colour pink; a seedling from Safrano. Cornelia Cook (A. Cook, 1855), growth moderate, flowers white tinged with flesh, large and very full; not a free bloomer, and often does not open well, but a superb Rose when well grown; a seedling from Devoniensis. Desantres (A. Cook, 1855), "colour flesh, very distinct from any other Tea Rose; a better bloomer than Cornelia Cook, and a good winter flower. Raised from Devoniensis." General Washington (C. G. Page, 1860), rosy-crimson. Isabella Sprunt (Rev. James M. Sprunt, 1855), sent out by Isaac Buchanan, of New York, in 1865; sulphur-yellow, a sport from Safrano, which variety it very closely resembles in all save colour of the flower. Paradine (A. Cook, 1858), canary-yellow small flowers; a seedling from Le Pactole. President (sent out by Mr. W. Paul, of London, in 1860), growth moderate; colour rose, with salmon shade; flowers large, moderately full, much resembling Adam. Mr. Paul, the disseminator, states that this is an American variety, but I am unable to learn by whom it was originated.

Among the many letters I received in response to inquiries is one from the Rev. James M. Sprunt, D.D., and it is of such interest that I insert it as it came to me:—

"Jan. 1, 1880.

"In the spring of 1855 I removed from my former residence in this town (Kenansville, N.C.), to the premises on which I now reside. Among the plants which I carried with me was a very large and handsome Safrano Rose. It had been trained to a single stem, fully 2 inches in diameter, and forming a symmetrical head about 4 feet from the ground. I pruned it well back, but the early summer being dry, the top died. The plant, however, put forth six or eight strong shoots from the collar at the surface of the soil, and one of these attracted my attention from its dissimilarity to the others in the colour of the stem and foliage. I observed it carefully until it bloomed, when it proved to be a fine yellow, all the other shoots retaining the normal colour of the Safrano. From this sport, which was named Isabella Sprunt, from one of my daughters, I sent cuttings to Mr. Isaac Buchanan, florist, of New York, in 1860, and it was sent out by him some two or three years afterwards, I think before the close of the war, though I heard nothing concerning it till 1865. (By referring to old files of the *Country Gentleman*, we find Mr. Buchanan first offered this for sale in 1865.)

"I may add that in the winter of 1856 I took up the old plant, and sawed the stock into five or six pieces, being careful to get a good share of the root to the yellow shoot; that plant still lives, and is quite constant though it has had, perhaps, two or three Safrano flowers, certainly one, and besides, about two years ago there was a fully developed bud and flower exactly one-half of which was like Safrano and the other half like Isabella Sprunt. I tried to fix this new sport, but it produced afterwards only yellow flowers.

"About the same time (1855) I divided some strong plants of Agrippina, and planted them at my new home. Two or three years later I observed a single shoot from one of these plants growing vigorously without flowers or branches, and as I observed it from time to time, it continued until it measured over 15 feet before it showed any buds, the rest of the plant retaining its normal characteristics. This shoot branched out very freely the following year, and cuttings retained the same habit invariably. I came to the conclusion that this was not a sport, but a chance seedling, as the flowers were so very unlike the parent, and the roots were so matted together that I could not determine whether it proceeded from the old root or not, without taking up the whole plant, which I was unwilling to do. But the wonderful thing is, that after the rest of the plant had for years retained its original habit and flowers, gradually it began to change, until the whole is now like the James Sprunt in growth and flower, and no part of the Agrippina remains. I have written you this statement that you may judge for yourself, my own opinion having changed more than once. *James M. Sprunt.*"

Safrano is, therefore, without doubt, a sport resulting from one of these strange freaks in which Nature occasionally indulges. About James Sprunt there is less certainty, but I consider it also to be a sport; it is like Agrippina, only with more substance of flower and greater vigour of growth. The theory of evolution would point towards this, as an example of how Nature tends towards progression and improvement as well as towards variation.

SURFACE DRESSINGS FOR CONIFERS.

I quite agree with the practice of applying heavy surface-dressings with a view to the prevention of the uprooting of valuable Coniferous trees, having followed it up more or less for many years wherever practicable, which is not always the case under the old style of planting, which in dressed grounds was almost invariably too deep, in order that the surface of the lawns (and Arboretums where kept constantly mown) might be uniform.

It is under such circumstances that the plan recommended by Mr. Rust (p. 215), of placing a circular erection of stones or bricks to keep the soil at a distance from the collar of the tree becomes valuable, and is indeed the only plan available in cases where surface-dressing becomes an absolute necessity, but where the ground is either quite level or the inclination towards instead of from the collar of the tree. At the same time, by way of caution, it must be observed that an indiscriminate quantity of earth must by no means be placed over the roots at one application, as in most instances it would be more likely to be injurious than beneficial, and the cases in which it would be least likely to be hurtful would be those in which the trees are standing considerably above the general level. A few years ago we had, in the course of some alterations, to fill up a rather wide and deep hollow, on the upper edge of which grew a fine luxuriant Spanish Chestnut, probably nearly 100 years of age; the hollow was only filled so as to bring the surface up to the general level, so that more than one-half of the surface was not interfered with at all, and yet the second year afterwards this tree was completely dead, and we could assign no other cause than the quantity of soil heaped upon the roots on one side.

When we consider that in dressed grounds the scythe, the mowing-machine, and the broom are constantly depriving the trees of all that nourishment, consisting of fallen leaves, the fibrous loam resulting from the decay of the roots of grasses, commingled with worm casts, which the trees enjoy under more natural conditions, we may reasonably conclude that if the trees are to be maintained in vigour, applications of earth to the surface will become an absolute necessity in after years; and this consideration ought to be

borne in mind and materially influence the operations of planting for specimen trees in dressed grounds, where they should be raised so much above the general level that such applications of earth to the surface may be made without materially altering the contour of the ground, or interfering with the collar.

At the same time planting on small mounds should be equally avoided, as they are both ugly and unmeaning; and it is quite possible to raise the collar of the tree, say 2 feet above the general level, and so to arrange the inclination of the ground from that height that it may lose itself gradually in a natural manner, and thus all appearance of a mound may be avoided: and this becomes the more necessary to be attended to at the first, because as a general rule it will be some years before the trees will attain the age and size when surface applications become a necessity.

The same precautions with regard to planting trees intended to make specimens on elevated sites should be observed when planting in woods or any other situations where the surface is never disturbed, and where the trees are therefore not deprived of the restorative surface-dressings supplied in a natural way, because even here the trees are greatly benefited by having occasional cartloads of road-side scrapings or other composts spread over the surface.

In these latter situations the planting in the first instance may be performed without the aid of any extra compost and with great advantage as regards rapid extension and the future well doing of the trees, by allotting a large and open space of ground, either naturally or artificially well drained, to each tree. Commence to dig from the centre, and, gradually working round it, throw up a mound to the requisite height above the ground level; and on this mound, after pressing it down moderately firm, place the roots well spread out, and then cover them by digging out the outer circle and throwing the earth over, and so forming the slope that at the last there shall be an open trench at least 18 inches below the ground level. If there are trees in the neighbourhood the roots of which are likely to encroach on the mound, the precaution should be taken to turn over the bottom of that trench at least another foot; the trees will thus be isolated for a year or two, and will have a fair chance of becoming established, when the trench may be filled with compost, and surface-dressings applied from time to time in after years.

The benefit to be derived from superficial applications of fresh material is by no means confined to Coniferous trees, or indeed to trees at all. It will be found highly beneficial in many other of our most important operations, and if considered desirable I propose to resume the subject in a future paper. *John Cox, Redleaf.* [Please do so. Eds.]

THE BEDDING-OUT SYSTEM.

The opponents and the advocates of this practice are as one in their condemnation of the abuse of the system. But this does not by any means settle the question, as it would appear that the former altogether object to the annual turning out of tender plants into the beds of the flower garden and elsewhere, and contend, I believe, that such beds and borders might be better furnished by our numerous species of hardy plants, which would at all seasons of the year be objects of interest, and some of which would be in bloom at nearly all seasons. The truth of the latter part of this assertion no one will attempt to deny. The relief this would afford to the flower gardener would doubtless be very considerable, as the annual turning of some thousands of tender plants out of pots into the beds and borders of the flower garden necessitates considerable expense, and their propagation and preparation for this purpose demands much forethought and a great amount of labour—a labour of love, I will admit, in many instances, but a very considerable labour nevertheless.

But the question now to be considered is this—Would the proprietors of flower gardens, or would the general public, be satisfied with this state of matters? I fear not. Our hardy alpine and spring flowering plants are exceedingly interesting, and many of them are very pretty, and everybody loves and admires them, but unfortunately the state of the weather in this country at the time they are in their greatest beauty is too often such as to prevent people spending much of their time in their gardens; and it might, I fear, be truly said that "many a flower was born to blush unseen, and waste its sweetness in the desert air."

Many of our summer and autumn flowering hardy herbaceous plants and annuals are effective enough while they remain in bloom, but in most cases the blooming season of such plants is of short duration, and it is difficult to induce even a few species to keep each other company in this respect. And, taken altogether, it is hardly possible to maintain a simultaneous and continuous display of flowering plants for, say, five months of the year, by the exclusive use of hardy plants. Now, on the other hand, it is found that there are various species of exotics, or what are known as tender plants, that is, plants which are not sufficiently hardy to withstand the rigours of our winters, but which are found to succeed admirably in the open air in this country during the summer. So that it really does not seem very wrong nor greatly opposed to what may be considered as the rules of good taste, to make use of these accommodating plants to assist in producing a display for so considerable a portion of the year.

In some instances, perhaps I ought to say in many instances, undue advantage has been taken of the glowing or warm colours of the flowers of some of these plants, in producing what is considered a glaring effect, and this, it would unfortunately appear, has produced upon the sensitive nerves of some persons of very refined tastes something which may perhaps be defined as scarlet-geraniphobia. This is certainly very much to be regretted, and it is now confidently hoped that much of this will be rectified, and as a natural consequence "bedding out" will become still more popular than it has ever been, for the simple reason of its being better done than formerly. Much of this desired improvement will and has already been effected by the judicious use of suitable plants bearing flowers of neutral shades of colour, as well as by the use of plants (hardy as well as tender) with ornamental foliage, &c. Without, however, by any means altogether discarding our bright coloured friends, which during such cold and dripping summers as we have of late experienced have been acceptable rather than otherwise, I think the flower gardener can hardly be accused of showing any reluctance to the introduction of hardy plants into the parterre, but is on the contrary very glad to do so, when such can be found to suit his purpose. He is, moreover, not one who would hang a dog on account of his colour, nor ignore a suitable plant because of its blooms being intensely bright, or even glaring, but will rather endeavour to neutralise or subdue this effect by the use of flowers or foliage of more sombre character.

I have never been quite able to understand why an architectural or geometrical flower garden should be considered in any degree as an objectionable or inapplicable adjunct to a modern mansion. There may, it is true, be residences which fortunately command fine and extensive views of the surrounding country, where beds of flowering plants in its immediate vicinity might be considered as an intrusion, and as tending to divert attention from the more extended beauties of the landscape; but in all such cases other sites than that of the immediate vicinity of the mansion are generally available for that of the flower garden. Another, and an often adduced objection to a summer flower garden, more particularly when in contact with a residence, is the desolate appearance of the beds during the winter months; in most cases, however, this is now effectually remedied by the judicious use of small plants of our many hardy ornamental evergreen shrubs and Conifers, &c.

Very much has of late been written in praise of what has been termed the wild garden, or wilderness, and there are few who fail to admire the beauty of our native plants in their normal or wild condition, notwithstanding that this generally exhibits a fierce struggle for existence, in which the strongest if not the fittest usually prevail—such as a group of yellow Primroses or blue Violets in possession of a mossy bank, but likely to be soon overrun and smothered by fierce Brambles or rampant Dog Roses, unless the wild gardener in such cases steps in and interferes, by establishing a "scientific frontier," which some might condemn, and prefer to leave the children of the wild woods to fight their own battles. But however great the charms of the wild garden may be, its tangled and rampant beauties should certainly be kept at considerable distance from a mansion or residence, where its too close proximity could only indicate either slovenliness or affectation.

Variety, however, is confessed to be charming, and there is no reason why an extensive garden establishment should not comprise a variety of gardens, such as a winter garden, which in this country can only exist under the protection of glass and in an artificial atmosphere—and in most establishments this desideratum exists in the form of a conservatory or greenhouse; also a summer flower garden, a spring flower garden, a hardy Fern garden, and a wild garden, together with a fruit garden and vegetable garden, all occupying to some extent separate sites, while at the same time each should form part of a comprehensive and harmonious whole. *P. Grieve.*

THE FROST OF DECEMBER, 1879.

At the usual monthly meeting of the Meteorological Society, held on Wednesday evening, the 18th inst., Mr. G. J. Symons, F.R.S., President, in the chair, Mr. W. Marriott, F.M.S., read a paper "On the Frost of December, 1879, over the British Isles."

Exceptionally low temperatures were registered all over the British Isles from December 1 to December 7. On December 1 the lowest temperature was —2°, at Ketton, near Stafford; and the next lowest was —5°, at Trent College. The temperature continued low throughout the day, at several places not rising above the freezing point. On the 2d the cold was more intense. In the counties of Leicester, Lincoln, and Nottingham the temperature fell below zero, the lowest being—4°.5, at Coston, near Melton Mowbray. Temperatures between 0° and —10° were registered in the north and south of Scotland and along the central part of the north of England to the Midland and Eastern Counties, while over the whole of England, Scotland, and Ireland, with the exception of the sea-coast stations, the temperature fell below —20°. On the 3d the temperature was more evenly distributed and not quite so intense as on the previous day; however, in the North Riding of Yorkshire and the Valley of the Tees, readings at and below zero were registered, the lowest being —2°, at Gainford.

On the 4th intensely cold weather was experienced over the south of Scotland and the north of England: the lowest reading obtained was —23° at Blackadder in Berwickshire; —16° was also registered at Springwood Park, near Kelso; and readings of —5° were reported at Haddington, Melrose, and Corbridge-on-Tyne; and —4° at Alston. Temperatures below 10° were registered over the south and south-east of Scotland, and over the north of England as far as the valley of the Trent, and also in the Eastern Counties; while over almost the whole of England, Scotland, and Ireland the temperature fell below 20°. In some parts of the south of Scotland and the Border Counties the maximum temperature during the day did not rise to 20°. On the 5th the minimum temperature was not so low as on the previous day, there being a cloudy sky and a general fall of snow. In Ireland, however, this was the coldest day of the month. On the 6th the temperature fell considerably in Derbyshire, Nottinghamshire, and Yorkshire: readings of —3° being recorded at Trent, —1° at Buxton, and 0° at York and Stanley.

At many places the maximum temperature during the day was much below the freezing point. On the 7th very low temperatures were registered over the whole of the north and east of England; the lowest reported was —10° at Ketton, near Stamford. The temperature fell below zero in the counties of Essex, Leicester, Derby, Lincoln, Nottingham, and York, and also in the south of Scotland; while over almost the whole of the north-east and central part of England, as well as a portion of the south-east district, the temperature fell to 10° or below. Readings below 20° prevailed over nearly the whole of England and Scotland, and the centre of Ireland. The maximum temperature during the day at a few places was extremely low, the thermometer at Appleby only recording 12°.4, and that at York 18°. During the next few days a little warmer weather prevailed, but on the 11th the temperature fell below 20° over the central part of England, Scotland, and Ireland. Low temperatures were also experienced at most places on the 12th. Milder weather continued for the next few days, but on the 17th the temperature again fell below 20° over the whole of the south of England. Low temperatures also prevailed on the

18th, 21st, 23d, 24th, and 26th, while the maximum temperatures at many places on the 21st and 26th did not reach 32°. At almost all the inland stations frost occurred on an average of about twenty-five days during the month, and temperatures below 20° were registered from eight to thirteen days at several places. The only station where frost was not felt was Scilly, the lowest temperature recorded there being 33° on the 2d.

The only comparatively mild districts were the west and south of Ireland, and the extreme south-west of England. Even the seaside health resorts, which are reputed for their mild climates, were not exempt from the cold, the temperature falling below the freezing point on eleven occasions at Ventnor, fifteen at Torquay, twenty at Sidmouth and Eastbourne, and twenty-four at Ramsgate and Worthing. During the time of the cold weather the barometer was very high over these islands, and an anti-cyclone was formed over those districts where the lowest temperatures were recorded. That the cold was the result chiefly of radiation is shown by the great difference in temperature at the hill and valley stations. For instance, at Farley, 640 feet above sea level, 17°.7 was registered on the 9th, while at Oakmoor, 300 feet lower, in the valley of the Churnet, and less than a mile distant from Farley, the temperature fell to 1°.1. The effect of the cold upon the health of the community was very great. In London the number of deaths referred to diseases of the respiratory organs increased to 799 in the week ending December 20, and exceeded the weekly average by 288. The public journals record the fact that several persons were frozen to death in various parts of the country. The frost also caused great injury to plants, shrubs, and birds.

KELLY,

The seat of Dr. Young, is situated on the south bank of the River Clyde, in the parish of Inverkip, and some 30 miles south-west of Glasgow. Kelly House is of large dimensions, and its external appearance plain but neat. Dr. Young has lately added a large picture gallery to its south end, which he has filled with a grand collection of pictures by the best masters. The pleasure-grounds are entered by a very neat gate and lodge. They are extensive and very tastefully laid out, as well as remarkably well kept, and all the surroundings are rich and attractive. The coast at this place is bounded at a short distance back from the shore by a range of hills, rising at some places in gentle slopes, and at others in abrupt rocky precipices. In this neighbourhood stand Skelmorlie Castle, Knock Castle, Routenburn, and Fairlie Castle, and among these Kelly stands pre-eminent as one of the most beautifully situated.

Here also is perched on the edge of a precipitous rock near to the sea, the celebrated Skelmorlie hydropathic establishment, one of the most comfortable in the West of Scotland. Its situation affords to its numerous visitors the most bracing air, and views of some of the grandest scenery which the Firth of Clyde affords, and, as it is put (pardon the Hibernianism), the luxury can be enjoyed at all times of salt water fresh from the sea. Through the kindness of Dr. Young visitors to the above establishment or others residing in the district may obtain (by written application) cards admitting them to walk through the grounds and Kelly Glen every day (Sunday excepted). Those cards are available for the whole season. This act of kindness on the part of Dr. Young is a great source of pleasure to the numerous visitors to the district, and is largely taken advantage of, as the walks through the glen are the most delightful in the district, and the banks on either side are one mass of spring flowering bulbs, &c., of nearly 10 acres in extent. At the top of the glen and just below the garden is a very neat summerhouse, very tastefully got up. It is covered with moss having shells wrought in, forming the Rose and Shamrock pattern.

The neighbourhood was notorious for its witches early in the last century. People of peculiar habits were objects of suspicion. Surprise has been expressed that many of those unhappy persons should have confessed themselves guilty of this crime, but it must be remembered that many of them were examined under torture—thrusting pins into the flesh, and keeping the accused from sleep being the ordinary treatment of a supposed witch. The following traditional rhyme of the district relates to Alexander of Dunrod, who was supposed to be a warlock. It may be observed that the custom in Scotland, in days long gone by, was, and even still is in some parts, to name a person after his place of residence.

"In Inverkip the witches ride thick,
And in Dunrod they dwell;
But the greatest loon among them a'
Was auld Dunrod himsel'.

"Auld Dunrod was a goustie carle
As ever ye micht see,
And gin he was na a warlock wicht,
There was nane in the haill countrie.

"Auld Dunrod stack in a pin—
A bourtree pin—in the wa';
And when he wanted his neighbours' milk,
He juist gied the pin a thraw.

"He milkit the Laird o' Kelly's kye,
And a' the kye in Dunoon;
And auld Dunrod gat far mair milk
Than would mak' a gabbart* soum."

Tradition also has it, that if a witch, or warlock, drew a hair rope across the mouth of a jug, they could draw the milk from all the cows in the district by an unseen hand. I have to thank the author of the *Guide to Wemyss Bay, &c.*, for the following regarding Livingstone, and other interesting facts connected with the district. Dr. Young, being one of Dr. Livingstone's early friends, fitted out, at his own expense, an expedition for his recovery. After Dr. Livingstone's death, the two Africans, Susi and Chuma, who had so faithfully attended their master till the last, and who brought home his remains, resided for some time in this country, and during the summer of 1875 spent a fortnight at Kelly, and at Dr. Young's request they erected a fac-simile of the hut in which Dr. Livingstone died (see fig. 49), in the grounds at Kelly. It is erected about 50 yards from the north-west corner of the kitchen garden, on a grassy slope. In front are some very fine specimens of Coniferæ, such as Piceas magnifica and cephalonica, Wellingtonia gigantea, &c. It may be here mentioned that Dr. Young acquired his Doctor's degree for his high professional skill as a chemist, and for having been the first to discover that paraffin oil could be distilled from shale. From the hut is a gate in the wall, opening on a walk leading to an eminence, where is erected a very large and handsome summer house. From this point most extensive and varied views are obtained. Looking east, the eye takes in Ben Lomond and the mountains all about Loch Eck, and on towards Inverary. To the west the Cowal Hills are seen in all their extent, with the sea between. On their southern slope are the pretty watering towns of Inellan, Dunoon, and Kilcreggan, and to the south-west is descried the Kyles of Bute and all about Rothesay, with the lofty mountains of Arran in the far distance. Goatfell, the highest in the range, rises to a height of 2866 feet. Looking nearly due south is seen, standing in mid-ocean, that wonderful mass of rock, Ailsa Craig, and about 6 miles off the thriving town of Largs, with its beautiful surroundings. Here was the scene of the famous battle, known in history as the battle of Largs, between the Norwegians under King Haco, and the Scots under Alexander III., fought on October 3, 1263, which ended in the complete overthrow of the Norwegians, and freed the country from their invasions; and about 2 miles to the south stands Ashcraig, the seat of the Misses Stewart, a place long noted for its fine situation, and the high order in which everything about it is kept.

The conservatory here is a very handsome iron erection in the curvilinear style, 80 feet in length, 27 feet wide, and 16 feet high, and contains many rare and well-managed plants. The following are very conspicuous, and are in a wonderful state of health:—Camellias, Old White, a bush-shaped plant, 8 feet high and 18 feet in circumference; Donkelaarii, a pyramid, 6 feet high and 12 feet round; myrtifolia, 6 feet high and 12 feet round; two Lady Hume's Blush, 6½ feet high and 13 feet round; two Carswelliana, pyramids, 10 feet high and 12 feet round; Melrosei, a variety raised in this district, 7½ feet high and 14 feet round; tricolor, 8 feet high, and 14 feet round; two Dicksonia antarctica, stems 6 feet high, spread of tops 12 feet; Alsophila australis, stem 3 feet, spread of top 14 feet; two Oranges, 7½ feet high, and 18 feet round: the crop and health of these is extraordinary; Corypha australis, 7 feet high and 9 feet through; Cordyline indivisa and Banksii.

Suspended from the roof are very handsome hanging baskets filled with the most approved plants for the purpose. There is a very handsome fountain at the west end, and here also are placed large mirrors, which reflect the greater part of the house. The north end is taken up with a rockery, very artistically done, with neat miniature waterfalls. In it I found very healthy specimens of Adiantum Flemingii, gracillimum and farleyense, Gleichenias, Aspleniums, &c. Here were also two Dicksonia antarctica, with stems 9 feet high, and a grand pyramidal plant of the old white Azalea, 6 feet high and 11 feet round. Vinery No. 1 is 40 feet long, 12½ feet wide, and 16 feet high. The Vines are chiefly Black Hamburgh. It is used as an early house, and had an excellent crop all over the house. An old Peach tree in this house deserves notice on account of its remarkably free bearing qualities in such a situation. No. 2 is a Hamburgh-house, 22 feet long, and of the same width and height as the first, with the roots outside and in. No. 3 is similar to No. 1. No. 4 is in the shape of a half circle, and planted with Vines brought by Dr. Young from the Vale of Eschol. They have not fruited as yet, but are very coarse growers, and the wood is difficult to ripen. In this house I found some very pretty Orange plants, in a small state, nicely fruited, raised from seed gathered by Dr. Young from St. Gerome's tree at the convent, Bethlehem. No. 5 is an early Peach-house, 30 feet long, 11 feet wide, and 12 feet high; the trees young and very healthy. No. 6 is a vinery of the same dimensions as No. 5, full of young Vines, to be used as an early house. The back wall is to be planted with Figs brought by Dr. Young from Mount Olivet. No. 7 Peach-house is of the same dimensions as the two last; very fine trees, and excellent crops are obtained. Here there is a fine range of pits principally used for growing Strawberries in spring — Garibaldi and President being the varieties used, and over 1000 pots are forced every season. There is also a span-roofed stove, 52 feet long and 12 feet wide, filled with a very fine collection of plants, in a small state, as they are principally used for table decoration, including a very nice healthy collection of Orchids. The roof on both sides is covered by a large plant of Stephanotis floribunda, which flowers most abundantly.

The kitchen garden is nearly 4 acres in extent, in three divisions of terraces, and slopes gently to the south. It is so nicely arranged on all sides, by judicious planting of shrubs and otherwise, that but little of the kitchen garden proper is seen in walking round. Pyramidal fruit trees are rather largely planted out here, but as a rule fruit trees do not bear well, the atmosphere being too humid in autumn for them to ripen their wood. All sorts of bush fruits are had in abundance. In front of the conservatory, running its whole length, there is a ribbon-border, 16 feet wide, filled with bedding plants; and facing this, between the conservatory and kitchen garden, is a large space of short grass, intersected by gravel walks. At the top of the kitchen garden is a gravel walk, 7 feet wide, which runs the whole width of the garden, and on the south side of this is a broad border, filled with choice Rhododendrons, pyramidal Hollies (mostly Queen), and other fine shrubs. To the back of this is a row of Fuchsia Riccartoni and Tritoma Uvaria, planted alternately, backed with a hedge of Escallonia macrantha and standard Rose Gloire de Dijon, also planted alternately 6 feet apart. The front of this broad border facing the conservatory is all bedded out with the most effective bedding plants, which gives the place a very gay appearance in summer. Violas are largely used here, as the soil and climate suits them well, and a good show of flower is had from them for eight months in the year. The outhouses, bothies, &c., are most complete. The gardener's house stands at the south-east corner of the garden, on a rather high elevation. It is two storeys high, and for comfort and convenience is just what a gardener's house ought to be. Mr. Machray, Dr. Young's head gardener here, has long been known as an ardent horticulturist, and the plants and trees under his care afford abundant evidence of his skill and ability. *John Downie.*

* A flat-bottomed boat.

The Dog Rose.—The following I take from the *Star*, May 13, 1794:—"On the road to Edgeware the husbandman's sign of an early and plentiful harvest is seen adorning the hedgerows, with the blossoms of what is commonly called the Dog Rose. This wild flower affords the farmer the means of calculating the time of harvest: as early as it appears before Midsummer, so long before Michaelmas he computes the time of reaping. We may therefore expect the next harvest will begin early in August." *A. F. G., in "Notes and Queries."*

Forestry.

Preparations for Planting.—There is much truth in the proverb, "Well begun is half done." It need not here be discussed whether this is literally true or not; but one thing is certain, that every false step and wrong action taken in respect to planting is less than no advancement or progress made. The first thing to do—or, at least, among the first—is to resolve upon a subject, or piece of ground to plant, and always the sooner this is done the better. Anything done in haste in connection with planting is usually imperfectly done, or at least less perfectly executed than if time and thought had been duly bestowed upon it.

As soon as a piece of ground is fixed upon for planting, the forester should take every available means and opportunity of knowing all that can be known about it. By this I do not infer that any man is capable of knowing everything that is desirable to be known, but only to put himself in possession of as much knowledge regarding the subject as he possibly can. We probably learn more from our mistakes and failures than we do from certainties and successes. At whatever time of the year a forester enters upon the duties of a new situation, he is much the better for waiting a complete round of the seasons before doing much either in planting or thinning. The climate requires close and due consideration; the soil must be well studied; the natural enemies, whether quadrupeds or insects, should be carefully considered, together with the elements at all seasons. To learn and understand the power and influences of all that surrounds us is more difficult by far than to read books and listen to human instructions, however clear and well defined. As the object in planting is usually manifold—such as affording shelter to crops and farm stock, providing covert for game and rendezvous for the fox, embellishing and beautifying the landscape, ameliorating the climate, together with supplying the district with wood and timber, and remunerating the proprietor for the outlay of his capital—(it is not usual that any single plantation is expected or intended to fulfil all these requirements, but even considerably short of that)—it must be self-evident that, in order to plant with any degree of certainty, much forethought and consideration is required, and also no small experience.

The form and outline of a plantation is a matter for wise consideration; and not only the boundary line, and appearance when young, it must also be looked at through the vista of the coming years, and in its state of maturity. The plantation has also to be looked at prospectively in connection with other plantations and surrounding objects, such as hills, rocks, lakes, and rivers. Plantations, too, should bear a due proportion to the general features and objects of the surrounding landscape. Large areas of plantation in the midst of small arable fields do not look well; neither, on the other hand, do small patches and narrow belts look elegant amongst broad and extensive fields. The north and east sides of fields and steadings, and also cottages, gardens, &c., should be sheltered and well protected from the storm, tempest, and cold winds; while, on the other hand, the south always, and generally also the west, should be left open and exposed. Nothing of a rural kind is less in keeping with good taste and propriety than for a farm steading, or cottage, to be surrounded with trees, in close proximity to the house on the south and west sides, while the north and east sides are bare and exposed.

The breadth of the various descriptions of plantations is also a subject of no small importance, and deserves much thought and consideration. No fixed rule can be laid down applicable to all cases, but if an error is to be committed, let it be that of planting too broad rather than too narrow belts. Indeed, unless the ground is too valuable to plant, or where the fields are small, no shelter-belt should be of less breadth than 3 chains. This ought to be regarded as the minimum breadth where useful timber is designed to be grown. There are many useful belts of not more than 1 chain wide, but the trees in such are necessarily either bushy and of stunted growth, or weak, small and slender, and short-lived. Where the planting is primarily designed to please and gratify the taste, and where the object is viewed from various standpoints, it is wise and judicious to set up as many artificial trees as fairly to represent the plantation, or single trees after being planted and so far grown up. Thinnings of Scotch Pine or Spruce do well for the purpose, and give those who have had but limited experience of such work a better guide than can be given in any other form. Taste in regard to plantations varies, as it does in other things. Bygone generations planted chiefly in rows and straight lines, and now nothing will please but bends and curves. I know of no standard or rule for the one system more than the other; and, indeed, if our ancestors erred in the direction of straight lines, we possibly transgress in some cases in regard to curves; and it is, I think, a question that may very justly be asked, Why so fastidious as to the curves and circles in plantation fences, when we do not object to straight lines of railroads, rows of telegraph poles, turnpike roads, furrows and ridges in fields, wire and other fences, streets, rows of houses, and ribbon borders in our gardens, and in an infinity of other things? Practically it would be well to at least modify our passion for curvilinear outlines of plantations, seeing that the fences that now protect them are usually of wire, or such other as can only be practically and economically erected in straight lines, and not in regular curves. When the plantation is of large extent there need be no difficulty in forming it, if not of curves, at least of outlines equally efficient both to please the taste and answer all the practical requirements of curves.

The subjects of species of trees to plant, and how to arrange and dispose of them so as best to afford shelter and produce landscape effect, &c., must be deferred until another occasion. *C. Y. Michie, Cullen House, Cullen, Banffshire, February* 16.

Fig. 49.—Fac-simile of the hut in which Livingstone died, erected by Susi and Chuma in Dr. Young's garden at Kelly. (see p. 268.)

Florists' Flowers.

Auriculas.—These require strict attention during the ensuing month. Since they were surface-dressed the growth has been considerable, and with the new leaf-growth there is a corresponding root-action. Attention must be given to watering and ventilation; no plant ought really to feel the lack of water at the roots, and they will require an increasing quantity as the season advances. The drying winds during March are rather trying to the plants; they must be shaded from scorching sun, and the glass-lights should be tilted, so that cold winds cannot injure the plants. To prevent dust from blowing upon them, and also to cause a humid atmosphere, the ground round the frames should be sprinkled when it is dry. Small rooted offsets should be repotted into larger pots in the usual compost; they must not be over-potted, rather give a small shift now and repot again in May or June. A healthy rooted offset now will, if well managed, make a good flowering plant for next year. When the weather is mild and the air calm the lights may be drawn quite off. Seedlings must be pricked off as soon as the first leaf is formed after the seed-leaves; the plants are very small at that time, but it is necessary to prick them out as soon as possible, else many of them will die. Plants in houses or pits are more under the eye of the cultivator. The atmosphere should not be too dry; the plants must be as near as possible to the glass, and air be freely admitted, avoiding currents directly on the plants.

Carnations and Picotees.

The whole collection must be potted into their flowering-pots as soon as possible. The uncongenial weather that we have had in previous years warns us that it is advisable to shelter the plants in some way after they are potted. Mr. Dodwell prefers a screen of Haythorn's hexagon garden netting next to glass; this moderates the force of gales, and if it is tightly stretched over the plants at an angle rain is also thrown off. Of course it is much better if the plants can be placed under glass till they are established. The soil for potting should be sweet and moderately dry: four parts loam, one of rotten stable-manure and some leaf-mould and sand is a good compost. It is best to have this mixed two or three months before using it. Some growers, anxious to have plenty of room in which to layer the grass, over-pot their plants. This ought not to be done. Pot one plant in a 7 or 8-inch, two in a 9-inch, and three in a 10-inch pot; small plants and weakly growing varieties may even have small pots to flower in. See that any plants still in small pots do not suffer for want of water at the roots.

Dahlias.

Cuttings should now be put in; I use a thumb-pot for each cutting. The pots are filled with fine soil, and a little sand is placed on the surface, the cutting is pressed gently round the base with the fingers. Plunge the pots in a gentle hotbed, the cuttings do not take long to form roots. About the end of next month pot roots should be taken into the forcing-house, where there is a gentle bottom-heat. Give the soil a thorough watering, and see that it does not become dry again. When the growths have started the soil should be partially shaken from the roots, and the plants may be potted into 4 or 5 inch pots. Seed may be sown this month if there is any convenience to pot off the young plants separately in small pots.

Gladioli.

Those corms that were potted early in the year for early flowering should now be placed in cold frames where the lights can be removed to inure the plants to the weather, as they must be planted out about the end of the month in a sheltered place. The first lot of bulbs may be planted early in the month, and a few more at intervals of a fortnight; place some sand under and over the bulbs at the time of planting, and fill in the drills with fine loam. The small seedling bulbs should be planted in rows 5 or 6 inches apart, and about a foot between each row. These should also be encased in sand and treated in other respects like named varieties.

Hollyhocks.

Let all plants in small pots be potted on as they require it. Those early propagated should be shifted from the small 60's into 4 or 5-inch pots. The autumn propagated plants will now be strong, and should be well exposed to the air, only placing the lights over them when frosty. The earliest plants must be planted out early in April; the late plants require to be more carefully nursed, to be planted out about the end of April. Seedlings may be planted out this month.

Pansies.

The whole of the plants ought to have been in their flowering pots last month, and they are now growing freely; if they are wanted to be in full flower by any particular date it is necessary to remove the flower-buds until within two or three weeks, or perhaps even four weeks from the time they are wanted—if the weather is warm two weeks would be sufficient. The lights should be quite removed from the frame in fine weather, and at all times plenty of air must be admitted. Plants in beds should have a rich surface-dressing, but before doing this fill up any vacancies from a reserve. If seedlings have been wintered in cold frames plant them out on a rich piece of ground.

Pinks.

The beds should be mulched in the same way as the Pansy beds, pressing the dressing round the neck of the plants; some of them may even require the additional support of a stick to prevent the plants snapping over close to the surface of the ground. From the middle to the end of the month seed may be sown. A good plan is to sow in a box rather thinly, using three parts of loam to one of leaf-mould. The seed should just be covered with finely-sifted soil, and a square of glass may be placed over the box until the seeds vegetate; this they will do most quickly over a gentle hotbed, but if this is not available place the box out-of-doors.

Phloxes, Pyrethrums, &c.

Those planted in beds should now be attended to: let them receive a surface-dressing of rich soil, and any labels that are not likely to stand through the summer must be replaced with new ones. If the plants are more than three years old it is best to dig them up and replace with young ones.

Polyanthuses.

Treat those in pots very much the same as the Auriculas. The opening flowers are not so easily injured as those of Auriculas, consequently it will not be necessary to cover up so closely for slight frosts; they require rather more water at the roots, but do not allow them to be exposed to rains at this time, as the foliage is not so beautiful after it has been dashed by rains.

Ranunculuses.

Plant out at once if the ground is in good condition; the crowns of the tubers should be about 1½ inch under the surface of the ground. The rows may be about 5 inches apart. Seedling roots grow more freely than named sorts, and should be planted 6 inches apart each way. The surface of the beds should be slightly raised above the paths, but deep alleys do not look well.

Plants in Cold Frames.

Such plants as Aquilegias, Phloxes, species of Primula, Ixias, Sparaxis, &c., require no other attention except to air the frames freely, see that no insect pests attack the leaves, and give sufficient water to keep the soil in a moderately moist state. *J. Douglas, Loxford.*

Garden Operations.

KITCHEN GARDEN.

Broccoli.—In certain districts which naturally possess a superior climate and other beneficial influences this invaluable vegetable can be produced in a state of great excellence without the uncertainty as to actual results that must inevitably exist at other less favoured localities where, as a natural consequence, its cultivation will always be attended with some degree of doubt and difficulty. In point of fact we have only to take the present season—which has been extremely fatal to these plants—as an instance to verify this statement. However, we are still encouraged in this pursuit by the fact that even under the pressure of such exceptional circumstances we now possess in a satisfactory state about a third part of the original planting of the following kinds:—Leamington, Dalmeny Park, and Willlams' Alexandra. Of other sorts which we have grown this year, such as Frogmore Protecting, Penzance, and Haywood's White Queen, the loss has been much greater in proportion. In my opinion, if in the process of cultivation, in private establishments more particularly, the requirements of this subject had more consideration, such severe losses among the plants as are to be met with even in ordinary seasons would be materially reduced, and a corresponding degree of success would thereby be attained.

In the case of that section of the plants which is required to produce heads during the autumn months the soil can scarcely be over rich or moist for the purpose, and the plants, if raised in a natural way, can scarcely be got ready for planting out too soon, and the kitchen garden proper will be a suitable place for them; but to put plants which are intended for a spring crop in soil so fertile and full of manure, and in places so sheltered, I consider to be a mistake altogether, because the conditions are such as simply tend to produce in the plants a succulent growth, which by the force of local surroundings becomes attenuated and tender, and is thereby prepared to suffer material damage from the first severe frost that comes, while subsequent ones as a rule finish them off entirely. To pass this order, plants, particularly Broccoli plants—which are somewhat tender, intended to give the spring crop of heads, and to withstand the effects of our winter seasons—such plants should be formed as sturdily as possible, and this unquestionably can best be effected by planting them in open and exposed places, slightly elevated, where the soil is tenacious in character, of fair average depth, and moderately enriched with manure or other fertilising agents.

Sow the seed early in March, and when the plants have become fit for transplanting permanently take advantage of showery weather for the purpose, so that they may get established by the time very dry weather sets in. Enough space should be allowed between the plants for them to make a proper development. As a rule, for this end 2 feet apart every way will be sufficient. The after-treatment that is necessary is simply to keep the surface-soil free from weeds and stirred occasionally to encourage growth, and when autumn arrives to remove all useless and decayed leaves from the stems in order to admit a free circulation of air amongst them. Local circumstances sometimes create difficulties in the way of success in cultivating some subjects, and recurrent and vexatious disappointment with it often leads to increased efforts to overcome them. Such, at least, has been our experience here with regard to the Broccoli plant for spring purposes, and until we ceased to grow them in this damp and fertile valley, our endeavours invariably ended in disappointment if not actual defeat.

A considerable quantity of rain has fallen lately and so saturated the soil as to necessitate the postponement of sowing the general crop of Onions, Carrots, and Parsnips. Light friable soil, such as is commonly to be found in established gardens, will need to be made somewhat firm before the seed is put into the ground; let, therefore, the places intended for these crops be trodden down and roughly raked over before the drills are drawn. These should run from 12 to 18 inches apart, according to the fertility of the soil. After the seed is raked in, another light treading over will be beneficial. On the other hand, where the soil is strong and adhesive no treading will be requisite, and as such land is cold and late compared with that before described, wait until it is in a proper state; a delay in this way is oftentimes more than compensated for in general results.

About the first week in March make the general sowing of seeds of the Brassica tribe on an open space, and take precaution to protect the seeds from the attacks of birds. At about the same time make a small sowing of Turnip seed, and supplement it by another sowing in about a fortnight's time. Many of the plants from these sowings will, doubtless, shoot into seed; this will in some degree be avoided by sowing in open places. We like the American White Strapleaf kind for this purpose. See likewise to the sowing of Radishes and Lettuce at intervals to maintain a regular supply.

Autumn plantings of Lettuce and Cabbage plants will after the operation of frost demand attention, and so also will the Spanish section of Onions which were sown at the same time; if any of these plants be loosened, press them in firmly again if not yet done. Any ground which is wanted for Cauliflower plants that is not prepared for them should be seen to, as the time will soon arrive for the general crop of these plants to be put out. Plants which are already out in hand-glasses should be well ventilated by day, and those in frames should be fully and constantly exposed unless very severe weather prevails. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

Peaches and Nectarines.—The principal work in the early house during the next fortnight will be the final disbudding and tying-in at the base of the shoots intended to form the fruiting wood for next season. As growth proceeds it is more than probable

that many of the young shoots that have been pinched to form spurs will have to be entirely removed, to make room for the full development of the foliage; but in many parts of the trees their retention will result in clusters of flower-buds, which invariably ripen well, and at the same time produce an even spread of foliage, where its shade will protect the old branches from the influence of the sun's rays. Trees which have set abundantly may now be divested of the least promising fruit, particularly where triple flowers were not thinned before they opened. It will as a matter of course be necessary to leave a much greater number of Peaches than is likely to be required by the most covetous cropper; but in every instance where triples are swelling the two outside ones should be removed for the benefit of the finest, which is always found in the centre. These do not, however, as a rule give the finest fruit, neither do they go through the stoning process so well as fruit from fine single blooms placed on the upper sides of firm, short-jointed wood. Although the month now passing away has been moderately mild, the absence of sun has obliged us to keep the fires going, and under this influence it is not unlikely that red-spider will be found in proximity to the pipes. Should this be the case the syringe must be vigorously applied until the enemy is brought into subjection. At the same time internal borders must be examined, well mulched with short horse-dung, and copiously watered if it is found that they are at all dry or approaching that state. The most fertile cause of spider is poverty and aridity, the best antidote is moisture, ammonia, and generous food. As the fruit increases in size great care must be observed in the choice of water for syringing purposes. Rain-water is the most suitable, but if this cannot be procured, that which contains the smallest quantity of lime will be the best substitute. Ventilate early and by degrees as the temperature increases, and reduce in the same way. Close up entirely, and run up the temperature after the afternoon syringing, and give a little night air on all favourable occasions. Succession-houses now in flower will require a free circulation of air with sufficient fire-heat to keep it buoyant, and to prevent sudden changes of temperature. Pass the brush over the flowers on fine days. Keep the paths and borders moist when the weather is fine, and allow them to become dry when external conditions are unfavourable. Trees having their roots in the external borders of late houses are still backward, but this condition must not cause alarm, as time can be redeemed, even in unheated houses, if such still exist, after the fruit has passed the early stages. Let the doors and ventilators remain wide open at all times when the house stands above the freezing-point, and keep the borders cool by means of light, but not over-rich mulching. In the selection of Peaches and Nectarines for cold houses, preference should be given to late-blooming kinds which have small flowers. *W. Coleman, Eastnor.*

Orchard-house.

If the trees in the forcing-house are in flower, it will be necessary to exercise due caution to prevent any injury to the blossoms. A stagnant moist atmosphere is exceedingly injurious, and should by all means be avoided. The hot-water pipes should be kept warm by day as well as at night; air must be admitted freely by day, and the ventilators should also be left open a little at night, unless a frosty wind should be blowing. When the fruit is set the trees should be thoroughly syringed in the morning with tepid water, and this operation should be daily repeated; the temperature at night may be 55°, but in the case of Peach and Nectarine trees injury may accrue from too much artificial heat. If there are Strawberry plants on the shelves these must be well syringed underneath the leaves at the same time as the Peaches: the object in each case is to deter red-spider from attacking the leaves. The syringing of course causes a moderately moist genial atmosphere, which suits the trees very well after the fruit is set and is swelling freely. It is a sign of a healthy state of matters when the leaves are edged in the morning with a row of dewdrops. In the later house the buds are now swelling rapidly, and there are plenty of blossom-buds, but little need be added to previous cultural remarks. The trees merely require attention as regards watering at the roots; if any one of them should become over dry at this time the result would be to lose the crop of fruit for this season. Previous remarks have had special reference to Peach and Nectarine trees, but the Apricot may be grown in pots under glass, and the fruit obtained is of exceedingly good quality. The trees come into blossom the earliest of all, and for this reason alone it is desirable that they should be under a glass shelter; the trees ought not to be syringed at all, as not only do they prefer a drier atmosphere than the Peach, but the leaves are not attacked by red-spider. The Plum and Pear require very similar treatment. I have found the blossoms fail to set in bad seasons, when the blossoms on the Peach trees have set fairly well; some varieties are worse than others in this respect. When I first began the culture of orchard-house trees, the Peach and Nectarine had the part of the house most freely exposed to the sun, but years of experience has proved to me that the Pear, Plum, and Apricot should have the best position when the trees are in flower; it is easy enough to remove them to another place when the fruit is fairly set. Usually there is only one compartment for all kinds of fruit, but it is better if one compartment can be reserved for Peaches and Nectarines, and another for Pears, Plums, and Apricots. *J. Douglas, Loxford.*

Orange-house.

If any of the trees require repotting it may yet be done. I have sometimes repotted them after the fruit has been set, but in that case the roots must not be injured. I have seen the following compost for Orange trees recommended on good authority, viz., one part rotten manure, one part leaf-mould, and two parts turfy loam: this I consider far too rich. Four parts of turfy loam to one of rotten manure, with a small portion of half-inch bones, answers better; bone manure is very suitable for Orange culture. Do not over-pot, shift from an 11-inch pot to a 13-inch, or from a 13-inch to a 15-inch, and the trees may remain in that size for at least three years; continue to apply surface-dressings as the trees require it. Manure-water is also beneficial when the fruit is swelling. When the trees have been potted root-action will be much promoted if the trees can be placed over a hot-bed with a gentle heat; the pots should not be plunged into, but simply stood on the bed. *J. Douglas, Loxford.*

PLANT HOUSES.

Orchids.—Many of those deciduous or semi-deciduous plants which take a decided rest during the winter months will now commence to grow, and must therefore be kept no longer under the resting treatment. Such plants as Anguloa Clowesii, A. Ruckerii, A. uniflora, Chysis bractescens, C. Limminghii, C. aurea, C. lævis, and C. Chelsoni, throw their flower-buds up along with the young breaks, and should, therefore, not be disturbed at the roots by potting or basketing till after the flowers have faded. Keep the Anguloas still in the intermediate-house, but the Chysis should be suspended in the Dendrobium-house so as to get abundance of light, heat, and air. Water often enough to keep the roots of all the plants mentioned moist. All members of the Mormodes, Catasetum, and Cycnoches family should now be shaken out of their old compost and be repotted into equal parts of peat and sphagnum. The pots ought to be half-full of crocks, and all long heavy bulbs will require a stake and tie to hold them firm. Mormodes luxatum and M. Greenii do best in the Cattleya-house; all the other kinds delight in a strong heat and a clear light while growing For the next few weeks water sparingly; then, if the new roots have run through the compost, give abundance. Thunia Bensoniæ, T. Marshallii, T. alba, T. nivalis, and T. (Phaius) Dodgsoni must now be shaken out from their old compost and be repotted. Three-parts fill the pots with drainage, over which place a layer of fibry loam with peat and sphagnum above. The roots will find out the loam, to the benefit of the plants, about the time the flower-buds show. Place these Thunias so that the tips of the old bulbs nearly touch the roof-glass in the Dendrobium-house. Where such bulbs are over long arch them over at top and tie them down, so that the young breaks at their base may be got nearer the glass, for unless these get a maximum of light flowering is out of the question. As with the Mormodes, &c., so with these as regards watering. Calanthe Veitchii and the varieties of C. vestita should now be potted up in a mixture of two-thirds loam, one-third peat, and the addition of a little drift-sand. Give good drainage, and place the plants in a light position in the East Indian-house. Limatodes rosea should be treated the same. This plant has been, and is, rather snuffed out by the more robust C. Veitchii, but it possesses a delicate pink colour of its own, a very compact inflorescence, and is altogether a charming Orchid. Where Peristeria elata and P. cerina have been wintered in the intermediate-house they should now be placed in a few degrees more heat, and receive a growing treatment. So soon as Ipsea speciosa and Spathoglottis Lobbii have passed out of flower let them be repotted or repanned, using a mixture of peat, chopped sphagnum and sand, with plenty of drainage. Both plants require abundance of heat and water. The singular and handsome Vanda Cathcartii now flowering is one of those Orchids that is rather particular as to position and treatment. It will grow luxuriantly if trained up the outside of a teak-rod cylinder and placed in a hot moist corner of the East Indian-house. This plant will take as much heat and moisture as a Nepenthes. The same may be said of the beautiful Dendrobium M'Carthiæ, which, in fact, speedily dwindles away under any other treatment. No time must be lost in top-dressing with fresh sphagnum such plants as Saccolabiums, Phalænopsis, Aerides, Angræcums, &c., for with an increase of daylight and sunshine their roots will soon send forth those young tender growing points which a slight touch will either injure or break. The present is an excellent time to give more root-room to any of the cool Orchids requiring such, and which are not flowering. The young stock of Odontoglossums, Masdevallias, and Oncidiums should be first seen to, as many of the older established plants will be passing through their flowering season, during which it is unwise to disturb their roots. Such plants are best potted about a week after they have done flowering. All plants that have root-room enough to carry them till next September will now only need top-dressing. The potting of cool Orchids should be so regulated that few or no plants have to be shifted during the heat of summer, as that is to them a very trying season, through which many of them are far more inclined to rest than to grow. That curious flowering plant, Nanodes Medusæ, must now receive liberal and frequent waterings. It is a very difficult thing to import and establish, but when once rooted in well drained peat and sphagnum, and kept constantly cool and moist, it will grow and flower freely. The flowers, which are large, and which last longer in perfection than any other Orchid I am aware of, are produced on the ends of the leafy growths; the full beauty of such can only be seen by looking through them towards a good light; for this reason the plants should be suspended in pans or baskets. Immediately Pleione humilis and Hookeri pass out of flower let them be done up in shallow pans of peat and sphagnum, and suspended near to a roof-ventilator of the cool-house. Any plants of Cymbidium Mastersii or C. affine that require potting must at once be seen to. Pot them in the mixture recommended for Calanthes, using rather large pots, and they will make clean strong growths and splendid spikes. The white variety of the former, lately named alba, is without doubt a superb old Orchid. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

The present is the best time to turf bare spaces under trees in towns. If it is done in the autumn the soot and filth that fall off the trees during the winter kill the grass, and it has to be done over again. Sow a little grass seed on lawns where the grass has become thin, and also a little Dutch Clover, but make the sowings separately, as if done together the Clover seed, being the heaviest, will all settle in one place. Where lawns have been top-dressed it is necessary that they should be bush-harrowed, or raked over with a short-toothed rake, before they are rolled, to work the top-dressing well into the roots of the grass and also to let the young blades of grass through where the top-dressing is caked. Beds that are intended for sub-tropical plants should have special attention now. If they are not drained they should be. Musas and Cannas, although great lovers of water, should nevertheless have good drainage, so that the water may freely percolate through the soil to keep it sweet. Bedding Pelargoniums should now be potted off into large 60-sized pots. Commence with the variegated section first, these being the tenderest, next the pink section; and thirdly, the scarlets. Propagate Coleus, Iresine, Mesembryanthemums, and all other tender bedding plants, without delay, with the exception of Alternantheras, and they should not be put in until the end of March or the beginning of April. The cuttings of Alternantheras are taken off for winter stock in August, struck in shallow pans plunged in a dung-bed. When they are struck, which will be in the course of a fortnight or three weeks, each cutting is pinched back to two joints; then in the course of another fortnight, having made two fresh shoots, they are potted off, five in a 48-sized pot, in a compost of yellow loam, leaf-mould, and a little silver-sand, placing them again on the manure, when in the course of a short time they are well established, and prepared to stand the winter. In the beginning of October they are placed on a shelf near the glass in a warm greenhouse, and there they remain till the beginning of February, when they are placed in a heat of 60° or 70° as the season advances. By the last week in March or the first week in April they will have made good growth, so that strong cuttings may be taken off, for small miffy cuttings are worse than useless. The cuttings are then taken off and inserted in a compost of loam and leaf-mould, adding a little silver-sand, in shallow pans, and plunged in a dung-bed. After the first batch of cuttings are struck the old plants are thrown away, for better cuttings are obtained from the young plants, which are then potted off in small 60-pots in a compost of leaf-mould and yellow loam, and plunged in a bed of new Hops, already prepared, there to remain until they are required for bedding out, but in the meantime they are given plenty of water and exposed to the full sun and air when favourable. By this mode I have grown A. amœna 6 to 8 inches in diameter, and well coloured; and magnifica, amabilis latifolia, paronychioides, and paronychioides major much larger. Any one who has not tried Hops, I would advise to do so. *W. Gibson, Royal Hospital, Chelsea, S.W.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	Mar. 1	Sale of Lilium auratum, Krameri, and Mediolodes and other Japanese Bulbs, at Stevens' Rooms. Sale of Japanese and English-grown Lilies, Orchids, &c., at the Mart, by Protheroe & Morris
TUESDAY,	Mar. 2	Clearance Sale of Nursery Stock, at Lang's Nursery, Teddington, by Protheroe & Morris. Clearance Sale of Nursery Stock, at Cobbett's Nursery, Horsell, Woking, by Protheroe & Morris
WEDNESDAY,	Mar. 3	Sale of Standard and Dwarf Roses, Fruit Trees, Shrubs, Gladioli, &c., at Stevens' Rooms.
THURSDAY,	Mar. 4	Meeting of the Linnean Society, at 8 P.M. Sale of Established Orchids, Camellias, &c., at Stevens' Rooms.
FRIDAY,	Mar. 5	Clearance Sale of Nursery Stock, at Mann's Nursery, Brentwood, by Protheroe & Morris.
SATURDAY,	Mar 6	Sale of Hardy Plants and Bulbs, &c., at Stevens' Rooms.

THE effects of UNINTERRUPTED SUNLIGHT on PLANTS! Such is the title of an article in a recent number of *Nature*, which must prove rather exasperating to gardeners, who to their loss know more of the effects of uninterrupted sunlessness than of the opposite condition. Nevertheless the article in question, which is based on the observations of Dr. SCHUBELER, of Christiania, is one well worth attention. Dr. SCHUBELER, whose name and works are well known to physiologists and plant lovers in this country, undertook some experiments with the special view of noting what effect the almost unbroken sunlight of the short Scandinavian summers had on plants raised from foreign seed. The experiments were made with samples of Wheat obtained from Bessarabia and from Ohio, and in both cases we are told it was found that the colour of the grain gradually acquired each year a richer and darker hue, until it finally assumed the yellow-brown tint of other home-grown Norwegian winter Wheat. Similar results were obtained with Maize, different kinds of garden and field Peas and Beans, Celery, Parsley, &c. In almost all cases the common garden flowers of Central Europe gain in size and intensity of colour when transferred to Norway. These differences become more marked the further north we go, exactly as happens in the case of plants growing on the lower and upper parts of a mountain respectively.

Not only is the colour intensified, but the aroma of all wild and cultivated fruits capable of cultivation is much greater than that of the same fruits when grown in more southern countries. The Norwegian Juniper, for instance, yields a much larger amount of essential oil than can be obtained from the shrub when grown in Central Europe. The excess of aroma, however, is, it seems, accompanied by a deficiency in sweetness; thus the Golden Drop and Green Gage Plums grown in Norway, though large, well-coloured, and rich in aroma, are so deficient in sweetness as to appear unripe to those who have eaten these fruits in France or Germany. Dr. SCHUBELER quotes Dr. GOEZE, who resided at Coimbra for some years as Curator of the Botanic Garden, to the effect that the Portuguese Strawberries are large, extremely sweet, but almost wholly deficient in aroma and flavour. A similar remark is applicable to the Portuguese wines when compared with the highly flavoured yields of the Rhenish and other northern vineyards, whence the conclusion that light bears the same relation to aroma that heat does to sweetness. When, as happened last year, we had little heat and less light, it is no wonder that our fruits were defective alike in flavour and sweetness. Some of our most savory herbs and plants become uneatable in Norway from the increased development of the flavouring principle. Celery grown in Norway in the same manner as in England, and presenting no difference in outward appearance from samples sent direct from Covent Garden, was nevertheless so sharp and unpleasant to the taste as not to be relished, and the same remarks apply to Garlic, Onions, &c. This may perhaps in part be accounted for by different conditions of soil or manuring.

These facts, be their interpretation what it may, have been observed by Dr. SCHUBELER and his associates for the last thirty years, and they warrant him in recommending the culture of certain plants, as Linseed, Lavender, &c., in various parts of Norway. Among other curious observations recorded by Dr. SCHUBELER may be mentioned the fact that leaves of Acacia lophantha grown in the polar regions never contracted their leaves during the two months or longer that the sun remained above the horizon. One half of an Acacia was shaded during the night, with the result that the shaded leaves began shortly to contract and remained closed till the plant was again wholly exposed to the midnight sun, when after a time the leaves began slowly to unfold.

Dr. SCHUBELER'S general conclusions are thus given:—

"1. The grain of Wheat that has been grown in low-lying lands may be propagated with success on the high fjælds, and will reach maturity earlier at such elevations, even although at a lower mean temperature. Such grain, after having been raised for several years at the highest elevation which admits of its cultivation, is found when transferred to its original locality to ripen earlier than the other crops which had not been moved. The same result is noticeable in grain that has been transported from a southern to a more northern locality, and *vice versâ*.

"2. Seeds imported from a southern locality, when sown within the limits compatible with their cultivation, increase in size and weight, and these same seeds, when removed from a more northern locality to their original southern home, gradually diminish to their former dimensions. A similar change is observable in the leaves and blossoms of various kinds of trees and other plants. Further, it is found that plants raised from seed ripened in a northern locality are hardier, as well as larger, than those grown in the south, and are better able to resist excessive cold.

"The further north we go—within certain fixed limits—the more energetic is the development of the pigment in flowers, leaves, and seeds. Similarly the aroma, or flavour of various plants or fruits, is augmented in intensity the further north they are carried within the limits of their capacity for cultivation; conversely, the quantity of saccharine matter diminishes in proportion as the plant is carried further northward."

The practical conclusions to be drawn from these experiments are numerous and too obvious to need special reference; but in view of the proved fact that, by the use of the electric light, the same changes in the physiological action of the leaves are produced as by the sun's agency, we again call attention to the desirability of fully testing the application of this source of light for purposes of forcing. Heat and moisture are at command; light has hitherto been much less so. Will not some electrician, with a taste for horticulture, endeavour to intensify the colour of forced flowers and to heighten the flavour of forced fruit? The means of carrying out such experiments as would be needed are not within the reach of many, but our horticultural societies and physiological laboratories might surely find interesting and profitable results in their prosecution.

—— BOTANICAL AND HORTICULTURAL CONGRESS AT BRUSSELS.—In connection with the Horticultural Exhibition which is to take place in Brussels from July 23—26 next, during the *fêtes* commemorative of the fiftieth anniversary of Belgian independence, it has been decided to organise a Congress. The Congress will be held in the Botanic Garden, and the subjects for discussion will be of a practical nature relating to botany and horticulture. The Congress is promoted by the Royal Botanical Society of Belgium and the Royal Linnean Society of Brussels, the secretaries being M. BERNARD and M. F. CRÉPIN, to either of whom communications should be addressed at the Botanic Garden, Brussels. The subjects proposed to be treated of are the following:—

The best method of drawing up monographs of large genera.
The best method of reproducing the imprints of fossil plants.
Organisation of a botanical school for teachers.
Arrangement of collections of vegetable products in botanic gardens.
Arrangement and preservation of herbaria.
The best system of labelling for botanic gardens, parks, nursery gardens, and pleasure gardens.
The best method of growing bulbous plants.
The foundation and maintenance of lawns.
The culture of alpine plants.
The effects of the winter of 1879-80, and the precautions necessary to protect plants against severe frosts.
Shading of plant-houses.
Instruction in botany in primary and middle schools.
Botanical museums for schools.
Modifications in the nature of the awards made at horticultural exhibitions.

—— MARKET GARDEN SUPPLIES.—If a stranger to the everyday life of our metropolis were to take his stand in the chief western thoroughfare leading to the market garden districts, say in the town of Brentford, for instance, he would not fail to remark, upon any Saturday, commencing about mid-day, and continuing almost without intermission till night, the remarkable stream of market waggons and carts, all heavily laden with manure and empty baskets, returning from London to their suburban homes. The to him unwonted spectacle would not improbably lead to the paraphrasing of MACAULAY'S lines thus:—

"The long stream of market wains
Roll down the western street."

The big horses lumber along, tired and dirty; the drivers are weary and sleepy, for none of them have seen bed for perhaps thirty-six hours, and will be only too pleased when they reach home, and can find the slumber and repose Nature so much needs. These hundreds of vans have brought in from the numerous localities of Isleworth, Hounslow, Twickenham, Hanworth, Feltham, Cranford, Harlington, Stanwell, Sunbury, and several other Middlesex parishes, the part produce of thousands of acres of fertile soil devoted to the production of vegetables and fruit for the sustenance and well-being of the teeming millions of the metropolis. With a population increasing at a marvellous rate, with new streets, squares, and habitations fast covering the areas once devoted to the culture of garden products for past generations, forcing the growers farther and farther into the country, comes a necessary increase in this remarkable traffic, for both quantity and mileage must grow with the necessities of the case. Even whilst our market growers are sending into London in their waggons their thousands of tons of good wholesome, healthy food, so also do they in a large way act as sanitary scavengers, carting out (unfortunately, in the very same waggons) from the midst of the dense population thousands of tons of manure that otherwise would but become a nuisance and a curse, but which, carted into its proper place—on to the fruitful land—in the course of Nature evolves life-giving food and blessings for our vast town people.

—— THE KINGDOM OF MEDINA. — Official advices have been received at the Liberian Consulate-General of the annexation by the Republic, on mutual and peaceful terms, of that vast and important country adjoining the interior frontier of the Republic, known as the kingdom of Medina. Medina abounds in the richest of African productions; there are thousands upon thousands of acres of gold and iron fields; its forests are teeming with Ebony, Palm, gum, and rubber trees, while the now well-known Liberian Coffee tree is found growing spontaneously to the height of 30 and 40 feet. In this new acquisition Liberia has opened still wider the door into the interior of Central Africa. The Medina Bopora country, with its 700,000 souls, will, with the exception of the Coffee plantations on the St. Paul's River, form the richest and most populous portion of the Republic. Extraordinary impetus has lately been given to agricultural pursuits in Liberia, owing to the great demand for Liberia Coffee seeds and plants in almost every Coffee-growing country.

—— HORTICULTURE AT SINGAPORE.—We learn from the *Straits' Times* of January 10, that the first annual exhibition of the Singapore Horticultural Society, held on December 30 and 31 last (about which we gave some particulars at p. 659 of our last volume), was a complete success in all but the attendance of visitors, which, owing to unpropitious weather, was somewhat limited. It appears that "the great feature of the show in the competitive classes was undoubtedly the fine-foliaged Begonias. The plants were magnificent, and no one unacquainted with the luxuriance of tropical vegetation could possibly form any idea of their gigantic proportions." There seems also to have been an excellent competition in the classes for three and six Ferns; and the writer of the *Straits' Times* report remarks with reference to them:—"Perhaps in no place in the East is so much attention paid to the cultivation of Ferns as in Singapore, and it is a gratifying fact that a very great desire is springing up amongst the residents here to learn the names and all particulars regarding this beautiful class of plants. The display on this occasion could not have been surpassed in any metropolitan show, and after three years' experience of exhibitions at Regent's Park, the Crystal Palace, and other places in London, the writer is bound to confess that nothing he has ever seen there could surpass the grand collection displayed here." It is interesting to read further on that there is a Mr. MILES at Singapore, as in Buckinghamshire, who can grow Cabbages sufficiently well to obtain the 1st prize, but not so cheering to learn that no prizes were awarded in the class for a collection of European vegetables. However, "in the next class, which was for native vegetables, TAN KOH, gardener to E. KOEK, Esq., exhibited a nice collection, comprising most of the kinds grown by the natives here, and which deservedly secured the 1st prize. TAN KOH also secured the 1st prize for both white and red Sweet Potatos with very large tubers. An honourable mention was awarded to the Venerable Archdeacon HOSE for a basket of Jerusalem Artichokes, very creditably grown for this climate. In the class for fruit a good deal of competition was shown, Captain ROSS securing 1st prize for Pumelows: they were two beautiful, thin-skinned, well-flavoured fruits. E. KOEK, Esq., was awarded the 1st prize for Plantains, for a fine sample of the var. Rajah; M. RIBEIRO, Esq., following, with a larger but insipid sample of the var. Tandok. The Hon. H. A. K. WHAMPOA, C.M.G., gained the 1st prize for twelve Oranges, and J. F. NICHOLSON, Esq., was awarded the 1st for Mangosteens. The Rambutans were under the average. Two lots of Durians were contributed, the 1st prize falling to A. C. MOSES, Esq., for two highly smelling specimens. Three collections of fruit were exhibited and were very interesting, consisting of Rambutans, Polesans, Sentoels, Rokums, &c. The show was greatly enhanced by a collection of 150 specimen plants sent by H. H. the Maharajah of Johore, K.C.S.I., who has taken a warm interest in the Horticultural Exhibition. The collection occupied a considerable portion of the centre stage, and was remarkably well grouped. Few places in England could have brought together such a grand display — magnificent Crotons, Coleus, Begonias, &c., of enormous dimensions and well coloured. The Ferns were beyond description, consisting of masses of Adiantum, notably A. amabile, 7 feet through; also a crested variety of Nephrolepis davallioides, of which there were three plants still larger, and enormous Tree Ferns. Rare Caladiums and fine-flowered Roses, with others too numerous to mention, made up a lot of plants, forcibly reminding one of the specimens that used to be exhibited in London and the provinces by BAINES, COLE, and others; and too much praise cannot be given to Mr. HUTTON, head gardener to H. H., for the very effective way in which he arranged the collection, under the personal direction of H. H. himself. The Honourable H. A. K. WHAMPOA, C.M.G., one of the members of the committee, also sent some examples of Chinese modes of training plants, which were much appreciated."

FIG. 50.—ABIES VEITCHII: BRANCH WITH CONES, NAT. SIZE; BRACTS, SCALES, AND SEEDS, MAGN. TWICE; TRANSVERSE SECTION OF LEAF, MAGN. TEN TIMES. (SEE P. 275.)

—— APPLES FOR CULTIVATION FOR MARKET.—There are three varieties in particular that are strongly recommended for this purpose by such a renowned fruit cultivator as Mr. FRANCIS N. DANCER, Little Sutton, Turnham Green—viz., Ecklinville Seedling, an Irish Apple, raised more than half a century ago near to Belfast, bearing large and handsome fruit—an excellent culinary Apple, and a free and reliable bearer, in use during the last three months of the year; Stirling Castle, a valuable early variety for culinary purposes, coming into use early in August, and bearing immense crops of fruit; and Warner's King, a very favourite culinary Apple of the

finest quality, bearing large and weighty fruit, in use from November till March. Stirling Castle is an Apple that is well adapted for culture in the bush form, and is therefore suited for small gardens. In a villa garden, where there is but limited space, and a good and useful selection is necessary, the three foregoing varieties would suffice to keep up a supply, beginning with Stirling Castle, following with Ecklinville Seedling, and finishing up with Warner's King. The value of these three varieties for market purposes lies in the fact that the trees bear in a young state, they crop heavily and pretty constantly, while the fruit is in each case of taking appearance and fine quality. In such a case as this, the lead of an authority and enterprising pomologist as Mr. DANCER is well worth following.

—— SEA SAND FOR CUTTINGS.—Mr. CANNELL calls our attention to the value of this material for striking cuttings, and certainly the sample of Coleus he sends struck some in sea sand some in ordinary pit sand show that the superiority is with the sea sand. We are assured that the sand has been in no way prepared prior to using, so that the notable quantity of salt it must contain cannot have injured the plant, nay in some cases it may have a distinct manurial value, while in other cases it may prove injurious.

—— ORCHIDS IN FLOWER AT BEARDWOOD.—The following Orchids are now in flower in the fine collection at Beardwood, Blackburn, the property of R. DODGSON, Esq. Cattleya Trianæ is well represented, and especially the variety named after the owner, which is remarkably fine. It has in all seven flowers, with the sepals and petals white, the lip a beautiful deep crimson, and the throat orange-yellow. Some of the flowers have measured over 8 inches in diameter. This is undoubtedly one of the finest of the Trianæ section :—

Cattleya quadricolor
,, amethystoglossa
Cœlogyne cristata, fifty fine spikes
Cypripedium insigne
,, Lowii
,, Roezlii
,, Sedeni ×
,, villosum
,, barbatum
,, Harrisianum
,, Dayii
Dendrobium nobile
,, crassinode
,, heterocarpum, deliciously sweet
,, Pierardi
,, thyrsiflorum
,, lituiflorum
,, Freemani
,, Wardianum
Lælia Lindleyana
Masdevallia ignea
,, Veitchii
,, Harryana
,, ,, cœrulescens
,, splendens
,, Bella
Odontoglossum Alexandræ, many fine varieties, well flowered
,, Hallii, several
,, Pescatorei, several
,, cirrosum, fine
,, Bictonense
,, Rossii major
,, roseum
,, Uro-Skinneri
,, angustatum
Phalænopsis Schilleriana, fine var.

—— HELLIWELL'S SYSTEM OF GLAZING has, according to a Jersey paper, been adjudged the 1st prize in the competition for plans for the construction of the new market at St. Heliers. The 2d prize went to Messrs. BROMILAW & CHEERS.

—— ORCHIDS IN FLOWER AT MR. BULL'S.—The ollowing Orchids are now in flower at Mr. WILLIAM BULL'S Establishment for New and Rare Plants, King's Road, Chelsea. The Cattleyas, Odontoglossum odoratum, and the rare Odontoglossum Ruckerianum, are very fine :—

Ada aurantiaca
Cattleya Trianæ
,, ,, grandis
,, ,, magnifica
,, ,, rosea
,, ,, splendens
,, ,, tyrianthina
,, Warscewiczii delicata
Cœlogyne flaccida
Cymbidium Lowianum
Cypripedium Bullenianum
,, Dayanum
,, Harrisianum
,, villosum
Dendrobium crassinode
,, Devonianum
,, fimbriatum oculatum
,, Findleyanum
,, luteolum
,, nobile
,, ,, cœrulescens
,, ,, pulcherrima
,, ,, Wallichii
,, Wardianum
Dendrochilum glumaceum
Helcia sanguinolenta
Lælia anceps
Lycaste Skinneri
Masdevallia amabilis
,, Harryana cœrulescens
,, ignea
,, Veitchiana
,, ,, gigantea
Odontoglossum Alexandræ (crispum)
,, Chestertoni
,, cirrosum
,, gloriosum
,, Hallii
,, maculatum
,, odoratum
,, Pescatorei
,, Roezlii alba
,, Rossii majus
,, Ruckerianum (fine)
,, triumphans
Oncidium Cavendishianum
,, Forbesii
,, fuscatum
,, Kramerianum
,, reflexum
,, sarcodes
,, serratum
Pilumna fragrans
Restrepia antennifera
Saccolabium violaceum

—— "NEW COMMERCIAL PLANTS." — Mr. CHRISTY has issued a third part of this publication. It will be seen that some of the plants mentioned can scarcely claim to be called new. They are—Teosinté, or Euchlæna luxurians ; Tagasaste, or Cytisus proliferus ; Symphytum asperrimum, Lailemantia iberica, a new oil plant, from the Levant ; Maté, or Paraguay Tea ; the Kola-nut tree, Cola acuminata ; Coca, or Erythroxylon Coca ; Pituri, or Duboisia Hopwoodi, a stimulant narcotic, from Queensland, the active principle of which is said to be identical with nicotine ; the Papaw-tree, Carica Papaya ; Japanese Peppermint, Mentha sp.; the Cow-tree, Galactodendron utile ; Mahwah, the flowers of Bassia latifolia ; Chaulmagra oil, Gynocardia odorata, &c.

—— BARGAINS.—Those who are fond of bargains, wish to be well served, and to obtain novelties not known to the trade, will do well to consult the *Bazaar*. From the issue of that journal for January 21, 1880, we cull the following advertisements of garden produce—paid for, we presume, at the usual rate of 4*d*. for twelve words :—"Nice bulbs of the Indian Shot-plant, very ornamental, and produces masses of white flowers bearing shot-like seed resembling bullets—a great novelty." We should think so. Here is another :—"Novelty in Roses.—Empress of India : blossoms 24 inches in circumference, colour rich velvet-crimson. Strong plants, price 2*s*. each, free." Another advertiser "can still spare some well rooted plants of the Empress of India, which grows 2 feet in circumference ; also the new black Rose, both great novelties ; 2*s*. 6*d*. each, free, or the two together for 4*s*." The black Rose seems to be plentiful ; here is another offer :—

"The wonderful black Rose, each petal positively rich black : strong plants, 2*s*. 6*d*. each. Also the largest Rose in the world, produces flowers 24 inches in circumference, and very double. Plants 2*s*. 6*d*. each. One good plant of each of the above free for 4*s*."

A "new and beautiful scarlet Passion-flower for window or greenhouse, almost hardy, and large double flowers, nice litttle plants," is offered by the same lady who deals in white-flowered Indian shot-plants with shot-like seed resembling bullets.

Novelties.—The wonderful new Bean, Bolster-case : produces pods from 9 inches to 12 inches in length, look like long Cucumbers hanging from the stalk : delicious vegetable. Twelve Beans free for 1*s*. 6*d*. Also the new Pea, Cleopatra's Needle : grows pods 6 inches or 7 inches in length, and an enormous size. Thirty-six Peas free for 1*s*. 2*d*."

"Scarlet Musk: one, 1*s*.; two, 1*s*. 10*d*.; three, 2*s*. 6*d*., hardy strong roots, free."

"American Healing: cures all bruises, swellings, burns, &c.; evergreen, hardy. One root, 1*s*. ; or three, 2*s*., free."

We are far from asserting that all the advertisements are of the same character. We have simply picked out a few curiosities, inserted, no doubt, in good faith, but, for all that, rather calculated to mislead.

—— ORCHIDS IN BLOOM.—The following Orchids are now in flower at Messrs. JAMES VEITCH & SONS' Royal Exotic Nursery, Chelsea :—

Ada aurantiaca
Angræcum citratum
,, sesquipedale
Calanthe nivalis
,, Turneri
,, Sieboldii
Cattleya amethystoglossa
,, maxima
,, Trianæ, in variety
Cœlogyne cristata
Colax jugosus
Cypripedium Argus
,, Dayanum
,, Harrisianum superbum ×
,, Lowii
,, porphyreum ×
,, Sedeni ×
,, villosum
Dendrobium Ainsworthii ×
,, crassinode
,, chrysotoxum
,, Dominii ×
,, endocharis ×
,, Farmeri
,, fimbriatum oculatum
,, micans ×
,, Findleyanum
,, Pierardi
,, primulinum
,, ,, giganteum
,, splendidissimum ×
,, Wardianum
,, nobile
Dendrochilum glumaceum
Lælia cinnabarina
Lælia harpophylla
,, albida salmonea
,, anceps
Lycaste Skinneri
,, ,, alba
Masdevallia amabilis
Odontoglossum Alexandræ
,, Andersonianum
,, Cervantesii
,, Alexandræ maculatum
,, caudatum
,, cirrosum
,, gloriosum
,, Jenningsii
,, pardinum
,, Pescatorei
,, pulchellum
,, prænitens
,, odoratum
,, roseum
,, Roezlii
,, ,, album
,, Rossii
,, triumphans
,, maculatum
Oncidium serratum
,, unicorne
Phaius Bernaysii
,, grandifolius
,, maculatus
Phalænopsis amabilis
,, grandiflora
,, Schilleriana
Sophronites grandiflorum

—— ROYAL CALEDONIAN HORTICULTURAL SOCIETY.—The dates selected for holding the spring, summer, and autumn exhibitions of this Society, in the Waverley Market, Edinburgh, are April 7 and 8 ; July 7 ; and September 8 and 9.

—— LIBERIAN COFFEE.—In an official report on a survey of the west and interior of Liberia, made by order of the United States Government, Captain VREELAW, of the United States Navy, in speaking of the Liberian Coffee, says :—"Some plantations have as many as 200,000 trees, producing from one to four and sometimes 12 lb. per tree, worth at Monrovia eighteen cents per pound. The tree produces in its third year, and thence on to thirty years. Estimating 450 trees to the acre, and a yield of 4 lb. per tree, we have at the end of the seventh year 324 dols. per acre annually. The labour for this production is small, the rains are abundant, and with simple machinery, invented and made in America, the berry is extracted from the hull. *Colonies and India.*

—— CANTERBURY AND EAST KENT ROSE SOCIETY.—The second exhibition of this Society will be held in the Corn Exchange, Canterbury, on July 1.

—— OXFORD ROSE SOCIETY.—The twenty-ninth annual exhibition of this Society will be held on July 6, and, by permission of GEORGE HERBERT MORRELL, Esq., in the beautiful grounds of Headington Hill Hall.

—— WEST KENT HORTICULTURAL SOCIETY.—On Saturday, July 10, the annual exhibition of this popular Society will be held in Camden Park, Chislehurst.

—— SOUTHAMPTON HORTICULTURAL SOCIETY.—The summer show of this Society will be held on July 31 and August 2 ; and the autumn display on November 16 and 17.

—— FAREHAM and SOUTH HANTS HORTICULTURAL SOCIETY.—The date fixed for holding this Society's annual exhibition is Wednesday, July 7.

—— PUBLICATIONS RECEIVED.—*Handbuch der Botanik.* Von Dr. N. J. C. MÜLLER, Erster Band (WILLIAMS & NORGATE). — *Illustrirtes Garten Lexicon.* By TH. RÜMPLER (WILLIAMS & NORGATE). For those who read German this promises to be a valuable garden dictionary, including articles on garden plants, garden constructions, and on the sciences pertaining to gardening. It is well illustrated with numerous cuts.—*Les Orchidées, &c.* Par E. DE PUYDT (ROTHSCHILD, Paris ; DULAU & Co., London). A companion volume to the *Palms* of M. DE KERCHOVE. We shall have further occasion to speak of this fine volume.—*La Culture Maraichère.* Par A. DUMAS (Paris, ROTHSCHILD ; London, DULAU & Co.).—*La Pisciculture*, par JULES PIZZETTA ; *et L'Ostreiculture*, par M. DE BON (Paris, ROTHSCHILD ; London, DULAU & Co.).—*Pathologie des Poissons.* Par MICHEL GIRDWOYN (Paris, ROTHSCHILD ; London, DULAU & Co.).—*A Year's Work in Garden and Greenhouse.* By G. GLENNY (CHATTO & WINDUS).—*The Cotton Worm.* By Professor C. V. RILEY (Department of the Interior, Washington, U.S.A.)—*The Sugar Beet.* By L. S. WARE (LOW & Co.).

—— THE WEATHER.—General remarks on the weather during the week ending February 23, issued by the Meteorological Office, London :—The weather during this period has been showery, squally, and unsettled generally ; a clear sky was, however, experienced in most places at frequent intervals. The temperature was 4° above the mean for the time of year in the East and West, and 3° above in all other districts. Some rather high maximum readings were registered at the inland English stations on the 18th, the thermometer rising to 59° at Cambridge, 57° at Leicester, and to 55° in several other places. No verylow minima were observed, and scarcely any frost occurred. The wind until the 20th was generally south-westerly, but by the 21st it had shifted to W., by the 22d to N., and continued to blow from the last-named point (except in Scotland) during the remainder of the period. The south-westerly currents varied in force from a strong breeze to a gale on nearly all our coasts, but the westerly wind was generally moderate or fresh, and the westerly current light in all parts of the country. The rainfall was slightly less than the mean in "Ireland, N.," equal to it in "Scotland, W.," but rather more than the mean in all other districts. Smart showers of hail fell over the south-eastern counties between the 20th and 23d.

JAPANESE CONIFERS.—IX.

(*Continued from p.* 233.)

ABIES (Picea, Hort. Angl.) VEITCHII.*—Two or three plants, as we have already had occasion to remark, are called Abies or Picea Veitchii in the nurseries, which have no claim to such an appellation. Messrs. Veitch alone, so far as we know, are the happy possessors of living plants of this beautiful and very interesting Silver Fir. As modern botanists do not seem inclined (as we certainly are not) to follow Parlatore in "lumping" into one genus Pines and Spruces, Silvers and Larches, Cedars and Hemlocks, the name Veitchii may happily be retained for "this most remarkable species," which was described by Lindley under Abies, and not under Picea as supposed by Carrière. "I have named it," says Dr. Lindley, "after Mr. J. G. Veitch, whose great merit as a very energetic explorer of the vegetation of Japan it gracefully records." We should have been grieved to have had to disturb this arrangement, and are proportionately pleased to be able to retain in connection with so beautiful a species the name of its discoverer.

The plant has been well described from dried specimens by Murray (*loc. cit.*), and our figure (fig. 50) will suffice to convey an idea of its appearance; so that all that it seems necessary to add now is the account of the male inflorescence which is present in some of Mr. Maries' specimens, and which has not previously been observed.

Male catkins about ¼ inch long, raised on a stipes of equal length emerging from a scaly bud, the bud in question springing from the wood of the second year; anthers stalked, connective developed into a saddle-shaped flap, from the back of which projects a horizontally spreading or deflexed spur-like process. (Fig. 50.)

The disposition of the resin canals in the midst of the ground tissue of the leaf as in A. brachyphylla (see

FIG. 51.—ANTHERS OF ABIES VEITCHII, SEEN FROM THE BACK, FRONT, AND SIDE.

p. 557, vol. xii.), has been well described and figured by MacNab, and is in itself sufficient to distinguish the present species from A. homolepis (p. 823, vol. xii.), which in gardens has been mistaken for it. But the dense elegant feathery foliage, the blunt emarginate rarely acute leaves, the small erect obtuse cylindrical cones with concealed bracts, and the deeply falcate scales, all serve to render this species easily recognisable. Mr. Maries speaks of a green-coned variety and of a purple-coned variety, but this may possibly be an affair of age, season, or locality.

Schmidt, as we have seen (p. 589), considers A. sachalinensis to be a variety of this species, but if the reader will turn to the figure of that form as given at p. 589 of the present volume, he will, we think, agree with us in considering that, for garden purposes at least, the two are quite distinct, and Mr. Maries assures us that the two trees are widely different in habit and appearance, and in the length of the leaves. A. sachalinensis is a lowland tree, growing not only in Sachalin, but also on the south-east coast of Jesso, while A. Veitchii occurs on the central mountains of Japan rarely below 5000—6000 feet. It should, however, be said, that we have seen cones of A. sachalinensis from Mr. Maries since we saw those figured at p. 589, and that these cones, in form and in the degree of prominence of the bracts, offer intermediate stages between true Veitchii, in which the bracts are all shorter than, and therefore concealed by, the scales, and true sachalinensis, in which the bracts are all prominent. The leaves of the young sterile branches of Veitchii are much longer and more slender than those on the cone-bearing branches, and hence resemble those of sachalinensis. While, therefore, for garden purposes we keep the two species distinct, we shall not quarrel with those botanists who regard the one as a variation from the other. If Maximowicz's nephrolepis be, as we believe from a comparison of the types that it is, the same as Veitchii, then the species in a wide sense has a rather extended range, from Sachalin to Yesso, Japan, and the mainland of Manchuria. *M. T. M.*

* (1861) ABIES VEITCHII, Lindley, Gard. Chron. 1861, p. 23!; Murray, Pines and Firs of Japan, 1863, p. 39, figs.!; Carrière, Traité des Conif. ed. 2 (1867), p. 399; Koch, Dendrologie, 2, 228 (1873); Franchet and Savatier, Enum. Plant. Japon i. 468 (1875).
Picea Veitchii, Gordon, Pinetum, ed. 2, 226 (1875).
A. nephrolepis, Maximowicz, Mel. Biol. 6, 22 (1866)!
A. sibirica var. nephrolepis, Trautvetter, ex Maximowicz, Primit. Flor. Amurens. 260 (1859)!
Pinus selenolepis, Parlatore in DC. Prod. xvi., ii., p. 427 (1868).
Pinus Veitchii, MacNab, Proc. Roy. Irish Acad. 1876, p. 687!
Hab.—In ins. Nippon, Fusi-Yama, ad alt. 6000—7000 ped., J. G. Veitch!; Oldham 813!; Maries! Hakodate, ubi culta, Maximowicz! Iter secund. Mandshuria austro-orient, Maximowicz! Ins. Sachalin, Schmidt?

Home Correspondence.

Wild Violets.—Few people would think that they could have too many sweet Violets about their grounds if they could have them without interfering with other flowers. There are many parts of the country in which Violets do not grow wild, or where the competition for the few which grow is such that it is difficult to get two or three in the scramble for them. Those who come to a new garden, if fond of Violets, generally plant some in their flower-beds, and assign perhaps a piece of rich deep soil in the kitchen garden to them. After flowering the first year they become an untidy luxuriant mass of leaves, bearing few or no flowers, and it is decided that the soil does not suit Violets. But observe where and how wild Violets grow and flower best, and you will perhaps see that the bank on which in March you gathered a bunch of fine Violets is in May a mass of the umbelliferous weed called Cow Parsley, or, still more likely, a luxuriant bed of Nettles. Violets do best where they have to compete with such plants as these for soil, and where they cannot grow thick, but have to creep about to look for a vacant spot amongst the shelter of taller vegetation. So dig up your thickly matted Violet roots in September, and plant a few where they were, to flower and increase again, and take the rest in baskets to plant on orchard banks, in corners under deciduous trees, near rubbish heaps, under Privet hedges, behind walls where Nettles grow; in fact, in any bit of waste ground you can find. Every country house has too many such spots. Where they become too luxuriant, thin them out again, and look for other places. In this way you may always have abundance of Violets in spring. *C. Wolley Dod, Grange-over-Sands, Lancashire, February* 24.

Cheshunt Hybrid Rose.—The committee of the National Rose Society has deemed it expedient to make a rule that this Rose shall no longer be shown in a box of Teas. Now what does this rule signify? It simply excludes the Rose Cheshunt Hybrid from being exhibited, except in a very rare case, in any box of Roses whatever, and this I think I can prove. It is with the rarest exception that you can exhibit Cheshunt Hybrid among twenty-four or thirty-six H.P.'s, for this reason, that when the Rose is large it generally becomes rough and coarse in the centre (although I have seen it exhibited with form equal to Alfred Colomb), and it is therefore useless in a collection of H.P.'s. Again, you cannot exhibit the Rose in the class to which it belongs by birth, viz., Hybrid Tea, because there is no such class at present, and even if there was there are not a sufficient number of Roses of this sort to make one. Perhaps we may have a class for these in time to come, when the Stapleford Roses and others are in the hands of the public; but this cannot be yet. Now why has this Rose been excluded from the Tea box? Because, as far as I can gather (and I have spoken to several nurserymen exhibitors of the Rose about it, as well as amateurs), certain gentlemen, supposed to be learned in Rose lore, do not like the Rose—*i.e.*, they do not like to see it in a box of Teas—they say "its colour spoils the *tout ensemble* of the Tea box." Now a great many people, and I think I am right in saying the bulk of exhibitors, think just the contrary—that the beautiful colour of Cheshunt Hybrid, in half-opened bud, not only sets off the other Teas, but is in itself a lovely Rose. I remember standing by a gentleman at one of the great Rose shows this last year, when he exclaimed, "What a lovely box of Teas, only it is utterly spoilt by Cheshunt Hybrid." I feel confident in my own mind it was Cheshunt Hybird that made the box "lovely;" for if it had been removed the box would have presented only one colour, or shades of one colour. I think—and many others think with me—that the committee have taken a leap in the dark; at any rate they might have waited till there were a sufficient number of hybrid Teas to form a class of their own before they cut off all chance of poor Cheshunt Hybrid seeing an exhibition tent again. Apart from exhibition this Rose is the most useful to have as a garden Rose—Gloire de Dijon always excepted. It is hardy, a profuse bloomer from early summer to late autumn; will grow as a standard, or climb on a wall in any position, and always furnish Roses to cut. *E. L. F.*

Broccoli.—Your correspondent, Mr. H. S. James, has drawn attention to a question of much importance to gardeners. Broccoli are literally cut to pieces here as elsewhere, and their loss will be severely felt this season, on account of the late supply of Cauliflowers being so soon cut off last November. At a rough guess, I should say that many gardens will be short of this much valued esculent for a period approaching six months during the present year. I am, however, astonished to find that Mr. James attaches so much importance to varieties. I have long ceased to notice the elaborate lists of things that differ little except in name to be found in trade catalogues. Those long lists and the pretty pictures that we so frequently see, are surely not intended to catch practical gardeners. I think climate, soil, situation, and the distance at which the plants are kept apart has more to do with the preservation of green crops that any advantage that is to be obtained from cultivating particular varieties. At the same time I do not ignore the hardiness of some kinds over others. Veitch's Self-protecting Broccoli has failed here as with Mr. James, but, generally speaking, we manure our ground too much, and for want of space plant out too thickly; the result being, that in a season like the past one our good intentions perish with the plants. It would be a great boon to gardeners, and an advantage to employers, if it were a recognised custom to have an auxiliary garden for rough vegetables minus the brick walls. The original cause of having kitchen gardens so inadequate in extent, was no doubt owing to the cost of walls. I am not so certain but that Brussels Sprouts, Broccoli, and other greens, would succeed better in spare gardens properly enclosed than they do within the precincts of brick walls. I am of course referring to gardens of inadequate size, where thick planting is practised as an absolute necessity. In low districts and in all damp situations I would prefer any open plot protected from cattle and vermin, such as hares and rabbits, for planting winter crops, with a view to their withstanding severe frost. We have two examples bearing upon the pointbefore us. There are two plantations of Broccoli within the kitchen garden proper—one is an open quarter, the other occupies an east border; the soil is deep and highly enriched in both cases, but the plants, as may be expected, have escaped the severity of the weather much better in the open brake. We have a third plantation outside the walled-in garden, in a poorer soil, which has escaped still better, proving how advantageous it is to make provision against contingencies that are always possible and never improbable. I have abundance of private communications from well-known practical friends bewailing the sad loss of vegetable crops. Why cannot we exchange experiences and opinions in your columns for the benefit of ourselves and others? *W. Hinds, Canford, Dorset.*

—— I have this season grown six varieties of Broccoli, and about 1500 plants in all, made up of Veitch's Self-protecting Autumn, Veitch's strain of Wilcox's Late White, Penzance Early White, Osborn's Winter White, Model, and Sutton's Perfection. Veitch's Self-protecting were grown in a south border, and although they failed in the autumn to come into use owing to the early and severe frosts, they have stood the severe frosts very well and have begun coming into use. Veitch's strain of Wilcox's Late White has stood very well, having lost about an average of two or three in twenty-five plants—also about the same with Penzance and Model. Osborn's Winter White has also stood the test well, losing about two in thirty plants; they are beginning to come in now. It is a Broccoli which deserves a place in every garden, while Sutton's Self-protecting Broccoli is rightly named, as my loss is about one in thirty. They are planted in the most exposed part of the garden, and are the least injured. I have heard this season of large breadths of Broccoli being killed to the ground in gardens near Norwich, thus showing the severity of this winter in the Eastern Counties. *J. Clarke, Gr., Melton Constable.*

Badly Ripened Seeds.—Those of us who have to cater for London families, and who are expected to have a supply of early forced vegetables, are already experiencing some of the disappointments that a good many anticipated, and that the trade forewarned us against, as the result of the past sunless summer. What I refer to particularly in this instance is a clear case of French Beans refusing to germinate, no matter under what conditions they are tried. I have tried them in pots, pans, boxes, &c., selecting soil in capital condition that was neither too wet nor too dry, placing the vessels containing the seeds in various temperatures—but all to no avail, as three-fourths of, and in some cases all, the seeds turned quite soft in the soil. Driven to extremities I was at last induced to try a few seeds of a well known early kind procured from a friend, of his "own saving," and every seed grew in a few days. The seeds

were given to me for the purpose of growing them in order to work up a stock of the variety for forcing purposes, and upon learning my straitened position the same kind friend sent a second contribution to the "relief fund," which was gratefully acknowledged and gladly accepted. My friend has retained this variety for years and saves his own seed annually. I saw the plants in bearing last year, they were grown in deep boxes in a warm orchard-house with a south aspect. In future I am going to borrow a leaf out of my friend's book, and grow and ripen my own seed thoroughly. It is an old proverb that "Heaven helps those who help themselves," and I for one am resolved to act upon the old adage in all cases where it is practicable. *Cultivator.*

The Chinese Primrose.—The value of this plant as a winter flowering subject has been well brought out at Castle Wemyss, the residence of John Burns, Esq., during the past season. The plants occupy a low span-roofed house used for Strawberry growing in spring; they are grown in 6-inch pots, and average 18 inches through the mass of bloom, forming perfect cones resting on stout, healthy-looking foliage: the cutting from these plants has been immense, and "still they come." I trust Mr. Henderson, the well-known superintendent of these celebrated gardens, will oblige his gardening friends by detailing his mode of producing such extraordinary results in so short a time, as I was told they were only sown in March last year. *Greenhorn.*

Odontoglossum crispum. — The article on Odontoglossum vexillarium by Mr. Sanders was very interesting, and he would increase the gratitude of Orchid growers by a similar notice of Odontoglossum crispum. The earlier specimens were much finer than the later importations, which are more stellate than round. The finest varieties I have seen came from Pacho, and I should be glad to learn if the districts where the varieties of Alexandræ and Bluntii grow have any special characteristics. *H. E. C.*

Birds and Primroses.—I observe the charge has been again raised against the small birds, that they tear the flowers of Primroses to pieces out of sheer wanton mischief. Those who make this charge can hardly realise how much it involves. We credit birds with eating seeds, fruit, or corn, from an instinctive desire to satisfy hunger—in fact, to live. In admitting this, no one puts birds into the category of reasoning beings—they are simply obeying natural instincts; but to assert that birds can be guilty of wanton mischief, is undoubtedly to assume that birds do reason, and have an intelligent conception of that which is right and wrong, or else how can it be realised that they know they are doing mischief and take delight in doing it? If it affords them wanton pleasure to destroy Primrose blooms that lords of the creation may be plagued, why do they not also destroy Snowdrops, Daisies, Violets, and indeed all other early spring flowers. The real culprits are the chaffinches—surnamed chaff, I suppose, because, on the hypothesis laid down, they love to "chaff" humanity. These are early risers, and usually attack the Primrose blooms in the early morn when the dew is on the flowers, and when the honeyed nectar they contain is of the sweetest. That they seek either for this honey when destroying the flowers, or else for some minute insects that infest them, there can be little doubt; or if for neither of these purposes, then the birds eat the flowers as food. It is not "wanton mischief," but the need of food that causes them to attack seed-beds, and in the same way it is searching for insects that infest the large flowers of the African Marigolds that induces the sparrows to pull the blooms to pieces, and scatter the petals all over the ground. If this were done out of sheer mischief, why not serve Asters the same? Troublesome as birds may be, I don't regard them as wantonly mischievous, and feel assured that what they do in gardens they do solely guided by Nature's instincts. *A. D.*

Tree Pæony.—I fear I have not made the matter of grafting the Moutan Pæony sufficiently plain to Mr. Brotherston. No doubt it may be grafted on any variety or species of herbaceous Pæony, or indeed even on the Moutan itself; but the stock I alluded to was particularly suitable for the purpose, owing to the number and size of its tubers, and was preferred to everything else by the Chinese. I may take this opportunity of making a remark or two upon the hardiness of the Moutan Pæony. I believe Lord Haddington need have no fear on this point. It is perfectly hardy in England. Like many Oriental plants, it is liable to get injured in its early spring growths. Our English climate is much more variable and uncertain than either that of China on the east or America on the west. We have a few fine days of spring weather, then winter once more. Our Oriental plants are not accustomed to this—they get deceived, and burst into leaf and bloom, and hence Mr. Brotherston's remark that "the points of the shoots die back a few inches every year." There is only one remedy, and that is, we must give a slight protection in the spring until all fears of spring frosts are past. Otherwise the Tree Pæony is perfectly hardy in England. *Robert Fortune.*

—— On the lawn in the south front of the conservatory at Frognal, Footscray, Kent, were, in days bygone and probably are still growing, two nice specimens of this subshrubby plant, which received no protection whatever during the winter months, neither did they require it—judging from the satisfactory results which followed each succeeding winter. These plants formed very prominent objects of floral beauty—their greyish rugged stems, the size, brilliancy, and beauty of the blossoms rendering them noteworthy subjects in the well-kept grounds, which, I may be permitted to remark in passing, have, under the superintendence of Mr. Marsh, been considerably improved within the last ten or eleven years. The Cedars of Lebanon here (not excepting those at Wilton House, Salisbury) are perhaps the finest in the kingdom, and, for all I know, are still in a fine state of preservation. *H. W. W.*

—— It may be interesting to many of your readers to know, that some fifteen years ago I bought for a large sum of money the two most renowned varieties of Tree Pæonies, viz., Gloria Belgarum and Souvenir de Gand, of the late Mr. Charles Gœthals. At that time I grafted about 1500 of these on the roots of the common Tree Pæony, by far the best and most suitable stock for the purpose; but since then I have grafted the Tree Pæonies on the roots of all the herbaceous species without exception, and with most satisfactory results. Nevertheless the P. sinensis of the herbaceous class is to be preferred, because it is not liable to produce so many suckers as P. officinalis edulis, &c. The best time for grafting is July and August. In 1849 the late Dr. Siebold confided to my care the whole collection of Tree Pæonies which he introduced, for propagating, which I did on all the species of the herbaceous class with the greatest success. As to the hardiness of the Tree Pæonies I may state, that while many plants in the open ground, such as Roses, Rhododendrons, fruit trees, Conifers, &c., were killed by the severe frost we had this winter, all my Tree Pæonies had no protection whatever, yet they suffered not in any way—they are, in fact, at the present moment in bud. In my opinion they do not suffer so much from a severe winter frost as they do from the late spring frosts in April and May. *Joseph Baumann, Nurseryman, Ghent, Belgium.*

Hemerocallis flava as a Winter-blooming Plant.—I have had this Lily in bloom for the last fortnight, with as many as from nine to eleven spikes on some plants, and from six to seven blooms on a spike. I would strongly recommend it as a winter-blooming plant, being so easily grown, the perfume so sweet, and the colour such an acquisition. I have grown it for the last three years, and I am well pleased with it. It is no mean object in a conservatory, and stands the same treatment as Leucojum æstivum, which I have also in bloom. *John Clews, Headfort Gardens, Kells.*

An Amateur's Experience.—I am surprised to find how few axioms have been laid down for the guidance of cultivators of Peaches under glass. This must have been practised for generations, and yet some of the most simple problems appear unsolved. (1.) The question of whether galvanised wire will injure the growing shoots of Peaches to me is so well established by my own experience that I should have supposed it unquestionable had not the question been lately discussed in your columns. For my own part, so regular was the result in my house that I have been used, where a shoot pressed against the wire, to put a bit of matting to prevent it from injuring the bark, and as I have a long range of wire, I was induced last year to untie the trees from the wires, and have them well painted. The result is a perfect cure. (2.) I see questions respecting the scale insect also on Peach trees, Pines, &c. I have proved the mixture of one wineglassful of paraffin or petroleum oil to 4 gallons of water, thoroughly mixed up before using, on Peach and Plum trees, as I wrote last year, and this year confirms it also. Paraffin oil is also a cure for mealy-bug, especially when used as an ointment mixed with its own bulk of kitchen fat. The latter should however be cautiously used, not spread over the whole plant. The paraffin and water will not hurt bedding plants. In my orchard-house, 14 feet by 24 feet, I syringe every inch, using 12 gallons: not a plant injured. (3.) I have a plague of ants. I have long suspected them of planting colonies of black and green-fly to serve as "milch cows" for them, but could never catch any one in the act. To-day, however, I found an ant carrying an aphis in his mandibles up a Peach tree. This is an interesting fact: can any of your readers confirm it by their observation or give me a recipe to clear the house of these industrious mischief-makers? Their nest is at the root of one my best Peach trees—a difficult place to disturb. (4.) I have had a plague of green caterpillars, under an inch long, which I do not know how to abate; for the last two years they have bred in great numbers. The first year on one Nectarine tree I had nearly 100 fruit spoiled by their ravages; last year I had them picked off by hand. I shall be much obliged if some of your experienced friends will help an amateur grower with their advice. I have succeeded admirably in procuring the setting of large numbers of fruit, but fear to become too tedious if I write farther as to ventilation, syringing, &c. *M. W. Rowlett, Leicester, Feb. 23.*

Myrsiphyllum asparagoides.—This plant in my estimation is worthy of a place in every greenhouse or conservatory on account of the delightful Jasmine-like fragrance of its tiny white flowers, which are borne in great profusion. A small plant of it, when in flower, quite charges the air with its most delicate and agreeable perfume; its little dark shining leaves, when trained to wires either on pillars or on back walls of conservatories, also give a very pleasing contrast to its miniature-like blossoms: thus adding a twofold charm to recommend it. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Peach Trees and Galvanised Wire.—I substituted galvanised wire for nails and shreds in a Peach-house we have here, 75 feet long, the wall 14 feet high. A trellis was put up also in front of the house, and the same kind of wire used. Last year I do not think there were more than half-a-dozen cases of injury to the shoots, and those were traced to the ligature being too tight. The wires on the wall were covered with the limewash used at our annual cleansing of the wall. Those on the front trellis received two coats of paint in the first instance, and one coat at the annual winter pruning and tying. Treated so I do not think it possible that any injury can result from the use of the wires, provided the ligatures are tied with a view to the swelling of the wood. The correspondence relating to this subject which has appeared in your columns from time to time has proved that coating the wire with paint or limewash is in great measure a preventive of the injury, if any, caused by using galvanised wire. So small is the expense and the time required, that where trees are subject to injury in the manner above referred to, I should most certainly advocate the above remedy. Far from adopting the return to nails and shreds for walls, as a former correspondent of yours had decided to do, I should be very glad to have all my walls wired. The neat appearance, the expeditious manner with which the training can be effected, and—a great consideration—the preservation of the walls, are obvious reasons for so doing. In the case of Pears, Plums, &c., trained on the spur system, eyes only driven into the wall, as recommended by Mr. Maclean, of Beaumanor, is a very good plan, but for Peach trees wiring is preferable. *D. C. P.*

Wire-training of Wall Trees.—Several of your correspondents have complained of their trees being injured by canker, &c., owing to the training on wires. I have now tried it many years, and since the first, when I suffered in like manner, I have never had a complaint. It is, of course, easier and more natural for a gardener to tie his knot tight, but in doing so he brings the young shoot into immediate contact with the wire, by which the tender bark is bruised and pinched, and probably chilled by the cold iron. I at once tried a very simple remedy, which has answered perfectly. Let the twine or bast first be tied to the wire by a half hitch, and then round the shoot, taking care to leave plenty of room for growth. If this is carefully attended to, there will, I believe, be little danger of canker, nor any necessity for painting the wire, which will not meet the real danger. *Experto crede. T. P., Porthgwidden.*

Catalpa.—The quality of being durable belongs to others of this genus besides C. bignonioides. C. longissima has long been known in the West Indies as a wood to which the property belongs in an eminent degree. It is much cutivated and eagerly sought after for posts, &c. It is also a wood which does not suffer from the attacks of ants so much as many others. It grows to 60 and 70 feet in height on the plains, and grows well in the same soil as required by Pithecolobium Saman. *J. H.*

The Frost and the Shrubs.—Of about a hundred species of Conifers none have suffered here except a Podocarpus andina (Prumnopitys elegans) in a bleak situation; the tender specimens of Pinus insignis having been killed off some years since, the two survivors appear able to stand anything. Dacrydium Franklinii and Libocedrus Doniana and tetragona are the only Conifers which have utterly failed with me, and the last I have not given a fair trial to. Sciadopitys lives, but does not progress; perhaps, however, I may not have given it fair play. Solanum jasminoides was killed last winter, Grevillea rosemarinifolia

succumbed to the severe spring of four years since, and I have failed to keep Embothrium coccineum, although I cannot help thinking that if the climate of Ushnia (Cape Horn) is as severe as it is stated to be, the species or variety there found ought to be hardy. The Rev. T. Bridges, of the South American Mission, is now in England, and might be able to give some valuable information, also as to the evergreen shrub known there as Leña dura (sp. hardwood). Fagus betuloides is quite hardy, and I am surprised that it is not more commonly met with. Desfontainea has not suffered where once established, but that appears to be the difficulty. Raphiolepis ovata appears to be perfectly hardy. I have utterly failed with Fortune's Palm, although at Dangstein there is a fine specimen; probably there is some art in protecting things during the winter. The same may account for the Fuchsia given me by the late Mr. Tillery being always killed down, although our sunny Sussex slope must be far warmer than Nottinghamshire. Ceanothus divaricatus (standard) was much cut last year, but did not suffer against a wall; but it is a most valuable shrub. Whether the Myrtles will break out after a second killing back it is impossible to say, but I am anxious about them, for it is too much to expect such continued vitality. *Sussex.*

Cedrus atlantica.—Was this plant known to the Romans? In the postscript of a letter from J. Evelyn to Samuel Pepys, dated Sayes Court, August 10, 1683, there occurs the following passage relative to Lord Dartmouth's expedition to Tangiers:—

"I am sure you cannot but be curious (among other things) to enquire of *medals* and *inscriptions*, especially what may be found about old Tangier, &c. Mr. Sheeres will remember also *the poor Gardener*, if he happen on any kernels or seeds of such trees or plants (especially ever-greenes) as grow about those precincts. Were it not possible to discover whither any of those *Citrine*-trees are yet to be found, that of old grew about the foote of *Mount Atlas* not far from *Tingis*, and were heretofore *in deliciis* for their politure and natural maculations to that degree, as to be sold for their weight in gold? Cicero had a table that cost him ten thousand sesterces, and another, which I have read of that was valued at 140,000 H.S., which at 3*d*. H.S. amounted to a pretty sum; and one of the Ptolomies had yet another of far greater price, insomuch as when they used to reproach their wives for their luxury and excess in pearle and paint, they would retort and *turn the tables* on their husbands. Now for that some copies in Pliny reade *cedria*, others *citria*, 'twould be enquired what sort of Cedar (if any) grows about that mountaine."

On referring to Dr. Middleton's *Life of Cicero*, I find—"There was a Cedar table of his remaining in Pliny's time, said to be the first which was ever seen in Rome, and to have cost him £80." "Extat hodie M. Ciceronis in illâ paupertate et quod magis mirum est, illo ævo empta H.S. x. [Plin. *Hist. Nat.*, xiii. 15] nullius ante Ciceronianam vetustior memoria est." *Ibid.* 16. Was the wood referred to Cedar? and if so, was it Cedrus Libani, C. atlantica, or C. Deodara? *S. P. Oliver, Capt.* [One such table was valued at about £9000, while still more fabulous prices are recorded as having been paid for them. Horace suggested the employment of the wood in the construction of a temple to enshrine a marble statue of Venus:—

"Albanus prope te lacus
Ponet marmorean sub trabe citrea."

and Petronius Arbiter, in descanting on the luxury of the Romans, seems to represent it as worth more than its weight in gold. Daubeny, from whose essay on the trees and shrubs of the ancients we take the above, concludes that the tree which furnished this material was what is now known as Thuya articulata or Callitris quadrivalis, a tree which is found at present in Algeria, and which furnished beautiful specimens of cabinet work to one of the great exhibitions (1855) in Paris. Eds.]

The Hermitage, Higham.—This ancient seat of the Head family was rebuilt by Sir Francis Head, Bart., who enclosed a park round the same, and greatly improved the adjoining grounds. When the mansion was rebuilt as above stated, the interior was decorated by Italians brought over expressly for the purpose. The result is that some of the reception rooms, notably the domed dining hall, remind the visitor of such rooms as are commonly to be found in the noble palaces of Milan and other Italian cities, the plaster decorations of classic subjects and garlands corresponding with those to be found in Italy. From the Head family the property passed into the hands of a yeoman farmer, who for many years lived there and tilled the soil. During his occupation the park was ploughed up, the ball-room of the mansion was converted into a granary, and the maintenance of the house much neglected. At his death, after many changes of occupants, it passed into the hands of the present proprietor, who purchased it in 1866, reclaimed a portion of the park and laid it out to great advantage. He also renovated and completely reinstated the mansion, laid out the terraced gardens with great effect under the superintendence of Messrs. Veitch of Chelsea, and added a fine vinery with stove-house adjoining, and two smaller glass structures, and planted the ball-room, now reconverted from a granary into a noble conservatory, and in which are placed fine specimens of Tree Ferns and Palms, now in full development. The soil and climate of this part of Kent are most favoured. Here flourish the Fig tree and Myrtle without protection, while such plants as Bambusa gracilis, Elæagnus reflexus, and Arundo conspicua grow luxuriantly without protection, unaffected by frosts. The nature of the soil is a rich sandy loam on a chalk foundation. It is said that in former times vineyards were successfully cultivated in this part of Kent, where the Hop grows luxuriantly, and the magnificent growth of Rhododendrons at Cobham Park in the immediate vicinity testifies to the mildness of the climate. *Higham.*

A Novel Cineraria.—Lovers of this showy and extremely useful florists' flower will be pleased to learn that Mr. James has succeeded in obtaining a new "break," that promises to be the forerunner of another host of new flowers. The colours of the flower, as will be seen in the annexed illustration (fig. 52), do not shade off into one another, as is usually the case, but are arranged in bold and well-defined belts, the outer one being of the darkest shade—a rich deep maroon. The flower is well recurved, and also possesses other qualities in size and substance. We understand that it flowered for the first time last season, and that it has reproduced

Fig. 52.—A NEW TYPE OF CINERARIA.

itself from seed. It is now in bloom at Redlees, and we hope will be exhibited at one or other of the forthcoming shows.

Art in the Conservatory: Heating.—Mr. Adams, at p. 181, in defending his views on heating, materially alters his rule, for example at p. 106, when he says "26° is low enough for ordinary calculations" (p. 181). Let us see how his vinery of 400 feet at p. 106 stands. I find it requires 92 feet of piping; so far so good, but how does it stand in practice? Our vineries contain 72 feet to every 400 feet of external glass, that is 20 feet less than Mr. Adams' vinery at p. 106. Now this is the point, for the 20 feet more piping he has to raise his house of 400 feet 20° to justify his rule of calculation, and I say it cannot be done. Two years since we put in about 60 feet of 3-inch pipe, to raise a house 10°, and find it works easily in mild weather, but only just able to do the work in rough weather. Mr. Adams has put another rule at p. 181, but I cannot see how it can be worked in practice, because, as I think, the water in pipes (180°) is too hot, according to outside temperature (32°). Now, suppose piping is put into a house that will give a proper temperature with pipes at 180°, and outside at 32°, what heat will be requiured in the pipes to keep up the temperature of the house when outside is only 20°? I find 32 : 180 : : 20 : 112½ nearly. Who can bank up at, say, 12 o'clock at night, and come at 5 o'clock in the morning and find the water boiling in pipes perhaps 50 yards from the boiler with the outside temperature at 20°? If these are the standard rules on heating, I am sorry I am unable to agree with them, because I think if the highest temperature is given to pipes, the average lowest temperature should be given to the external air. In working the rule given at p. 106, this plan would suit the South of England or the North of Scotland, or any other country, giving different quantities in different climates. This is the conclusion I have arrived at, and shall adopt it to suit my own requirements until I hear of a rule which will act better. *Charles Ford, Thornton Manor Gardens.*

Foreign Correspondence.

Gardening at Oporto.—Oporto, whence I write and where I have my abode, is, as can be seen from a map, nearly in the latitude of New York, Rome, Constantinople, and Pekin; but from a gardening point of view, and even from the point of view of human comfort, climate is not so much an affair of latitude as of a host of other conditions. We have a far warmer winter than any of the places I have named, not even excepting Rome. For many years together I have only seen it snow once, and then the flakes melted as they touched the ground, and though we have frost there is almost invariably a thaw before the sun has been in the heavens two hours. All through the long continued cold weather of last December and January, which seems to have prevailed over the whole of Europe, my registering thermometer has but once marked a lower point than 30° Fahr., and that was on Sunday night, January 24, when the register mark showed 29°.

This may well seem a paradise for gardeners, in combination with an open, decomposed granite soil, but we have our drawbacks. The east wind which comes to us over the great peninsular table-land is cold and parching in winter, and in summer fiery in its heat and more parching still. In addition to these elemental disadvantages, we have to contend with such an army of sparrows, tits, and other feathered enemies, such hosts of slugs, snails, wire-worms, caterpillars, and aphides, and beyond all other ravagers of our parterres, such a cohort of mole crickets as few gardeners can elsewhere be plagued with. Again, throughout the summer very strong north-west winds prevail. On the whole, however, horticulturally, we have not very much to complain of. In such conditions we should do a great deal more than we achieve, but in truth scientific gardening and scientific gardeners are not common in this country. Whatever owners of gardens do in Portugal they must do or direct themselves. Portuguese gardeners are willing and handy, but extraordinarily ignorant of their craft. For my own part I admit that my successes are outnumbered by my failures, as often as I have travelled out of the common gardening routine; nevertheless, I have thought that the record of some of my experiments, carried out under conditions novel to English gardeners, might have an interest for at least some among your large circle of readers. I propose accordingly from time to time to give some account of my doings and their results.

We have now had, as I have said, over two months of keen, dry, frosty weather, and I never knew the gardens so bare of flowers at this period of the year. Crocus and Narcissus, indeed, are in bloom, and the scarlet Star Anemone (fulgens) and Violets and Primroses are in full swing; the Camellia trees are covered with blossom, but this blossom where exposed is sadly nipped and made yellow by the east wind; these, however, are no more than the common product of all Portuguese gardens in January.

As regards novelties, I have been greatly disappointed with the behaviour under my hands in this country of what was always my favourite winter flower in England, the old-fashioned Christmas Rose (Helleborus niger). Last spring I planted, under the most auspicious circumstances, some dozen strong clumps of H. niger and of other species of this genus, fœtidus, orientalis, ruber, purpurascens, lividus, viridis, and others. Some have died, most have dwindled, and only one has thriven, the shrub-like H. lividus. I conclude that we are in too low a latitude. Most of the species of Helleborus have Northern or Central Europe given for their habitat. Much as I have travelled and often botanised in Portugal, I have never encountered a plant of the genus. I believe that neither our soil nor our aspect is to blame, for I have tried every soil, from stiff, loamy clay to sandy peat, and every aspect from north to south. Here, then, is the record of a decided failure. On the other hand, I have succeeded where I did not in the least expect success. I have had abundant blossom from white Bouvardias grown in the open air from July till past Christmas, and not small and stunted blossoms, but bloom that would pass muster in Covent Garden. This is to me the more extraordinary, as my garden, though protected from the north, is fully exposed to the east, and the east wind had accordingly blown upon my Bouvardias persistently for about a month without apparent harm. At about Christmas it got a little colder, and then I used shelter; the plants are at

this moment in a most promising condition. I shall leave them untouched till summer. Another plant which is now in most abundant flower is Agathea amelloides. I do not know much of it in England, but here it is quite hardy, and with its pretty blue and yellow Aster-like flower is by far the most ornamental and longest blooming plant in my garden.

I must not forget another novelty in Portugal, the Cape aquatic, Aponogeton distachyon. I saw it in magnificent flower in a pond in Surrey last June, and in September I brought over some roots and planted them in an ornamental stone tank. The soil was our common garden soil, about a foot deep, with 2 feet of water over the crown of the bulbs. In six weeks the floating leaves were visible at the surface; in a fortnight more the white waxen blossoms had opened, floating on the surface like little paper boats, and scenting the air around with their delicious fragrance. The tank is in no way protected from the cold winds, and yet the plants are now (February 15) in fuller bloom than they have been at all. Now this I admit surprises me even more than the blooming through the winter of the Bouvardias—for the wood of the Bouvardias was ripened in the growing period by the full heat of the Portuguese sun—but in the case of the Aponogeton there was of course no such heat, for they were planted on September 15. Your experienced readers know how well plants which have passed through a hot summer can stand cold. We have most signal evidence of this important fact out here. In England we see the Heliotrope turned brown by ever so slight a touch of frost; now here I have never known the Heliotropes to succumb to the 2°, 3°, or 4° of frost we are liable to. It is the same with Dahlias and with scarlet Pelargoniums. The natural blooming period of the Dahlia is indeed shorter than perhaps your English readers may have come to think, and the bloom fails quite as soon here as in England; but it is the exhaustion of the year's vital energy of the plant that causes its decay, no violence of frost, for often we have the thermometer considerably above 40° till Christmas. On the other hand, the scarlet Pelargoniums go on blooming, and finally seem to succumb more to wind than age or frost, carrying their scarlet standards, like maimed but sturdy veterans, well into the New Year.

In my next communication I propose to tell you something of the behaviour of the various species of Iris, native and foreign, in this latitude. *Theorist, Oporto, February* 23.

Castleton Botanic Gardens, Kingston, Jamaica: *Beaumontia grandiflora.*—One of the most conspicuous plants in the gardens here, at present, is Beaumontia grandiflora, growing as an ordinary shrub, 6 to 8 feet in height, and in full bloom. It grows in a flower border, but well isolated from other plants, and looking at it with its well balanced head and short-jointed well matured branches, terminated by a truss of large, bell-shaped, pure white flowers, the keenest observer would fail to discover that it was aught but an ordinary self-supported bush, instead of being, as it is in a natural state, one of the most vigorous climbers known.

There is here another plant of the same, which is growing about 9 feet from the stem of a large Mango tree. I am told that when it formed a bush, about 5 or 6 feet high, it flowered annually; but the then superintendent here, aware of its peculiarity, had a tall stake put in the ground near to it, and, intuitively I suppose, the arms of this plant embraced and clambered up the stake into the Mango tree, until now it has got to the top; but from the time that it began to climb it has not flowered.

Of course it will bloom in time, when by its further extension its terminal growth will no longer be supported by the Mango. It may serve to illustrate by its flowering in the shrub form, as well as in its non-flowering while in a climbing state, the value of self-reliance or independence, and botanically that rampant growth and the condition of blossoming are respective degrees of vitality or phases of vigour, the one almost the opposite of the other. *George Syme.*

Catananche Cœrulea.—This herbaceous plant is well fitted for pot-culture, and may be utilised for conservatory and room decoration. It should be potted in loam, leaf-mould, and manure, the pots plunged to the rim in a sunny situation, and well watered in hot weather, administering manure-water as soon as the pots get filled with roots. In this manner handsome specimens in 6-inch and 8-inch pots may be grown, which will prove very serviceable for decorative purposes. *J. C. B., in the "Field."*

Reports of Societies.

Edinburgh Botanical; *Feb.* 12.—The Society met in 5, St. Andrew Square, the President, Mr. William Gorrie, of Rait Lodge, in the chair. The following communications were made:—

I. On the Ripening of Hardy Fruits 150 years ago. By Mr. Malcolm Dunn, of Dalkeith Palace Gardens, Vice-President.

The paper was based on the old book exhibited at the last meeting, entitled *Pomona*, by Batty Langley, of Twickenham, 1729, and its object was to inquire how far the dates when hardy fruits ripened given by it when compared with such dates for 1879, and generally for the past three years, bore on the vexed question of the deterioration of our climate in these later times. Mr. Dunn had besides when composing his paper accepted and compared the evidence on the subject given in Miller's *Gardeners' Dictionary*, 1768; Martyn's *Gardeners' and Botanists' Dictionary*, 1807; Lindley's *Guide to the Orchard and Kitchen Garden*, 1831; Hogg's *Fruit Manual*, 1860 to 1875; and the *Herefordshire Pomona*, just being issued.

The *Pomona* discusses the growth of open-air plants giving the exact date when their fruits ripened at Twickenham and in the South of England. Thus, Langley describes nineteen sorts of Grapes then produced in England. From his very accurate accompanying engravings we recognise many also now grown, though under different names. A few of the hardier sorts, such as Burgundy and Claret Grapes, appear then to have been cultivated after a limited fashion in the open vineyard—a system, by the way, which Langley strongly advocates, though he concludes his dissertation on the Vine by saying that "a full south aspect on a wall is the best for all kinds of Grapes," clearly showing that then, as now, a crop of well ripened Grapes was with difficulty obtained from Vines growing in an open vineyard, even with a southern aspect in an unpropitious season; indeed some kinds were found so uncertain in ripening in any season that he recommends them to be grown as excellent fruit for baking when they failed for dessert purposes. Two-thirds of the sorts of Grapes enumerated by Langley are now grown; and we know that they will now also ripen their fruit as early and certainly when they meet with the same favourable cultural and climatic conditions. The white Sweetwater is mentioned to have ripened by August 21, as it now does in Southern England in ordinary seasons; so, too, our author notes November 10 when the white Raisin should be ripe, if, as he *naïvely* remarks, "the seasons are kind enough to allow it." So far then the dates of the ripening of Grapes given at Twickenham and around London 150 years ago are without change from those known in this latter half of the nineteenth century.

The records of the ripening of fruit trees, such as Peaches and Nectarines, bear also in this direction. Langley enumerates forty sorts of both, a majority of which are still in cultivation, and ripen about the same dates as he indicates. And so, too, with regard to Apples, Pears, Plums, Cherries, Apricots, and other fruits. They ripen now about the time given by Langley, and no change is indicated in the works already indicated as having been consulted, whose dates of publication nearly were intervals of thirty years—from 1768 to 1879.

Mr. Dunn attributed the decadence of outdoor cultivation of hardy fruits to the great extension of cultivation under glass, not to deteriorated seasons.

In the course of the discussion following this paper it was maintained that when proper care and culture is given, good orchard crops could be obtained even in such far northern spots, when naturally protected by tree or hill shade, as the vicinity of Cape Wrath, the Carse of Gowrie, or Cupar. The more extensive planting of hedgerows with fruit trees was advocated. Mr. A. Buchan, of the Scottish Meteorological Society, said that he had consulted other records, which showed the cycle of years from 1720 to 1730, referred to in the *Pomona*, was a succession of bad seasons; three of them, in fact—1726, 1727, and 1728—years of dearth about as bad as 1877 and 1879, with this difference, that in the former years there were no facilities for importing grain such as we now possess. About 1775 there occurred six or seven years of the very finest weather, such as there had been experienced no approach to except in 1826.

II. Mr. James Blaikie, F.R.S.E., one of Her Majesty's Inspectors of Schools, read an account of a visit to the Engadine, and exhibited a fine collection of nearly 300 alpine plants chiefly collected in that district.

The Engadine, or Upper Valley of the Inn, is situated in Eastern Switzerland. The upper part of the valley is nearly level, and is about 6000 feet above the sea. No corn is grown, and the only trees are the Arve (Pinus Cembra) and the Larch. In the lower Engadine corn grows freely, but Wheat will not ripen. The climate is dry, and the flora rich. Mr. Blaikie and his companion made Pontresina their headquarters during ten days' botanising. On the eastern side of the Pontresina valley the Piz Langaard (10,700 feet) and other mountains offer climbing without either the attraction or the danger of ice, but they are clothed in many parts with a rich and varied flora. Less ambitious persons have only to cross the stream to enjoy shady walks where the banks under the trees are carpeted with the creeping stems and tender pink-lined cups of the Linnæa borealis. Ascending the Pizot, a superb granite pyramid 10,650 feet above the sea, the tourists found it particularly rich in Saxifrages; the specimens shown included Saxifraga stenopetala, S. Sequieri, and S. planifolia—plants only found in the highest Alps. A large portion of the collection was from the Val del Fain, a limestone valley near the summit of the Bernina Pass, and celebrated for its alpine flowers. These included Papaver alpinum, Alsine recurva, Cardamine alpina, Draba tomentosa, Eritrichium nanum, Phyteuma hemisphæricum, P. pauciflorum, P. humile, Sempervivum Wulfeni and S. Braunii. Very frequent changes of paper helped to preserve the natural colours of the plants. With great difficulty one specimen of Dryas octopetala was induced to remain white, though the Campanulas were obstinate to the last.

III. A letter to Professor Balfour from Mr. John Buchanan, Mount Yomba, Central Africa, was communicated by Mr. Sadler.

This locality is midway betwixt the Zambesi and Shire Rivers, and is about 50 miles from Lake Shirwa, which the natives state was in October last little better than a sheet of mud owing to the aridity of the season. The district much resembles the Blantyre Mission station, where Mr. Buchanan was previously located, Maize is not so extensively cultivated, but Rice is grown, as well as a species of Sorghum, likewise Cassava, Bananas, and Plantains. Several species of Palms grow on the mountains, one of them Mr. Buchanan thinks is the wild Date; also very fine Tree Ferns—one of them is 8 feet high, having a spread of fronds of at least 20 feet in diameter. The natives use cord for net-making apparently made from fibres of Hibiscus cannabinus. They cultivate a species of Croton, with oil from which they anoint their bodies, without any of the effects on the system peculiar to Croton tiglium.

IV. Mr. Sadler gave in his report for January of the open-air vegetation at the Royal Botanic Garden.

V. Miscellaneous Communications.—A notice of the death of General Munro, C.B., a non-resident member of the Society, was laid on the table.

Mr. Symington Grieve gave in a note on the Island of Colonsay as a station for Orchis pyramidalis, which is not known to exist in any other part of the West of Scotland. Dr. Lightfoot, in his *Flora Scotica*, published in 1777, noticed this station, but this has been generally questioned, though Mr. Grieve could now confirm it, after the lapse of a hundred years since its first discovery.

Mr. John Stewart, W.S., exhibited some beautiful American Apples, which had been extensively sold in the British fruit market as Newton Pippins. The Apples, though of excellent flavour, were certainly not correctly named.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, February 25, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
Feb.	In.	In.	°	°	°	°	°	°	°		In.
19	29.17	−0.65	51.2	46.0	5.2	48.7	+ 9.9	45.0	87	S.W.	0.07
20	29.30	−0.51	53.9	45.3	8.6	49.3	+10.4	43.1	79	WSW	0.19
21	29.61	−0.21	51.8	39.0	12.8	45.8	+ 6.8	39.8	80	WSW / S.W.	0.12
22	29.64	−0.17	42.5	34.5	8.0	38.8	− 0.3	37.0	94	E.S.E. / E.N.E.	0.02
23	29.83	+0.02	42.5	32.3	8.2	36.5	− 2.7	35.3	95	N.E. / N.N.E.	0.31
24	30.14	+0.33	40.1	34.5	5.6	37.3	− 2.0	33.0	85	E.N.E. / E.S.E.	0.00
25	30.17	+0.36	48.9	38.3	20.6	38.0	− 1.5	33.1	82	WNW / WSW	0.00
Mean	29.69	−0.12	47.0	37.1	9.9	42.1	+ 3.0	38.0	86	variable	sum 0.71

Feb. 19.—A changeable day, fine at times, then dull and showery. Strong wind. Mild.
— 20.—Fine and bright till 4 P.M., dull after. Slight showers between 1 and 2 P.M. Rain and hail in evening.
— 21.—A fine day, partially cloudy. Heavy shower at 4 P.M. Cloudless afterwards.
— 22.—Fine till 10 A.M., very dark and gloomy till 2 P.M., fine afterwards. Heavy rain and hail at 11 P.M.
— 23.—A dull, miserable, cold day. Rain fell throughout.
— 24.—Overcast, dull and cold throughout. Fine towards midnight.
— 25.—A very fine bright day. Cold in morning, but warmer in afternoon. Cloudy at night.

London: *Barometer.*—During the week ending Saturday, February 21, in the vicinity of London the reading of the barometer at the level of the sea decreased from 29.88 inches at the beginning of the week to 28.99 inches by the afternoon of the 16th; increased to 29.08 inches by the evening of the same day; decreased to 28.83 inches by the early morning of the 17th; increased to 29.44 inches by the afternoon of the 18th; decreased to 29.33 inches by the morn- of the 19th; and increased to 29.80 inches by the end of the week. The mean reading for the week at sea level was 29.42 inches, being 0.31 inch

below that of the preceding week, and 0.58 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 54° on the 20th to 47½° on the 15th; the mean value for the week was 51½°. The lowest temperatures of the air observed by night varied from 38½° on the 17th to 46° on the 19th; the mean value for the week was 42°. The mean daily range of temperature in the week was 9½°, the greatest range in the day being 12¾° on the 21st, and the least 5¼°, on the 19th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Feb. 15, 43°.2, + 4°.5; 16th, 46°.8, + 8°.1; 17th, 42°.5, + 3°.8; 18th, 46°.9, + 8°.1; 19th, 48°.7, + 9°.9; 20th, 49°.3, + 10°.4; 21st, 45°.8, + 6°.8. The mean temperature of the air for the week was 46°.2, being 7°.4 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 108° on the 21st, 103½° on the 20th, 102° on the 18th, and 100¼° on the 17th; on the 19th the reading did not rise above 69½°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 34° on the 15th, 34½° on the 21st, and 35° on the 17th. The mean of the seven lowest readings was 38½°.

Wind.—The direction of the wind was S.W., and its strength strong. The weather during the week was frequently fine, though wet and stormy. Gales of wind prevailed on the 17th and 19th. Hail fell on the 20th and 21st.

Rain fell on every day of the week; the amount measured was 1.08 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, February 21, the highest temperatures of the air observed by day were above 55° at Truro, Cambridge, Nottingham, and Sunderland, and below 53° at Brighton, Wolverhampton, and Bradford; the mean value from all stations was 54°. The lowest temperatures of the air observed by night were below 34½° at Truro, Wolverhampton, Nottingham, Liverpool, Bradford, and Leeds, and above 40° at both Brighton and Norwich; the mean value from all places was 36°. The extreme range of temperature in the week was above 21° at Truro and Liverpool, and below 14½° at both Brighton and Norwich; the mean range of temperature from all stations was 18°.

The mean of the seven high day temperatures was above 51½° at Truro, Plymouth, and Cambridge, and below 49° at Wolverhampton, Bradford, and Leeds; the mean value from all places was 50½°. The mean of the seven low night temperatures was below 40° at Wolverhampton, Nottingham, Hull, and Leeds, and above 42° at Plymouth, Brighton, Blackheath, Cambridge, and Norwich; the general mean from all stations was 40¾°.

The mean daily range of temperature in the week was above 11° at Truro and Wolverhampton, and below 8° at Brighton and Norwich; the mean daily range of temperature from all places was 9¾°.

The mean temperature of the air for the week from all stations was 45°, being 9½° higher than the value for the corresponding week in 1879. The mean temperature was above 46¼° at Truro, Plymouth, Blackheath, and Cambridge, and below 44° at Wolverhampton, Hull, Bradford, and Leeds.

Rain.—Rain fell every day of the week at almost every station, and the amounts measured were large. The heaviest falls were at Bristol, 3.72 inches, Truro, 1.99 inch, and Sheffield, 1.64 inch; and the least falls were at Liverpool, 0.54 inch, Cambridge, 0.89 inch, and Sunderland, 0.92 inch; the average fall over the country was 1.38 inch.

The weather during the week was frequently fine and bright, though generally dull, wet and stormy. Gales prevailed generally on the 17th and 19th.

SCOTLAND: *Temperature.*—During the week ending Saturday, February 21, the highest temperatures of the air observed by day varied from 52½° at Aberdeen to 49° at Greenock; the mean value from all places was 51¼°. The lowest temperatures of the air observed by night varied from 33° at both Perth and Aberdeen, to 37° at Glasgow; the mean from all stations was 34¾°. The mean range of temperature in the week from all places was 17½°.

The mean temperature of the air for the week from all stations was 43¾°, being 12½° higher than the value for the corresponding week in 1879. The mean temperature was above 44½° at Glasgow and Leith, and below 43° at Dundee, Aberdeen and Greenock.

Rain.—The heaviest falls of rain were at Greenock, 1¾ inch, and at Aberdeen and Perth, 1¼ inch; and the least falls were at Edinburgh and Leith, both half an inch, and Glasgow three-quarter of an inch; the average fall over the country was 1 inch.

DUBLIN.—The highest temperature of the air was 54¼°, the lowest 27¼°, the extreme range 27°, the mean 44¾°; and the fall of rain 1.14 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

DOUBLE SWEET ALYSSUM.—What is "the original and true new Double Variegated Sweet Alyssum," the entire stock of which Messrs. Miller & Hunt, of Chicago, advertise as having been "purchased of a florist in Danville, Ills., a year since, has been thoroughly proved by us the past season; and we consider it far in advance of all others for bedding or bordering, from its perfect symmetry of form: a quality not possessed by other varieties"? Does any reader know?

MENTHA PULEGIUM GIBRALTARICUM.—Will some of your correspondents kindly tell me the quickest and best way to get up a good stock of Mentha pulegium Gibraltaricum for this season's bedding? *G. W. H.*

SALVIA SPLENDENS, MRS. STEVENS.—Have any of our readers fallen in with this Salvia, which is considered in America as a great acquisition, the flowers being of a rich shade of crimson-maroon, entirely distinct from anything before seen in Salvia splendens, with which it is identical in habit and growth and size of flower-spike? Mr. Peter Henderson, of New York, speaks of it from personal possession.

TAMARIND SAUCE.—Can any of your readers give me a recipe for making Tamarind sauce? We used to have it with pork at Singapore. *H. E. C.*

VINES FOR FORCING IN POTS.—Will you kindly let me ask what the qualities of Duke of Buccleuch are as a Vine for pot forcing? Also, whether Early Ascot Frontignan is useful for that purpose, and what the size of the berries is? *R. D. B.*

Answers to Correspondents.

ABIES NOBILIS: *W. H. G.* The knots in question are the work of an insect unfortunately too common. If you wish to save your other trees, we should advise you to cut the affected one down and burn it.

ANTHURIUM SCHERZERIANUM: *J. Barrett.* A good average in size, but by no means so fine as Mr. Ward's variety, or indeed as many others that we have seen.

BEGONIA: *R. J. H.* When you send a leaf and flower we will give you our opinion of its merits.

BOOKS: *E. W. Serpell. Greenhouse Management for Amateurs* (*Bazaar* Office, 170, Strand, W.C.).

CELERY: *Enquirer.* Leicester Red and Manchester Red, Wright's Grove White and Veitch's Solid White.

CLASSIFICATION OF EXHIBITORS: *R. Tyson.* As used in reference to country shows, the designation "amateurs" is understood to apply to persons who manage their gardens themselves, or with more or less assistance from a jobbing gardener or garden labourer, and who do not systematically derive pecuniary advantage from the pursuit. Gardeners, properly so called, are either nursery gardeners, market gardeners, or gentlemen's gardeners, the latter being employed by private individuals to undertake the management of their gardens for them. Cottagers are understood to be cottage residents earning their income by daily labour other than gardening, and who manage the gardens attached to their cottages, or one of the allotment plots rented by them, by themselves or with the aid of any of the members of their own family. No rule or definition can be expected to be of absolutely universal application; but these exceptional cases should be dealt with equitably on their own merits by the managing committee, at the time.

GARDENERS' ROYAL BENEVOLENT INSTITUTION: *H. S. James.* Write to Mr. E. R. Cutler, 14, Tavistock Row, Covent Garden, W.C.

HOT WATER: *J. Paterson.* Perkins' system of heating is now very little used; you had better consult one of the many leading hot-water engineers, whose names appear from week to week in our columns.

MASDEVALLIAS: *H. E. C.* The abortive breaks on your Masdevallias were very likely caused by your plants having received a severe check at the roots. Have they been lately broken to pieces with a view to propagation? Few persons can boast of possessing plants of the Bull's Blood variety. I feel certain, with better root-action, they will right themselves. *J. C. Spyers.*

MELONS: *W. B.* Do not stop the shoots till the fruit has set.

MEN FOR A 20-ACRE GARDEN: *H. C.* It is impossible to give a useful reply to such an indefinite question.

NAMES OF PLANTS: *J. McP.* Your Masdevallia is not M. Harryana sanguinea, but M. Veitchiana, a better thing.—*H. J. Ross.* 1, Asplenium fontanum; 2, Cystopteris alpina; 3, the Australian Asplenium bulbiferum; 4, Dendrobium primulinum.—*F. Corrin.* 1, smashed beyond identification; 2, Epidendrum ciliare var.—*T. C. C.* 1, is a Cœlogyne, but the material of both numbers sent is quite insufficient for naming.—*M. I., Annan.* 1, Dendrobium Lindleyanum; 2, Coccoloba platyclada; 3, Berberis Wallichiana; 4, Abies Douglasii; 5, Maxillaria—materials insufficient; 6, Rhododendron dahuricum.—*P. B. C.* 1, Odontoglossum pulchellum; 2, Bletia hyacinthina.—*G. W. M.* Dendrobium secundum and Equisetum arvense.—*J. W. H.* 1, Odontoglossum pulchellum; 2, Dendrobium Lindleyanum; 3, Bletia verucunda; 4, Cypripedium insignis, a fine variety; 5, Calanthe vestita; 6, Cheilanthes hirta.—*W. J. T.* Odontoglossum Rossii.—*H. C.* 1, Imesipteris tannensis; 2, Viscum Lindsayi; 3, Bauera rubioides; 4, Grevillea punicea; 5, Mirtella reticulata; 6, seems to be the male of Casuarina Fraseriana, a rare species, but requires cones to make certain. Xerotes belongs to the natural order Xerotidieæ.—*G. Wall.* 1, Lopezia racemosa; 2, Salvia gesneriflora; 3, Habrothamnus fasciculatus.—*J. W. C.* 1, Camellia, something like Chandleri, but we do not undertake to name florists' flowers; 2, Blechnum latifolium; 3, Adiantum pubescens; 4, A. trapeziforme, var. pentadactylon; 5, A. colpodes; 6, A. concinnum latum.—*C. W. D.* The "Paris Daisy," or Marguerite, is Chrysanthemum frutescens, and your plant is the yellow variety known as C. frutescens Etoile d Or. See our last number, p. 241.—*E. W. Serpell.* Arabis lucida variegata.

NYMPHÆA ALBA, VAR. ROSEA: *E. T. R.* 1. It must be hardy, since it comes from the North European lakes. 2. It was grown and flowered at Kew in the summer of 1878. Messrs. Frœbel, of Zurich, catalogue it under the name of N. alba Caspary, needlessly given to it in France. We also find it in Mr. Parker's catalogue, under its proper name, but probably it is scarce. 3. In neither of the cases named is it priced, so that probably it is dear. 4. It would grow in any place which would be suitable for the common Water Lily, and therefore ought to grow in the sunken barrel which receives the drainage of your lawn.

ONCIDIUM GARDNERI: *H. E. C.* O. Gardneri (not Gardnerianum, as written in error) is described by Lindley in Hooker's *London Journal of Botany*, vol. ii., p. 662.

SALMON DISEASE: *E. W. P., Fulham.* The only full account of the fungus Saprolegnia ferax that we know of in English is the illustrated description of the "Salmon Disease," written for this paper by Mr. Worthington Smith, and published in our columns for May 4, 1878.

SCILLA MARITIMA: *T. S. S.* This is the medical Squill, a native of the South of Europe, the modern name of which is Urginea maritima. It will be better in the cool-house than in heat. The leaves should be allowed to grow on, well exposed to light, till they reach their full maturity; and then, after the bulb has rested, it will, if strong enough to flower, throw up an erect spike of greenish-white flowers, before the leaves grow afresh.

VINES: *John Polson.* The Vine roots you have sent us appear to be dead. We can gather nothing from the samples of soil without making an analysis. The recovery of the Vines is extremely doubtful, but you will be able to settle that point as soon as they should commence growing.—*A. B. C.* The cause of your Vines breaking so badly is no doubt owing to the imperfect ripening of the buds or wood last autumn.

VINES DYING: *E. H.* Your Vines are dead; of that there is no doubt. Were the stems, or any part, exposed to the frost in the early part of December? We think it most probable frost is the cause of the mischief. Some of the roots are alive. Your case is not exceptional.

CATALOGUES RECEIVED:—Robert Parker (Tooting, S.W.), Catalogue of Alpine and Herbaceous Plants, Stove and Greenhouse Plants, Hardy Trees and Shrubs, &c.—J. Green & Son (44, Vicar Lane, Leeds), Retail Catalogue of Garden and Agricultural Seeds.—Sutton & Sons (Reading), Farmers' Year-Book and Graziers' Manual.—Thomas Kennedy & Co. (Dumfries), Catalogue of Select Agricultural Seeds.—Jacs. P. R. Galesloot (Amsterdam), Catalogue of Fruits.

COMMUNICATIONS RECEIVED.—H. Freeman.—E. B.—R. H.—S. P. O.—J. B.—S. P.—E. W. & Sons. (no such announcements have been made in our columns this season).—F. C.—C. B.—J. K.—C. M. H., Boston.—E. F., Oranenburg.—G. E.—H. M.—A. S.—J. M.—J. P., Paris.—S. E. F.—W. Y.—Veto.—J. O.—R. S. & H.—J. V. & S.—W. D.—B. S. W.—J. W.—J. S.—W. J. T.—W. E.—T. B.—P. P.—G. W.—J. E.—G. Lee.—G. J. M.

Markets.

COVENT GARDEN, February 26.

We have scarcely any alteration to note this week, the only feature being the easier state of the vegetable market. Good plump samples of late Grapes are now realising high prices, the supply reaching us from extreme sources only. Business quieter. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ficus elastica, each	2 6–15 0
Azaleas, per dozen	18 0–60 0	Foliage Plants, various, each ..	2 0–10 6
Begonias, per doz. ..	6 0–18 0	Fuchsias, per dozen	9 0–15 0
Bouvardias, per doz.	12 0–24 0	Hyacinths, per doz..	6 0–12 0
Cinerarias, per doz..	9 0–15 0	Myrtles, per doz. ..	6 0–12 0
Cyclamen, per dozen	12 0–30 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	9 0–12 0
Dracæna terminalis	30 0–60 0	Primula, single, per dozen	4 0– 6 0
— viridis, per doz.	18 0–24 0	Solanum, per dozen..	9 0–24 0
Erica gracilis, per dozen	9 0–18 0	Tulips, 12 pots ..	8 0–12 0
— hyemalis, p. doz.	9 0–24 0		
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

Cut Flowers.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6- 1 0	Mignonette, 12 bun.	6 0- 9 0
Arum Lilies, per dozen	4 0-12 0	Narcissus, Paper-white, 12 spikes	1 0- 1 6
Azalea, 12 sprays	0 6- 1 0	Pelargoniums, 12 spr.	1 6- 3 0
Bouvardias, per bun.	1 0- 4 0	— zonal, 12 sprays	0 9- 1 6
Camellias, per doz.	1 0- 6 0	Primula, double, per bunch	1 0- 2 0
Carnations, per dozen	1 0- 3 0	— single, per bunch	0 6- 1 0
Cyclamen, 12 blms.	0 4- 1 0	Roses (indoor), doz.	4 0-12 0
Epiphyllum, 12 blms.	0 6- 1 0	— Roses, Fr., doz.	2 6- 6 0
Eucharis, per doz.	4 0- 9 0	Spiræa, 12 sprays	1 0- 2 0
Euphorbia, 12 sprays	3 0- 6 0	Tropæolum, 12 bun.	1 0- 3 0
Gardenias, 12 blms.	12 0-24 0	Tuberoses, per dozen	4 0- 6 0
Heliotropes, 12 sp.	0 6- 1 0	Tulips, 12 blooms	1 0- 1 6
Hyacinths, 12 spikes	4 0- 9 0	Violets, Fr., per bun.	1 6- 2 6
— small	1 6- 4 0	White Lilac, Fr., per bundle	4 0- 8 0
— Roman, 12 spikes	1 0- 2 0		
Lily of Val., 12 spr.	0 9- 2 0		

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0- 6 0	Lemons, per 100	3 0-10 0
— American, barrl.	18 0-30 0	Oranges, per 100	6 0-12 0
Cob Nuts, per lb.	1 0- ..	Pears, per dozen	3 6- 6 0
Grapes, per lb.	4 0-12 0	Pine-apples, per lb.	1 0- 3 0

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0-10 0	Horse Radish, p. bun.	4 0- ..
Asparagus, Sprue, per bundle	1 0- ..	Lettuces, Cabbage, per doz.	3 0- 4 0
— English, p. 100	15 0- ..	Mint, green, bunch	1 6- ..
— French, per bun.	7 0-25 0	Mushrooms, p. baskt.	1 6- 2 0
Beet, per doz.	1 0- 2 0	Onions, per bushel	8 0- ..
Brussels Sprouts, lb.	0 6- ..	— Spring, per bun.	0 6- ..
Cabbages, per doz.	1 0- 2 0	Parsley, per lb.	1 6- ..
Carrots, per bunch	0 8- ..	Peas, per lb.	1 0- ..
— French, per lb.	0 6- ..	Potatos (new), per lb.	0 3- 0 9
Cauliflowers, per doz.	2 0- 5 0	Rhubarb (Leeds), per bundle	0 9- ..
Celery, per bundle	1 6- 4 0	Seakale, per punnet	3 0- ..
Chilis, per 100	3 0- ..	Shallots, per lb.	0 6- ..
Cucumbers, each	1 6- 3 0	Spinach, per bushel	5 0-15 0
Endive, per score	4 6- ..	Tomatos, per dozen	3 0- ..
Garlic, per lb.	0 6- ..	Turnips, new, bunch.	0 6- ..
Herbs, per bunch	0 2- 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 150*s.* to 190*s.* per ton. German produce is making from 6*s.* to 7*s.* 6*d.* per bag. New English Potatos are realising 2*s.* per lb.

SEEDS.

London: *Feb.* 25.—The market to-day was poorly attended, and the business doing very small. As regards American red values continue to decline; in fact the prices now current are those which in ordinary years usually obtain at the close of the sowing season, when speculative purchases are made for holding over. French seed can also be bought on greatly reduced terms. In Trefoil a moderate business has been passing at somewhat easier rates. Fine clean white is not over-abundant. Very low quotations now prevail for Alsike. No change in grasses. Spring Tares meet a steady demand at previous currencies. Bird seeds are without quotable variation. Owing to the recent drop of 30 per cent., split Lentils are now exceedingly cheap. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CATTLE.

At Copenhagen Fields on Monday there was a considerable advance in the price of finest descriptions of beasts, and all kinds were rather dearer. The favourable weather and shortness of stock in hand caused a brisk demand. For sheep the demand showed an increase on last week. Choicest kinds were readily disposed of at advanced rates, and inferior qualities were difficult of sale. Good calves were in demand. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.*, and 5*s.* 8*d.* to 6*s.* 2*d.*; calves, 5*s.* to 6*s.* 8*d.*; sheep, 5*s.* to 5*s.* 6*d.*, and 6*s.* 6*d.* to 6*s.* 10*d.*—Thursday's trade showed no fresh feature. The condition of the beasts was not so good as on Monday, hence the top price was weaker, but a fair trade was done. Sheep sold quietly at late rates. Calves and pigs were unaltered in price.

HAY.

Tuesday's Whitechapel Market report states that there was not much demand for fodder, and prices were as follows:—Prime Clover, 100*s.* to 125*s.*; inferior, 80*s.* to 95*s.*; prime meadow hay, 80*s.* to 95*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 38*s.* per load.—At Thursday's market a short supply of hay and straw was on offer. The trade was rather better, and prices were firm.—Cumberland Market quotations: — Superior meadow hay, 95*s.* to 105*s.*; inferior, 40*s.* to 72*s.*; superior Clover, 115*s.* to 128*s.*; inferior, 84*s.* to 95*s.*; and straw, 34*s.* to 40*s.* per load.

POTATOS.

The Borough and Spitalfields Markets reports state that supplies are only moderate, and the trade steady without animation. Scotch Regents, 140*s.* to 160*s.*; do. Champions, 150*s.* to 170*s.*; Lincolnshire do., 150*s.* to 173*s.*; Victorias, 160*s.* to 180*s.* per ton. German reds, 6*s.* 6*d.* to 8*s.*; Belgian kidneys, 6*s.* 6*d.*; French whites, 6*s.* per bag.—During last week 52,055 bags of Potatos were received at London from Hamburg, 9902 from Rotterdam, 5273 bags 116 barrels from Harlingen, 637 bags 571 casks from Malta, 1154 bags from Amsterdam, and 752 bags from Antwerp.

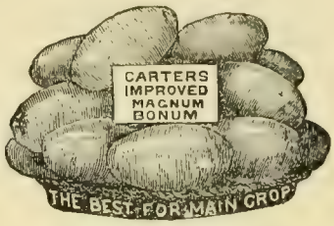
Government Stock. — On Monday Consols closed at $98\frac{1}{8}$ to $98\frac{1}{4}$, for delivery, and $98\frac{3}{16}$ to $98\frac{5}{16}$ for the account. The same figures were recorded at the close of business on Tuesday and Wednesday. Thursday's final quotations were, for delivery, $98\frac{1}{16}$ to $98\frac{3}{16}$, and for the account, $98\frac{1}{8}$ to $98\frac{1}{4}$.

CARTERS'

DISEASE-RESISTING

POTATOS

FOR PLANTING.



IMPORTANT CAUTION

This variety was selected from the old MAGNUM BONUM purchased in 1877 by Messrs. Carter direct from the raiser, Mr. Clarke. Messrs. Carter find it necessary to issue this caution, as it has come to their knowledge that Potatos have been sold as CARTERS' IMPROVED MAGNUM BONUM, but which were a spurious and very inferior kind. Early Orders recommended.

Price, per Sack, 33s.; per Bushel, 12s.

Much cheaper per Ton and Half Ton.

CARTERS' SELECT STOCK.

Awarded a First-class Certificate by the Royal Horticultural Society,

with the following remarks:—"The Committee were of opinion that the 'Scotch Champion' Potato was remarkable for resisting the disease, and is a Potato of good quality."

Price, per Sack, 28s.; per Bushel, 10s. 6d.

Much cheaper per Ton and Half Ton.

Descriptive LISTS Gratis and Post-free.

Carters

THE QUEEN'S SEEDSMEN,

HIGH HOLBORN, LONDON, W.C.

GERANIUM CUTTINGS, at 8*s.* per 100, for cash, including Vesuvius, Lady Constance Grosvenor, and Old Tom Thumb.—J. WILLIS, Nash Court, Tenbury.

RHODODENDRONS for Covert Planting, &c.—Fine Plants, 1½ to 4 feet high, £9 per 1000, package free. -W. JACKSON, Blakedown, Kidderminster.

To the Trade.

DWARF H.P. ROSES, on Manetti, fine plants and best varieties, 25*s.* per 100; cash with order. EDWIN HILLIER, Winchester.

Cheap Offer.

MAHONIA AQUIFOLIA, 1½ foot, bushy, 10*s.* per 100.
WHITETHORN (QUICKS), 3-yr. transplanted, 15*s.* per 1000; 4-yr., strong, 18*s.* per 1000.
MANETTI STOCKS, 2-yr., strong, 25*s.* per 1000.
R. TUCKER, The Nurseries, Faringdon, Berks.

NICOTIANA LONGIFLORA.—A deliciously fragrant plant with pure white flowers; one will scent a whole house; easily cultivated, almost perpetual bloomer. Packet of seeds, with cultural directions, price 7*d.* Stamps with order.—W. J. MARSH, Woodbridge, Suffolk.

SEEDS of PRIZE FLOWERS.

CATALOGUE of SEEDS,

With every Article Priced, on application.

[ALL HALF NATURAL SIZE]

MR. WILLIAM BULL'S

SEEDS OF PRIZE FLOWERS.

	Per packet.—s. d.
Prize ASTERS.—Collection of assorted colours	2 6
Prize BALSAMS.—Eight colours	2 6
Prize BEGONIAS.—Handsome flowered section, mixed colours	2 6
Prize CALCEOLARIA.—Various colours, mixed	2 6
Prize CINERARIA.—Various colours, mixed	2 6
Prize COCKSCOMB	1 0
Prize CYCLAMEN PERSICUM.—Various colours, mixed	2 6
Prize CYCLAMEN PERSICUM GRANDIFLORUM, new	5 0
Prize GLOXINIA.—Various colours, mixed	2 6
Prize PANSY	2 6
Prize PELARGONIUM	2 6
Prize PETUNIA.—Choice hybridised, various colours, mixed	1 6
Prize PRIMULA SINENSIS FIMBRIATA.—Red	2 6
Prize PRIMULA SINENSIS FIMBRIATA.—White	2 6
Prize PRIMULA SINENSIS. "BULL'S PREMIER."—Mixed colours	2 6
Prize STOCKS.—Collection of assorted colours	2 6
Prize ZINNIA, double-flowering.—Collection of assorted colours	2 6

Catalogue of Vegetable Seeds on application.

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ESTABLISHMENT FOR SEEDS AND NEW PLANTS,

KING'S ROAD, CHELSEA, LONDON. S.W.

CLEARANCE SALE.

30,000 SPRUCE FIR, 2-yr. and 3-yr. transplanted, 8*s.* 6*d.* per 1000.
30,000 SPRUCE FIR, 2-yr. and 1-yr. transplanted, 3*s.* 6*d.* per 1000
50,000 QUICKWOOD, 2-yr. and 2-yr. transplanted, 8*s.* 6*d.* per 1000.
5,000 SCOTCH FIR, 2-yr. and 2-yr. transplanted, 12*s.* 6*d.* per 1000.
4,000 PRIVET, 2 to 3 feet, 15*s.* per 1000.
300 COMMON YEW, 1 to 2 feet, 10*s.* per 100.
Apply to JAMES HORSLEY, Nurseryman, Norton, Malton, Yorkshire.

MANGEL SEED.

JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.
Bardney Manor, Lincoln.

VEGETABLE & FLOWER SEEDS
SEED POTATOS. TOOLS &c
BEST QUALITY - CARRIAGE FREE.
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JAMES DICKSON & SONS
SEED-GROWERS.
108 EASTGATE ST. **CHESTER**

The Best Late White Broccoli.

SUTTON'S QUEEN. Fills the gap between late Broccolis and Cauliflowers. Perfectly distinct, very dwarf and compact, heads well protected, medium size, handsome, and of creamy-white colour.

Mr. H. GADD, Gr. to the Right Hon. Lord Middleton, says, on May 28:—"I am still cutting your Queen Broccoli, in fine condition, which, to use the phrase, is shaking hands with the Cauliflower, which is now coming nicely."

Price 2s. 6d. per ounce, 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Evergreen Hedges or Screens.

CUPRESSUS LAWSONIANA, fine specimens, 6 to 8 feet, and 8 to 10 feet, 12s. to 18s. per dozen.
THUJA LOBBII, fine specimens, 6 to 8 feet, and 8 to 10 feet, 12s. to 18s. per dozen.
WELLINGTONIA GIGANTEA, 5 to 6 feet, 48s. per dozen.
YEWS, English, very fine, 3 to 4 feet, 60s. per 100.
LAUREL, Common, bushy, 2 to 3 feet, 20s. per 100.
SPRUCE FIR, 3 times transplanted, 2 to 3 feet, 10s. per 100.
PINUS AUSTRIACA, 1½ to 2½ feet, 15s. per 100.
JOHN TUCKER, The Nurseries, Bridgwater.

FOR SALE, in one Lot, 300 very fine Common LAURELS, 6 feet high, 6 feet through—would make a very fine block or plant 40 rods like a wall for protection; 70 Irish YEWS, from 4 to 6 feet, good plants; about 100 LILACS; 75 RHODODENDRONS, common, 4 feet through; about 60 Portugal LAURELS, handsome plants; 100 SPRUCE FIR, 4 to 6 feet, all single plants, and will move well. Price for the lot, £30. Time will be given for their removal until next Christmas, and a lot of odd plants given with them

Also for disposal, about 3 lb. each of LEICESTER RED CELERY and BRUSSELS SPROUT SEED—the Sprout seed saved from good "Imported" of 1879 growth. Samples of both will be sent for any one to test. A quantity of Jerusalem ARTICHOKES for Sale, at 7s. per bushel; and about 600 yards of BOX, not large but good, at 6d. per yard; together with numerous other items, of which particulars from
R. RICHARDSON, Cottenham Park, Wimbledon.

To the Trade.

PRIMROSE, Double Lilac, 12s. 6d. per 100, £5 per 1000; Double White, 12s. 6d. per 100, £5 per 1000. Special offer to clear ground.
RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

SPIRÆA PALMATA.—This beautiful pink variety, with immense flower bunches, justly called "The Queen of Spiræas," is offered at 20s. per 100, strong clumps.
Wholesale CATALOGUES free on application.
BUDDENBORG BROTHERS, Bulb Growers, House, Bloemswaard, Hillegom, near Haarlem, Holland.

Wandsworth Common and Garret Lane Nurseries.

R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.

All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
CATALOGUES free by post on application.

Surplus Stock.

COSFORD NUT, White FILBERT, and other sorts, strong fruiting bushes. Oriental PLANES, straight, stout and well rooted, 5 to 6 feet, and 6 to 8 feet. TAMARISKS, in variety, for seaside or other planting. Very low prices will be quoted for the above, to clear ground.
Apply to EWING AND CO., The Royal Norfolk Nurseries, Eaton, near Norwich.

New Hardy Hybrid.

GLADIOLUS LEMOINEI and MARIE LEMOINE.
Price for strong bulbs, 12 francs; do., middle-sized, 7 francs.
Received First-class Certificate from The Royal Horticultural Society on August 12, 1879, and noticed in the *Garden*, No. 404.
VICTOR LEMOINE, Horticulturist, Nancy, France.

Scotch Firs, &c.

J. CARTER, NURSERYMAN, Keighley, has the following surplus stock, the quality all that can be desired:—

ALDER, 2 to 3 feet, and 3 to 4 feet; ELM, narrow-leaved and Wych, 2 to 6 feet; SCOTCH FIR, 1½ to 2 feet; SPRUCE FIR, 1 to 1½ foot; POPLAR, sorts, 4 to 8 feet; SYCAMORE, 2 to 7 feet; WILLOW, 4 to 5 feet; Purple and Fern-leaved BEECH, 3 to 6 feet. DECIDUOUS SHRUBS in variety.
CATALOGUE of General Nursery Stock on application.

Planting for Immediate Effect.

THE EXECUTORS of the late T. STANSFIELD have to offer a large stock of clean, well-grown, and well-rooted FOREST and ORNAMENTAL TREES, at exceptionally low prices. The following may be specially mentioned:—

LABURNUMS, 8 to 14 feet, strong, clean, and shapely, 3s. to 24s. per dozen.
BEECH, 6 to 9 feet, 12s. to 15s. per 100.
POPLARS, Ontario, 15 feet, 10s. per 100.
SYCAMORES, 6 to 15 feet, 6s. to 40s. per 100.
HORSE CHESTNUTS, 5 to 12 feet, 6s. to 30s. per 100.
LIMES, 6 to 15 feet, 15s. to £5 per 100.
ALDER, 16 feet, a few large } 1s. each.
BIRCH, 16 feet, ,, ,, }
ELMS, English and other, 4s. per dozen.
YEWS, English, 3 feet, 2s. per 100.
LONICERA LEDEBOURII, 6s. per 100.
CUPRESSUS LAWSONIANA, perfectly shaped, well-furnished, healthy plants, 5 to 8 feet, 9s. to 15s. per dozen.

The Limes, Laburnums, and Sycamores are particularly recommended for avenues and for planting as specimens in conspicuous situations. LIST on application.
Tanshelf Nursery, Pontefract.

For Sale, Drumhead or Cattle Cabbage.

S. BIDE has a limited stock of good DRUMHEAD CABBAGE PLANTS, at 5s. per 1000; RED or PICKLING CABBAGE, 7s. per 1000. Free on rail, and package free, but cash must accompany all orders to
S. BIDE, Alma Nursery, Farnham, Surrey.

CYCLAMEN PERSICUM, showing large quantities of bloom, 30s. per 100; sample dozen, 5s.
WHITE VESUVIUS, 20s. per 100; 3s. per dozen.
GLOXINIA BULBS (finest), 6s. per dozen. All package free.
GEORGE GUMMOW, 114, Loughborough Road, Brixton, S.W.

ROOTED CUTTINGS

(Choice Varieties with Names).

FREE AND SAFE BY POST. FREE AND SAFE BY POST.

We have much pleasure in offering the following in well-rooted healthy young plants, and which, by our improved system of packing, can now be sent by post with perfect safety to any part of the British Isles. Customers may depend on really fine varieties only being sent, but the selection must in all instances be left to us:—

	Per Doz. s.	d.
BEGONIA FUCHSIOIDES, a pretty pot plant for the greenhouse or window .. .. each, 6d.	—	
CHRYSANTHEMUMS, large-flowered, incurved, reflexed Japanese and Pompons, very choice varieties	4	0
,, good standard varieties	2	6
COLEUS, from our splendid collection, newest and choicest sorts	5	0
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DAHLIAS.—Our collection of these is very fine, and includes all the newest and best in cultivation.		
,, Choicest new and select Show and Fancy varieties	5	0
,, good standard sorts	3	6
,, Pompon or Bouquet	3	6
FUCHSIAS, a very fine collection.		
,, new varieties of 1879	6	0
,, choice exhibition varieties, single and double ..	4	0
,, good standard varieties	2	6
GERANIUMS (Pelargoniums), Zonal and Nosegay, new varieties of 1879. Denny's, Pearson's and Lye's	10	0
,, ,, extra choice sorts for exhibition, &c.	6	0
,, ,, good and choice varieties	4	0
,, standard sorts	2	6
,, ,, double-flowered, choicest varieties	4	0
,, ,, Madame Amelie Baltet, beautiful pure white, very double, the finest .. .. each 6d.	5	6
,, silver variegated, Daybreak, &c.	2	6
,, gold and silver, tricolor, and bronze varieties, extra choice sorts	5	0
,, ,, ,, good sorts	3	6
,, Ivy-leaved, in beautiful variety	2	6
,, sweet-scented varieties .. .. .. each 6d.	5	6
MIMULUS, choicest large-flowered, with names ..	3	6
,, ,, in mixture..	2	0
PHLOX, choice perennial varieties, from our splendid collection, with names	3	6
PENTSTEMONS, very fine named varieties	2	6

From CAPTAIN JAS DE COURCEY HUGHES, *Rathdowney, Queen's County, October* 24.

"I enclose Post-office Order to amount of account, and am much pleased with the rooted cuttings I got from you. They all turned out well, and made particularly nice shaped plants."

From ROBERT BOULT, Esq., *Halvergate, July* 5.

"I have the pleasure of informing you that the collection of Pelargoniums sent by you to Holland last Autumn, to Mr. V. W. de Villeneuve, was awarded the Gold Medal at the Horticultural Show held this week at Nymegen, Holland."

Cheques or Post-office Orders to

DANIELS BROS.,

TOWN CLOSE NURSERIES, NORWICH.

FOR SALE, good Standard, Half-Standard, and Dwarf ROSES, in first-class variety. For price apply to S. BIDE, Alma Nursery, Farnham, Surrey.

Twenty Thousand

MANETTI STOCKS.—For sale, from 10,000 to 20,000, 1-yr. and 2-yr.
RED CURRANT and RASPBERRY CANES (transplanted). For particulars apply to
ABEL FAIRALL, Stanhope Nursery, Westerham Hill, Kent.
ROCKWORK and PARKS LAID OUT and PLANTED.

MYATT'S PROLIFIC POTATO.—A really splendid sample. A few tons to offer, at £10 per ton; 2 cwt. sacks, 22s. 6d. each, for cash with order.
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Black Naples Currants.

SANDY AND SON have about 1500 to offer, very strong 3-yr. plants.
The Nurseries, Stafford.

NEW INDIAN AZALEA, "Empress of India" (First-class Certificate). Prices for Spring lowered as under to the Trade:—Nice plants, 4 to 6 branches, 60s. per dozen; strong plants and half specimens, 20s. to 40s. each.
A. VAN GEERT, Continental Nurseries, Ghent, Belgium.

SAMUEL SHEPPERSON, FLORIST AND SEEDSMAN, Prospect House, Belper, begs to intimate that his CATALOGUE of Florist's Flowers, Bedding, Border, Rockery, and Spring Flowering Plants, Choice Seeds, &c., is now ready, and will be sent post-free to all applicants.

BEAUTY OF KENT POTATO.—A new variety, which every one should try. We are permitted to publish the following opinion of it:—

"I last spring had a few tubers of Mr. James Pinks' red round seedling Potato, Beauty of Kent, to grow for trial, and although planted late and dug early it produced an abundant crop, *entirely free from disease* and of excellent cooking quality. It was one of the dishes in my collection at the International Show last year which carried off the premier prize.
(Signed) "PETER MCKINLAY."

Price, 1s. 9d. per lb.; 7 lb., 11s.; half bushel (28 lb.), 40s.
HOOPER AND CO., Covent Garden, London, W.C.

The Best Cauliflower.

SUTTON'S KING OF THE CAULIFLOWERS.
Dwarf, compact, very large, firm, beautifully white heads.
From Mr. JOHN CLARKE, Gr. to the Most Noble the Marquis of Ripon:—"Your King is a very dwarf, good strain of Cauliflowers, producing firm and beautifully white heads."
1s. 6d. and 2s. 6d. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

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10,000 CHRYSANTHEMUMS, in all classes, our selection of large-flowered, Japanese, Pompons, &c., 3s. per dozen, 10s. per 50, 15s. per 100.
5,000 FUCHSIAS, the finest sorts included, 3s. per dozen, 10s. per 50, 15s. per 100.
7,500 PHLOXES, the finest sorts included, 3s. per dozen, 11s. per 50; 20s. per 100.
Cuttings of any of the above half-price.
All other Indoor and Outdoor Plants, Trees or Shrubs for Garden or Conservatory, the best of varieties, most moderate prices, good quality, true to name. See large Advertisement, and apply for CATALOGUE to
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CENTAUREAS and LOBELIAS from STORES, &c.
CENTAUREA candidissima and C. ragusina compacta, 9s. per 100; C. gymnocarpa, 10s. 6d. per 100; all strong summer-sown plants: 50 and upwards sent free for cash.
LOBELIAS, Brighton and pumila magnifica, two of the very best, 4s. 6d. per 100, post-free.
HOLLYHOCKS, strong, healthy plants, in 60-pots, from extra choice seed, 3s. per dozen.
PANSIES, Show and Fancy (separate), from seed saved from an unsurpassed collection, containing all the leading named varieties, transplanted, 1s. 3d. per dozen, 7s. per 100.
Ditto, ditto, choice varieties to name, 3s. per dozen.
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PETUNIA GRANDIFLORA, the finest strain in cultivation.
"A superior strain of striped and blotched flowers, in every way the finest we have seen."—T. MOORE, Esq., *Gardeners' Chronicle.*
"Their strain is finer than ever, flowers of the finest form and substance, and the utmost diversity of colour."—SHIRLEY HIBBERD, Esq., *Gardeners' Magazine.*
"Fine bold flowers, with white grounds, beautifully striped purple and crimson."—EDITOR, *The Garden.*
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Single, 250 seeds, 2s.
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PRIMULAS, saved from the flowers of which the Editors of the *Gardeners' Chronicle* said, "A very fine strain, the flowers being large, highly coloured, and nicely fimbriated." Per packet 1s., post-free. Cash with order.
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NEW HARDY RED WATER LILY (Nymphæa alba var. rosea, Hartman). We have much pleasure in offering this superb new hardy Plant, which has been described as "the largest and most beautiful flower in Europe, emulating the Victoria Regia." It is a native of Lake Fagertärn, Sweden, and is totally distinct in colour from all other varieties. Good healthy plants, securely packed, post-free, 5s. each. Cash with order. Admirably figured in the *Garden*, June 28, 1879.
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CARNATIONS, True old Crimson Clove, strong plants.
RASPBERRY, Fastolf, the true variety.
RED CURRANTS, La Versaillaise.
Price on application.
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LIMES, splendid, 8 to 10 feet, £2 10s. per 100; 10 to 12 feet, £4 10s. per 100.
BEECH, Purple, splendid, 6 to 7 feet, £5 per 100; 7 to 8 feet, £6 per 100.
YEWS, English, fine, 3 to 4 feet, £3 per 100.
,, beautifully rooted, 4 to 5 feet, £3 15s. per 100.
JOHN WRIGHT, The Nurseries, Wakefield Road, Pontefract.

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Before Purchasing your Seed Potatos,

SEE QUINCEY'S RETAIL PRICE LIST.
It contains about 30 of the most useful sorts in cultivation. Post-free to intending purchasers. The following is a testimonial from the Marquis of Exeter's Head Gardener:—
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"To Mr. C. QUINCEY, Potato Merchant, Peterborough."

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CYCLAMEN PERSICUM, finest strains, 2s. 6d. per packet. All post-free.
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H. LANE AND SON, having a very large stock of the following, can offer them at very moderate prices, all well transplanted. One hundred acres well stocked to select from :—

Cedrus Deodara, 3 to 8 ft.	Thuja Lobbii, 3 to 14 ft.
Cryptomeria elegans, 2 to 7 ft.	,, gigantea, 4 to 10 ft.
Cupressus Lawsoniana, 3 to 15 ft	Thujopsis borealis, 3 to 14 ft.
,, ,, erecta viridis, 2 to 6 ft.	Wellingtonia gigantea, 3 to 12 ft
Picea nobilis, 3 to 10 ft.	American Arbor-vitæ, 4 to 12 ft.
,, Nordmanniana, 3 to 12 ft.	Variegated Yew, fine
,, Pinsapo, 2 to 6 ft.	Irish ditto, 3 to 9 ft.

Limes, Horse Chestnuts, &c., 12 to 14 ft.
Hollies, Aucubas, Laurels, Flowering Shrubs, &c. Fruit Trees of all descriptions. Roses in great variety, &c.
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A FINE NEW CONTINENTAL VARIETY, of rapid growth and delicious flavour. Quite distinct from all other Turnips. It is exceedingly sweet and juicy, and should be found in every Garden. Per oz. 1s., post-free.
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BEAUTIFUL WHITE-SPINED VARIETY, pronounced by all competent judges to be the finest Cucumber in cultivation. Fine robust constitution and habit, fruit growing rapidly to the length of 30 to 36 inches, being at the same time of the most beautiful proportions, and of a fine rich green colour, which it retains to the last. First-class for Exhibition. Per packet, 1s. 6d. and 2s. 6d. post-free.
Beautifully Illustrated CATALOGUE free to all customers on application.
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COCOA-NUT FIBRE REFUSE,
3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 for 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
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COCOA-NUT FIBRE WASTE, 1s. per bag, 30 bags for 20s. No charge for bags. Truckload (loose), free to rail, 25s.—BULBECK AND SON, Suffolk Place, Snow's Fields, Bermondsey, S.E.

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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.
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CANNELL'S SYSTEM of GERMINATION. Certain, simple, and the correct mode of raising plants from seeds (every one with the merest vitality must grow). Worth to the world many thousands of pounds. Sent, post-free, for one stamp.
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CHEAPEST ARTICLES FOR TRADE USE.
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IMPROVED ROLLER-CRUSHED BONE.
One Inch, Half Inch, Quarter Inch, Dust.

The value of pure pulverised Bone has been of late amply exemplified by the immense bunches of Grapes now so universally seen upon Exhibition Tables and in our First-class Fruit Markets.
All the leading Gardeners, Fruit Growers and Exhibitors throughout the Kingdom, use this largely. Samples are constantly being exhibited at the Royal Horticultural, South Kensington, Crystal Palace, Brighton, Royal Pomona Gardens, Manchester, and elsewhere.
Price Lists post-free on application.
A Sample Peck sent to any address on receipt of 2s.
TANTON'S SEED and MANURE STORES,
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Remarkable Success for Many Years.

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ALL HORTICULTURAL PURPOSES.

Amies' Anti-fungoid Potato Manure
Is a great Preventive of the Potato Disease.

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Write for our NEW PAMPHLET, post-free.
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ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.
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Protection from Cold Winds, Morning Frosts, and Scorching Rays of the Sun.

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TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.
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Works:—Chilcompton and Evercreech Junction Stations.
Address:—T. J. HICKES, Shepton Malet.

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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
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FLINTS and BRICK BURRS for Rockeries or Ferneries.
KENT PEATS or LOAM supplied at lowest rates in any quantities.
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N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

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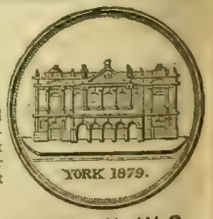
WITHOUT PUTTY, INDIARUBBER, or CEMENT.

It is adopted by H.R.H. the Prince of Wales.
Highest Award at Fine Art Exhibition, York.
No outside painting required, and it is easily repaired by even inexperienced workmen.
"*Bank Chambers, Norwich, October* 24, 1879.
"T. W. Helliwell, Esq., Brighouse.—Sir,—I went yesterday and examined the Glass Roof Glazed by you, under my directions, at Sandringham, for His Royal Highness the Prince of Wales, and found it perfectly satisfactory in all respects. The appearance is vastly superior to the old system of wood and putty, and I shall be glad to recommend it whenever I can.—Believe me, yours faithfully,
"C. SMEDLEY BECK, Architect."



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THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses :—

	Inches.	Inches.		
15-oz.,	6 × 4 to 8 × 6,	10s., 11s., 12s., 13s. 6d.	Per 100 ft. Box.
	9 × 7 to 12 × 9,	11s., 12s., 13s., 14s. 6d.	
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	20 × 12 to 24 × 16,	11s. 6d., 13s., 14s. 6d., 15s.	
	20 × 17 to 24 × 18,	12s., 13s. 6d., 15s., 16s. 6d.	
	Inches.	Inches.	
21-oz., Orchard House,	20 × 12,	20 × 13,	16s., 19s. 6d., 21s., 22s.
	20 × 14,	20 × 15,	
	20 × 16,	20 × 17,	

15-oz., for Cutting up, 32s. 6d., 36s. 6d., 41s. per 300 feet case.
21-oz., for Cutting up, 32s. 6d., 36s. 6d., 41s. per 200 feet case.
LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.
Lists on application.
REMOVED to 43, Commercial Street, London, E.

HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 200 feet,

Carriage Paid to any Railway Station in England.

Price Lists on application.

ALFRED SYER, Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities, of

BETHAM & SON,

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B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

TO THE TRADE.

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H. & F. SHARPE

Invite the attention of the Trade to their Special PRICED LIST of SEED POTATOS, issued last November,

Which comprises, amongst many others, the following excellent varieties, viz. :—

PRIDE OF ONTARIO (New),
RIVERS' ROYAL ASHLEAF,
MYATT'S PROLIFIC ASHLEAF,
MONARCH KIDNEY (New),
AMERICAN EARLY ROSE,
BRESEE'S PROLIFIC,

MAGNUM BONUM,
CHAMPION,
ELLIOTT'S WONDER,
SNOWFLAKE,
BRESEE'S PEERLESS,
BRESEE'S KING OF THE EARLIES.

The above have been Grown from the Finest Selected Stocks, are of Splendid Quality, and Free from Disease.

SEED GROWING ESTABLISHMENT,
WISBECH.

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Have the largest and most complete stock in the Trade; upwards of £20,000 worth to choose from.

HOT-WATER BOILERS, PIPES, and CONNECTIONS,

And all CASTINGS for HORTICULTURAL PURPOSES.

Their New Illustrated Catalogue, 9th Edition, now ready (price Sixpence).

Hot-water and Hot-air Apparatus erected complete, or the Materials supplied.

Price List on application free.

The following is an additional List of *celebrated Nurserymen, Gardeners, and Growers for Covent Garden Market,* who have permitted us to state that they are using this Manure with the most successful results, and are willing to give particulars to any one applying to them. It is very gratifying to be allowed to publish *such a List,* as the names of many of these gentlemen have *never before been published* in connection with any article of commerce. Further lists to follow :—

JAMES VEITCH & SONS ..	Royal Exotic Nursery, Chelsea
E. G. HENDERSON & SON	Pine-apple Nursery, Maida Vale
B. S. WILLIAMS	Victoria and Paradise Nurseries, Holloway
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CHARLES TURNER ..	Royal Nurseries, Slough
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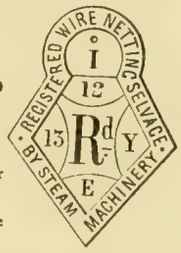

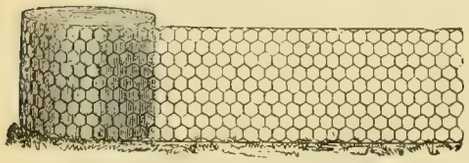

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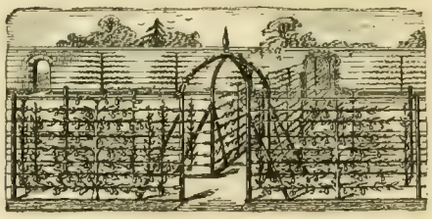

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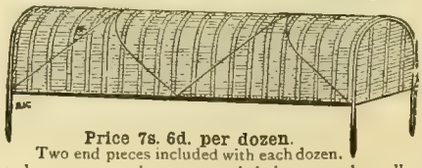

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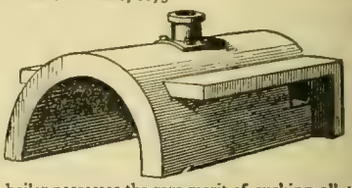

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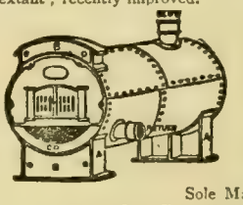

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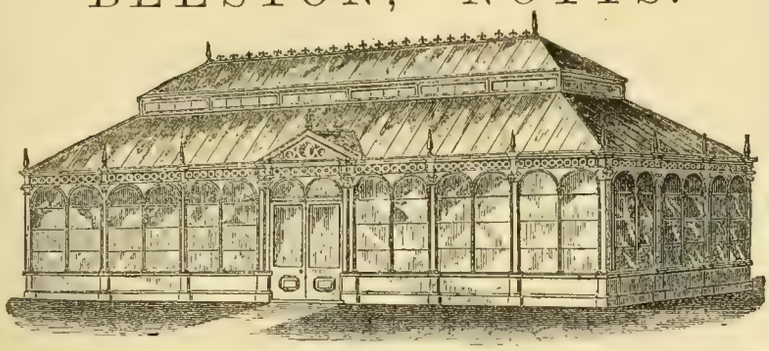

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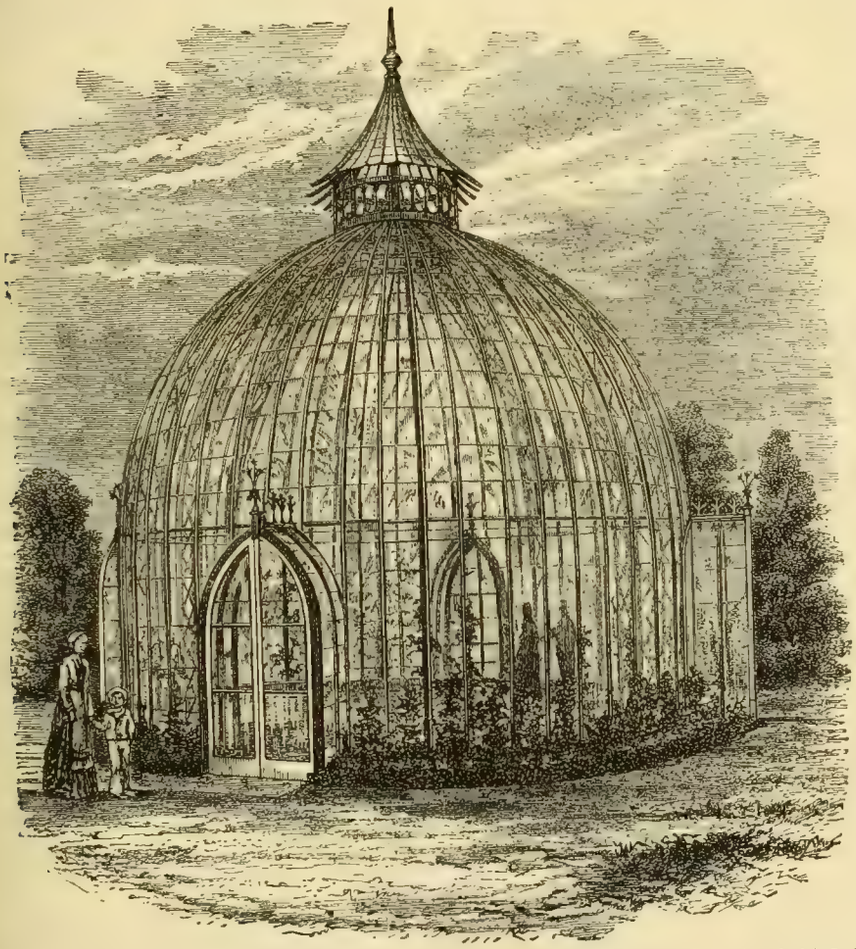

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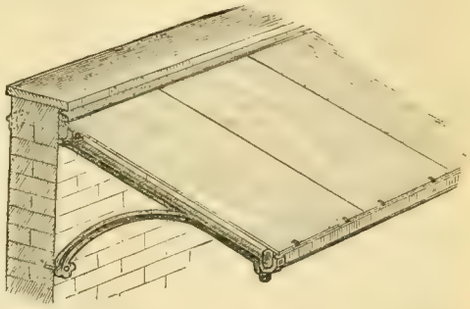

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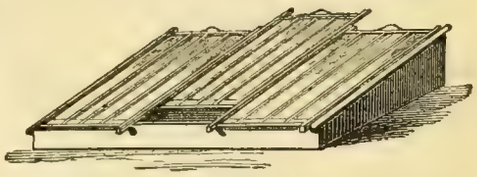

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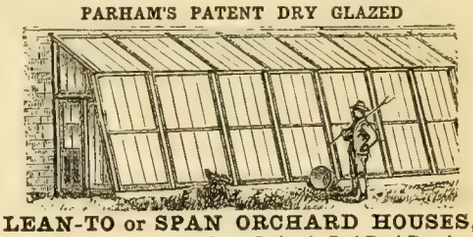

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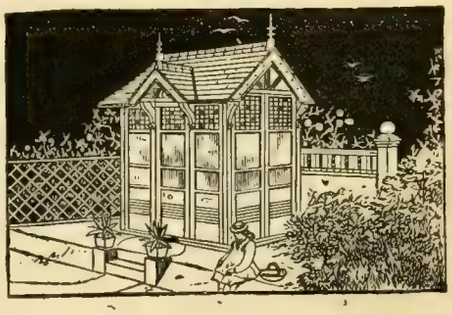

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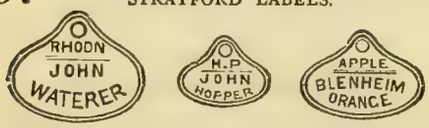

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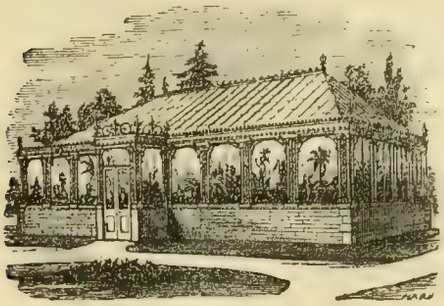

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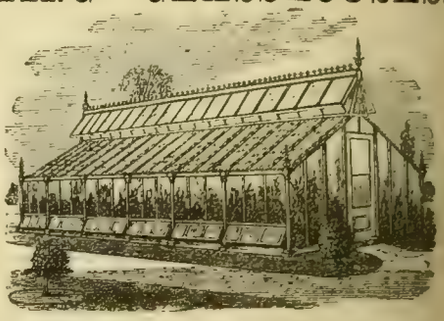

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"SIR,—Your Primula flowers are to hand. The great variety of colour, coupled with their immense size, renders them objects of great attraction. Personally, I have never seen any to approach them. When better known they will doubtless be much sought after."

From "The Garden:"—

"Double-flowered Chinese Primrose.—We have received from Mr. Gilbert, of Burghley, a boxful of those popular flowers, all good, but two unusually large and double. One is a full smooth-petaled flower of snowy whiteness, 1½ inch in diameter, and frilled around the margin. The other is a similar flower in all respects but colour, which is of a clear rosy tint. Either for decorative purposes, or cut flowers, these are well worth careful culture."

From "The Gardener," edited by David Thomson, Head Gardener to his Grace the Duke of Buccleuch:"—

"Double Primulas.—We have received from Mr. R. Gilbert, of Burghley House Gardens, some specimens of his seedling white and red double Primulas a few days since. On opening a box we at first thought they were Balsam blooms, so very much larger and more double are they, compared with any we have ever seen before. The colours are very pure and effective. Mr. Gilbert showed plants of these recently at the Manchester Show, some of which had 170 blooms, fully expanded, besides unexpanded buds. We are sorry to hear that the stock of these is as yet but limited, for they cannot fail to be much sought after when sufficiently known."

From "The Journal of Horticulture:"—

"We have received from Mr. R. Gilbert, Burghley Gardens, near Stamford, some flowers of double Primulas. The individual pips are 1¼ inch in diameter, and are perfectly double, every petal also being deeply serrated or fringed. The flowers are blush-white, some being delicately, and others more heavily, blotched and flaked with rose. The darker types of flowers are rosy-carmine, deepening towards the centre, the reverse of the petals being blush-pink. As fringed varieties of double Primulas, we have never seen any flowers superior to the examples now brought before our notice."

From "The Gardeners' Chronicle:"—

"Double Primulas:—R. Gilbert. Very symmetrical, closely built, full double flowers, of an excellent strain. The whites are of better quality than the rosy-pink variety, but both are highly meritorious, and exceedingly ornamental."

We have also received the following Letters:—

"To Messrs. OSBORN & SONS. Dear Sirs,—I have formed a very favourable opinion of Gilbert's Primulas, and consider them most valuable as decorative plants, and also very useful for bouquets and general cut flower decoration.—Believe me very faithfully yours, JOHN WILLS."

"Messrs. OSBORN & SONS, The Fulham Nurseries. Gentlemen,—I have found the blooms of Gilbert's Double Primulas you have from time to time sent me a great acquisition. As a florists' flower I do not know of anything more beautiful or useful, being far superior to any other varieties of Double Primula I have ever seen or used. For bouquet-making, and in fact every description of floral work, they will be found invaluable, being at once light and elegant. I have used them largely, and they have been greatly admired,—I am, Gentlemen, yours obediently, JAS. BROMWICH."

They have been exhibited at various seasons of the year, and have always been an object of great attraction and universal admiration, particularly so at South Kensington, and at the Ealing Show last November.

OSBORN & SONS,

THE FULHAM NURSERIES, LONDON, S.W.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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THE

GARDENERS' CHRONICLE.

Established 1841.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 *to the end of* 1878," *to secure them at once.*

The following is a List of those already published:—

1879.—Oct. 11.	1879.—Dec. 13.
,, 25.	1880.—Jan. 10.
Nov. 8.	,, 24.
,, 15.	Feb. 7.
,, 29.	,, 21.

Price 5d. each, post-free 5½d.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral at 11 A.M., Scientific at 1 o'Clock—Ordinary Meeting for Election of Fellows and Lecture by Dr. M. T. Masters, F.R.S., on Japanese Conifers, at 3 P.M., on TUESDAY NEXT, March 9. Admission, 1s.

ROYAL BOTANICAL and HOTICULTURAL SOCIETY of MANCHESTER.

The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1880 will open on MAY 14. ONE THOUSAND POUNDS in PRIZES. Spring Exhibitions at the Town Hall on March 16 and 17, and April 27 and 28. For Schedules, &c., apply to the undersigned,

BRUCE FINDLAY, Curator and Secretary.
Royal Botanic Gardens, Manchester.

GRAND FLORAL and HORTICULTURAL EXHIBITION, in connection with the Royal Counties, Hants and Berks Agricultural Show, will be held in Portsmouth, JUNE 22, 23, 24 and 25. Large amounts will be awarded in Prizes for PLANTS, CUT FLOWERS, FRUIT and VEGETABLES, open to all England. For Schedules of Prizes, &c., apply to J. TAPLIN, Havant, SAM. KNIGHT, Portsea, } Hon. Secs.

LEEDS FLOWER SHOW, JUNE 23, 24, and 25, 1880. The Schedule of Prizes is now ready, and may be had of the Secretary,

J. H. CLARK, Printer, Briggate, Leeds.

WAKEFIELD HORTICULTURAL SOCIETY.

The ELEVENTH ANNUAL EXHIBITION of PLANTS, FLOWERS, FRUITS, and VEGETABLES, will be held in the Grammar School Ground, on FRIDAY and SATURDAY, August 13 and 14.

ALFRED PICKARD, Secretary.
York Street, Wakefield.

INTERNATIONAL POTATO EXHIBITION.

President, The Right Hon. the Lord Mayor of London.

The SIXTH ANNUAL EXHIBITION will take place at the Crystal Palace, on September 22 and 23. Schedules of Prizes and all particulars may be obtained on application to

J. A. McKENZIE, Secretary.
Tower Chambers, Moorgate, E.C.

THE ANNUAL EXHIBITION of the STOKE NEWINGTON CHRYSANTHEMUM SOCIETY will be held in the Assembly Rooms, Stoke Newington, on NOVEMBER 15 and 16. Particulars on application to the Secretary,

W. GOLDSMITH, 1, Stafford's Place, Grove Road, Stamford Hill, N.

Beautiful Hardy Lilies should now be Planted.

THE "CHRONICLE" COLLECTION of 100 fine roots in variety, 30s.; 50 ditto, 16s.; 25 ditto, 8s. 6d.; 24 ditto, selected for pots, 18s.; 12 ditto, 10s. Cash with order. £1 in value carriage free

JNO. JEFFERIES and SONS, Cirencester.

DOWNIE and LAIRD, Royal Winter Gardens, Edinburgh, have to offer Show and Fancy PANSIES, also VIOLAS, the finest in cultivation, by the 100 or 1000. LISTS free on application.

Orchids, Bulbs, &c.

THE NEW PLANT and BULB CO. beg to announce the arrival of their first Consignment of ORCHIDS from New Granada. Special LIST (No. 46) containing full particulars of the above, with LIST of New and Rare Bulbous and other Plants, is now ready. Post-free on application. Lion Walk, Colchester.

Gold Medal Begonias.

LAING'S CHOICE HYBRIDISED SEED, superior to all others, harvested from their unequalled collection, was again awarded the Royal Horticultural Society's Medal in August. Sealed packets, free by post, 1s. and 2s. 6d. each. The Trade supplied. Now is the time to sow.

JOHN LAING and CO., Seedsmen, Forest Hill, S.E.

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MR. R. BATH has now but a few thousand of his highly renowned Fastolf remaining for Disposal, 20s. per 1000; sample 100, 4s. Post-office Order or Cheque with order. No deliveries made in any case without a previous remittance. Crayford, Kent.

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B. S. WILLIAMS, The Victoria and Paradise Nurseries, Upper Holloway, London, N.

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W. F. BOFF, 203, Upper Street, Islington, N.

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Seakale.

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DICKSON and ROBINSON, Seed Merchants, Manchester.

Jerusalem Artichokes.

WANTED, a supply of the above. Please state quantity to offer, and price to

FRANCIS & ARTHUR DICKSON & SONS, 106, Eastgate Street, Chester.

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To the Trade.

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Strong Scots Fir (true Native).

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GEORGE SMITH, The Dell Nursery, Rock Ferry, Cheshire.

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To the Trade.

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E. WHITE, The Bournemouth Nurseries, Bournemouth.

SALES BY AUCTION.

Valuable East Indian Orchids.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 8, at half-past 12 o'Clock precisely, a very extensive importation of EAST INDIAN ORCHIDS, consisting of the finest lot of Vanda cœrulea ever brought to Europe, and collected by Mr. W. B. Freeman in a new locality: the plants are full of growths, one mass having not less than twenty-four, and in most perfect health, with sound green leaves. The sale also contains a grand lot of the rare and beautiful DENDROBIUM FREEMANI, Rchb. f., many of them in bud and flower and mostly with flowering growths all in perfect health. Also an importation of AERIDES FIELDINGI (Foxbrush), in splendid masses; ODONTOGLOSSUM VEXILLARIUM, VANDA TERES, MORMODES PARDINUM, various CŒLOGYNES, and other ORCHIDS.

May be viewed the morning of Sale, and Catalogues had.

Orchids and Lilies.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 10, at half-past 12 o'Clock precisely, a great variety of ESTABLISHED ORCHIDS, including duplicates from several well-known collections, many of the plants being in flower; 3000 fine bulbs of LILIUM AURATUM, just arrived from Japan in fine condition; 1500 LILIUM speciosum; 1000 LILIUM KRAMERI, ORCHID BASKETS, 200 LILIUM TIGRINUM FLORE-PLENA, GLOXINIAS, BEGONIAS, 500 AMARYLLIS BELLADONNA, 500 AMERICAN TUBEROSES, &c.

May be viewed the morning of Sale, and Catalogues had.

Valuable Imported Orchids.

MR. J. C. STEVENS has been instructed by Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 11, at half-past 12 o'Clock precisely, a grand Importation of CYMBIDIUM EBURNEUM, in masses of unusual size and health; CŒLOGYNE ASSAMICA, Rchb. f., a free-flowering new species, yellow and white, centre beautifully spotted purple; the new DENDROBIUM RUCKERI, Lindl., just brought home by Mr. W. B. Freeman; a fine lot of the splendid ODONTOGLOSSUM LUTEO-PURPUREUM SCEPTRUM, Rchb. f.; ODONTOGLOSSUM VEXILLARIUM, also BARKERIA CYCLOTELLA, Rchb. f. Flowers and drawings will be shown on the day of Sale.

On view morning of Sale, and Catalogues had.

Hardy Trees and Shrubs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on SATURDAY, March 13, at half-past 12 o'Clock precisely, a first-class collection of HARDY TREES and SHRUBS, from one of the most renowned Surrey Nurseries; 1000 Standard, Dwarf and Climbing Roses; Fruit Trees, Herbaceous Plants, Gladioli, Liliums, Spiræas, &c.

May be viewed the morning of Sale, and Catalogues had.

Odontoglossum Alexandræ, &c.

Ex ss. "Medway."

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Company, Colchester, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 15, at half-past 12 o'Clock precisely, a large Importation of ODONTOGLOSSUM ALEXANDRÆ, collected in the BEST LOCALITY in the neighbourhood of Bogota. The species offered as specimens are extremely large, from fifteen to twenty-five bulbs each, and commencing to break freely; the bulbs are also individually very large. Also CATTLEYA MENDELII, ODONTOGLOSSUM PESCATOREI, O. BLANDUM, O. TRIUMPHANS, &c.

Further particulars next week.

Important Collection of Orchids.

MR. J. C. STEVENS has received instructions from Captain Edwards to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY, and FRIDAY, March 17, 18, and 19, at half-past 12 o'Clock precisely each day, the entire COLLECTION of ESTABLISHED ORCHIDS formed by the late Mr. Serjeant Cox, at Moat Mount, Mill Hill, near Hendon, and comprising good plants of nearly all the known varieties.

On view the mornings of Sale, and Catalogues had.

Important Sale of about 600 fine Standard and other

ROSES, selected FRUIT TREES, hardy CONIFERÆ, EVERGREEN and DECIDUOUS SHRUBS, AMERICAN PLANTS, some fine double CAMELLIAS and AZALEA INDICA, beautifully set with bloom-buds; ERICAS, EPACRIS, and other Greenhouse Plants; fine bulbs of LILIUM AURATUM and others, GLADIOLUS, DAHLIAS in dry roots, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on Saturday, March 13, at 12 o'Clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Established Orchids, Lilies, and Bulbs.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, March 15, at half-past 11 o'Clock precisely, a consignment of IRIS from Japan, comprising many new and beautiful varieties; an assortment of English-grown LILIES, including giganteum, Brownii, Humboldtii, columbianum, and Washingtonianum; HARDY PLANTS and BULBS, Christmas ROSES, 300 SPIRÆA PALMATA, 200 dry bulbs of CYCLAMEN PERSICUM, 2030 AMERICAN TUBEROSES, 2000 GLOXINIA and BEGONIA BULBS, from Belgium; 600 strong bulbs of PÆONIA CHINENSIS, in collections; and three dozen WREATHS and BOUQUETS of DRIED CAPE FLOWERS, from Germany; together with about 300 lots of ESTABLISHED ORCHIDS, from various private Collections. Amongst them will be found Aerides Lobbii and Fieldingii; Odontoglossum vexillarium, Roezlii, pulchellum, Alexandræ, Rossii majus; Masdevallia tovarense bella, Harryana, Lindeni, with fifteen bloom-spikes; Cattleya Dowiana, Dayana, Warneri, maxima, Trianæ, Schilleriana, and Mendelii; Oncidium macranthum, prætextum, Philipsianum, and Rogersii; Chysis aurea, Dendrobium Lindleyanum, Cambridgeanum, fimbriatum, oculatum, suavissimum; Lælia purpurata, elegans, anceps, and Dayana; Angræcum sesquipedale, citratum, pertusum; Bollea cœlestis, Cœlogyne cristata, Phalænopsis grandiflora, Schilleriana; Cymbidium eburneum, Cypripedium Boxallii, concolor, Stonei, Lowii, and Sedeni; and numerous others.

On view morning of Sale. Catalogues at the Mart and Auctioneers' Offices, 98, Gracechurch Street, E.C.

New Malden, Surrey.

VALUABLE NURSERY STOCK.

MR. W. T. HUNT, Jun., will SELL by AUCTION, on the Premises, Floral Nurseries, New Malden (near Combe and Malden Station), on SATURDAY NEXT, at 1 for 2 o'Clock, under distress for rent, the valuable NURSERY STOCK, including about 200 dozen choice HYACINTHS, 130 dozen fine SPIRÆA JAPONICA, many dozens of TULIPS, FUCHSIAS, ARUM LILIES, AZALEAS, FERNS, Dwarf and Climbing ROSES, a few BLACK and RED CURRANTS, &c., and a few items of Household Furniture.

On view the day prior and morning of Sale. Catalogues to be had on the Premises; at the Norbiton Park Hotel, New Malden; or of the Auctioneer, 459, New Cross Road, S.E.

The Nurseries, Warminster, Wilts

IMPORTANT SALE of NURSERY STOCK.

MR. W. ABRAHAM is instructed to SELL by AUCTION, on the Premises, as above, on TUESDAY, March 9, and two following days, a quantity of valuable NURSERY STOCK, consisting of Evergreen and Deciduous Trees and Shrubs, Fruit Trees, &c., including Yews, Lawson's Cypress, Cedrus Deodara, Thujopsis borealis, Cryptomerias, Laurels, Hollies, Box, Rhododendrons, Azaleas, and other American Plants; Standard Apples, Pears, Plums, Cherries; also Pyramid, Bush, and Dwarf-trained Apples, Pears and Plums; Raspberries, Strawberries, Rhubarb Roots, &c.; and a variety of other Stock in excellent condition for removal.

May now be viewed, and Catalogues can be obtained at the Nursery; or of the Auctioneer, Goldworth Nursery, Woking, Surrey.

The Lodge, Totteridge Common, Herts.

A quantity of HOT HOUSE, GREENHOUSE, and GARDEN PLANTS, comprising choice Collections, in pots, of Camellias, Oleanders, Azaleas, Pelargoniums, Geraniums, Daturas, Cinerarias, Ferns, Amaryllis &c.; Orange Trees, in tubs; two superb American Aloes, in tubs, supposed to be the finest in this country; Iron Truck for moving ditto, Garden Tools and Implements, Garden Seats, Vases, Iron Rollers, and 16-load Rick of superior Upland Meadow Hay.

MESSRS. MORLEY AND BATE will SELL the above by AUCTION, on the Premises, on FRIDAY, March 12, at 1 o'Clock sharp.

On view day prior and morning of Sale. Catalogues on the Premises, and at Totteridge Station; or of the Auctioneers, at 185, Earl's Court Road, Kensington, S.W.

For Sale.—Goodwill of Seed Business.

MR. R. B. MATTHEWS, wishing to devote his undivided attention to the Nursery Business, has instructed the Subscribers to SELL, by PRIVATE CONTRACT, the Goodwill of the old-established GOLDEN PLOUGH SEED ESTABLISMENT, 65 and 67, Victoria Street, Belfast, together with the Stock and Fixtures. The Purchaser can go into possession immediately without any interruption to the business, which is well known to be one of the best in Belfast. The rent is moderate, and the situation all that could be desired.

Apply to W. BEATTIE AND SON, Agents and Brokers, 25, Rosemary Street, Belfast.

FOR IMMEDIATE DISPOSAL, a FLORIST'S, SEEDSMAN'S, and FRUITERER'S BUSINESS (through a death). Long Lease. Capital Trade. Situate S.E. district. Incoming by valuation, about £120, or immediate offer.

B. M., *Gardeners' Chronicle* Office, W.C.

To Nurserymen, Florists and Others.

TO BE SOLD, a FREEHOLD HOUSE, with good Stable, &c.; 8000 feet of Glass. Eight miles north of London. Price £1500, or would be LET on LEASE at £100 per annum. Stock at valuation.

Apply to Mr. H. H. WELLS, Solicitor, 8, Paternoster Row, London, E.C.

Kent.

3½ miles from Bromley, and 2 miles from Orpington Stations.

TO BE LET, with Immediate Possession, about 8 Acres of ARABLE LAND, and 8 Acres of STRAWBERRY PLANTS, various sorts, namely, Paxtons, Counts, and Helenas, in the first and second year of fruiting; together with Horse and Van, two Iron Horse-Hoes, Market Boxes, &c. Rent very low.

Apply to Messrs. RUSSELL AND GUIVER, Land and Estate Agents, 2, Crescent Road, Bromley, Kent.

TO LET, FLORIST'S and NURSERY, 6-roomed House, three Greenhouses, Pits, Stable, &c. Twenty-one years' Lease. Seven miles out, W. Price £150. Stock at valuation.—Particulars of X., Mrs. Britten, 2, Shaftesbury Villa, Kew Road, Richmond.

Fifty Nurseries, Market Gardens, Florist and Seed

BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS, HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained gratis at 98, Gracechurch Street, E.C.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

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ROSES, Dwarf, of finest Hybrid Perpetual kinds.

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A few very fine Fruiting Trees of CHERRIES, PEARS, APPLES, &c., Standards; and PEARS on Dwarf Stocks.

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,, TRICOLORS—Mrs. Pollock, 2s. 6d. per doz., 18s. per 100; Sir R. Napier and Sophie Dumaresque, 3s. per doz., 20s. per 100.

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,, BRONZE—Maréchal McMahon, the best for bedding, 18s. per 100.

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SUTTON'S QUEEN. Fills the gap between late Broccolis and Cauliflowers. Perfectly distinct, very dwarf and compact, heads well protected, medium size, handsome, and of creamy-white colour.

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Cuttings of any of the above half-price.

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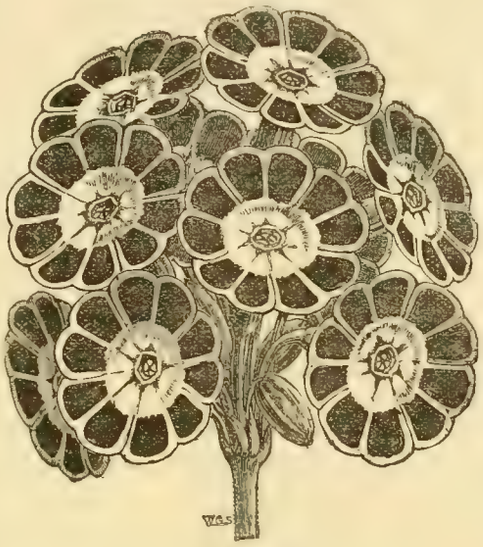

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,, ,, violet, white margin	0	6
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APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.
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QUICKS.—200,000, 3-yr. old, transplanted, about 25 inches high; same quantity Seedling BIRCH, and 2-yr. ALDERS, for Sale at very low prices.
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CHESTNUTS, Spanish, extra strong fine transplanted, 3 to 4 feet.

ASPARAGUS PLANTS, fine strong, 1, 2, 3, and 4-yr.

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STRONG FOREST TREES.

ALDER, 3 to 4, 4 to 5, and 5 to 6 feet.
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OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.

The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
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Descriptive Priced LIST on application.
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PRIMROSE, double: crimson-purple, 6s. per dozen, 45s. per 100; yellow, 3s. per dozen, 20s. per 100; lilac, 2s. 6d. per dozen, 16s. per 100; white, 3s. per dozen, 20s. per 100
,, single, crimson (fine), 2s. 6d. per dozen, 16s. per 100
POLYANTHUS, 2s. 6d. per dozen, 16s. per 100
AURICULAS (alpine, fine), 3s. per dozen, 20s. per 100
MYOSOTIS ALPESTRIS COMPACTA (very dwarf, 3 inches, fine), 2s. per dozen, 10s. per 100
VIOLET, Victoria Regina (strong clumps), 4s. per dozen, 25s. per 100
HEPATICA, single blue, 3s. per dozen, 20s. per 100
PHLOX SETACEA (strong), 4s. per dozen, 25s. per 100
IBERIS SEMPERVIRENS, 3s. per dozen, 20s. per 100
ARABIS ALBIDA (strong), 2s. per dozen, 12s. 6d. per 100
PANSY, Blue King, 2s. per dozen, 10s. per 100
,, Imperator (fine, plum-purple), 3s. per dozen, 20s. per 100
VIOLA, Golden Gem, 2s. 6d. per dozen, 16s. per 100
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,, Blue Gem (very dwarf), 2s. 6d. per dozen, 16s. per 100
WALLFLOWERS (double German sorts), 2s. per dozen, 12s. 6d. per 100
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RODGER McCLELLAND AND CO., 64, Hill Street Newry.

New Catalogue for 1880.

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Our Selection. Per doz.—	s.	d.
Abutilons, in variety ..	3	0
Achimenes, in variety ..	3	0
Ageratums, small plants, per 100, 5s.	1	0
Ageratums, in pots, per 100, 15s.	2	6
Antirrhinums	3	6
Begonias, Tuberous, from 4s. to	18	0
Other sorts	3	0
Bouvardias, 4s. to ..	6	0
Caladiums	9	0
Calceolaria Golden Gem (not in pots) per 100, 5s.	1	0
Carpet Bedding Plants (see Catalogue)		
Carnations and Picotees, 12 plants	7	0
12 pairs	12	0
Chrysanthemums, in great variety, per 100, 18s.	3	0
Clematis, to name ..	9	0
Coleus	3	0
Dactylis elegantissima, per 100, 6s.	1	0
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Geranium, Double ..	3	0
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Iris, German	3	0
Ivies, in variety.. ..	6	0
Ivies, Irish	3	0
Lantanas	2	0
Lilium auratum, very fine, each, 1s. and 1s. 6d.		
Lobelias, small, per 100, 4s.	1	0
Lobelias, in pots ..	2	6

Our Selection. Per doz.—	s.	d.
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Mimulus, in variety ..	3	0
Myosotis, per 100, 6s. ..	1	6
Pæonies, white, blush, crimson, and other shades	6	0
Pansies, show, per 100, 25s.	3	6
Pansies, Bedding, about 20,000 to select from, per 100, 12s.	2	0
Pentstemons, per 100, 25s.	3	6
Phloxes, per 100, 25s. ..	3	6
Pelargonium, Show, Fancy, and French, 6s. to	9	0
Pinks, per 100, 25s. ..	3	6
Potentillas, Double ..	6	0
Polyanthus, Seedlings, per 100, 5s.	1	0
Polyanthus, named sorts (see Catalogue)		
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Primroses, old Double Velvet, 1s. 6d each.		
Primroses, Single, assorted colours ..	2	0
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Roses, H P, fine plants from ground, per 100, 40s.	6	0
Roses, Climbing or Mosses	4	0
Rock Plants, per 100, 15s.	3	0
Salvias	3	0
Saxifrages	3	0
Sedums	3	0
Sedum acre aurea, elegans, and glaucum, per 100, 8s.	1	6
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Succulents, 4s. to ..	6	0
Tropæolums	3	0
Violas (immense stock of best sorts), per 100, 8s. to 12s.	2	0
Verbenas, stock plants, in pots	3	0
Verbenas, young, not in pots	1	6
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Vines, all the leading kinds for planting and fruiting, 30s. to ..	60	0
Strawberry Runners (our collection contains 65 varieties), per 100, 2s. 6d.		
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Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

BENJAMIN REID AND CO., NURSERYMEN, Aberdeen, N.B., beg to offer at reduced rates the following extra stocks of transplanted TREES and SHRUBS, all clean and well rooted. Early orders solicited :—

ALDER, 4 to 5 feet.
ASH. Mountain, 3 to 4 feet, and 8 to 10 feet.
CHESTNUT, Horse, 5 to 6 feet, and 7 to 9 feet.
LIME, 4 to 5 feet, and 6 to 8 feet.
MAPLE, Norway, 8 to 10 feet.
POPLAR. Black Italian, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
SERVICE, 5 to 6 feet.
SLOE THORN, 1½ to 2 feet, and 2 to 3 feet.
THORN, 1½ to 2 feet, and 2 to 2½ feet.
ABIES DOUGLASII, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
" ORIENTALIS, 1 to 1½ foot.
CEDRUS ATLANTICA, 1 to 1½ foot, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.
" DEODARA, 1½ to 2 feet. and 2 to 3 feet.
CUPRESSUS LAWSONIANA, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
" NUTKAENSIS, 2 to 3 feet.
THUJA GIGANTEA, 2 to 3 feet.
AZALEA PONTICA, 1½ to 2 feet, and 2 to 3 feet.
LAUREL, Bay, 1½ to 2 feet, and 2 to 2½ feet.
" Portugal, 1 to 1½ foot.
BERBERIS DARWINII, 2 to 3 feet.
" VULGARIS, 1½ to 2 feet, and 2 to 3 feet.
Prices on application

Grand New Coleus.

J. PEED AND SONS beg to call special attention to the undermentioned NEW COLEUS, which obtained two First-class Certificates from the Royal Horticultural Society in June and July last. They are quite distinct from any other varieties yet sent out, and are pronounced the most beautiful yet in commerce :—

SET No. 1.

Eva	7s. 6d.	Ada	5s. 0d.	Edith	5s. 0d.
Maud	7s. 6d.	Florence ..	5s. 0d.		

The five for 21s.

SET No. 2.

Phœbe	Miriam	Brookwood
Minnie Peed	Emma	Vesuvius
J. W. Baxendale	Wizard of Woking	Sunray
Little May	Ida	Roupell Beauty

The twelve for 42s., or 5s. each.

The usual discount to the Trade.
Roupell Park Nurseries, Norwood Road, S.E

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.

Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

LEICESTER RED CELERY has again proved itself to be the hardiest, sweetest, most solid, and best Celery this unfavourable season; when most kinds have been soft and watery this has been good in every way. Those wishing to obtain the true article should have it in printed packets, price 1s.; post-free on receipt of 13 stamps.

BROCCOLI, Harrison's new Dwarf Hardy; a late valuable kind, 1s. per packet.
SAVOY, Harrison's King Coffee Garden, 1s. per packet.
TURNIP, Harrison's Exhibition; a perfect round white variety, from 6d. per packet.
CARROT, Harrison's Early Market, 6d. per packet.

HARRISON'S "LEICESTER SEEDS," of choicest quality, are supplied in collections of 21s. and upwards, sent carriage free. Trade Prices and full particulars on application to
HARRISON AND SONS, Seed Growers, Leicester.

MAGNUM BONUM POTATOS. — A splendid sample of the above, grown from Seed, direct from the raiser (Mr. Clarke), price 7s. 6d. per bushel of 56 lb., free on rail, sacks included. Also about 10,000 strong HAZEL, at 15s. per 1000.
H. T. BATH, Seedsman, &c, 80, High Street, Lymington.

TREES for AVENUE, PARK, or STREET PLANTING.

ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
" Horse, 14 to 16 feet, girting 8 to 10 inches.
" Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
" Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.

They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.

The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

To the Trade.

MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.
Seed Growing Establishment, Wisbech.

New Crimson-Scarlet Fringed Primula Seed.

F. AND A. SMITH can supply the above (the same colour as exhibited by the Royal Horticultural Society, at South Kensington), in 2s. 6d. and 5s. packets. Also their well-known strains of other sorts of PRIMULAS, CINERARIAS, CALCEOLARIA, &c. LIST on application.
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GERANIUMS.—Stock Plants of New and valuable Geraniums with cuttings, for cash.

The magnificent new Silver-edged Geraniums, with grand flowers of all colours, strong plants 4s. 6d. per dozen, 25s. per 100, packed and put on rail. Strong rooted cuttings of all the best sorts 3s. per dozen, or 18s. per 100, by post. Cuttings 10s. 6d. per 100, post-free.

LISTS free on application. P.O.O. payable to
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Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

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Snowflake	Paterson's Victoria
Early Rose	Regent
Myatt's Prolific	Dalmahoy
Fortyfold	Fluke
Bresee's Prolific	Champion (Scotch)
Early Shaw	Redskin Flourball

And other leading varieties. Prices on application to
JOSIAH H. BATH, York Street, Borough Market, S.E.

TREE SEEDS.—

ABIES DOUGLASII, post-free, 2s. 6d. per ounce.
" MENZIESII, post-free, 4s. per ounce.
PICEA NOBILIS, post-free, 4s. per ounce.
PINUS MONTICOLA, post-free, 3s. per ounce.
LARCH, Native, 2s. per pound.

The above are all of crop 1879, and collected from Trees grown in Scotland, and may be fully relied on for purity and hardiness.

Special prices for large quantities, and to the Trade on application.
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SUTTON'S KING OF THE CAULIFLOWERS.

Dwarf, compact, very large, firm, beautifully white heads.

From Mr. JOHN CLARKE, Gr. to the Most Noble the Marquis of Ripon :—"Your King is a very dwarf, good strain of Cauliflowers, producing firm and beautifully white heads."

1s. 6d. and 2s. 6d. per packet, post-free.
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B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.
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Special Offer to Farmers, Gardeners, and Others.

GEE'S SUPERIOR BEDFORDSHIRE GROWN SEED POTATOS, CABBAGE, and SAVOY PLANTS, &c.

F. GEE has fine stocks of the above, which have been grown carefully on new land, fine samples, free from disease, and such that he can highly recommend to all who require a change of seed. They can be supplied in almost any quantities (if unsold) as follows (put on G.N. rails.) for cash with orders :—

	Per Peck of 14 lb.		Per Bush. of 56 lb.		Per Cwt. of 112 lb.		Per Ton.
	s.	d.	s.	d.	s.	d	£ s.
EARLY ASHLEAF KIDNEY, true dwarf top, improved stock..	2	6	9	0	15	0	14 0
SNOWFLAKES, very fine, scarce ..	2	6	8	0	15	0	14 0
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NEW MAGNUM BONUM. — Sutton's true. Splendid sample, fine quality, and very productive, and the finest disease-resister..	2	6	8	0	15	0	14 0
NEW SCOTCH CHAMPION.—True. Fine sample, extraordinarily productive, and marvellous disease-resister	2	0	7	0	13	0	12 0
PORTER'S EXCELSIOR.—Fine quality, good cropper	2	6	8	0	15	0	14 0

Good Peck Bags charged 3d. each, Bushels 6d., and Common Sacks, to hold 1½ Cwt., 8d. each.

ASPARAGUS PLANTS, splendid stuff, Battersea and Connover's Colossal, 1s. 6d., 2s. 6d., 3s. 6d. and 5s. per 100 10s. to 40s. per 1000.

RHUBARB, splendid for Planting, Victoria, Early Scarlet, and Prince Albert, 2s. to 4s. per dozen; 10s. to 20s. per 100. Price varying according to size.

CABBAGE and SAVOY PLANTS, grown from F. GEE's noted stocks. F. GEE can only now supply a very limited quantity as follows (if unsold on receipt of orders) :—

EARLY ENFIELD CABBAGE, small plants, 5s. per 1000.
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GREEN CURLED SAVOY, very fine, 5s. per 1000.

Packages for Cabbage Plants, 6d. per 1000 extra.

Splendid Double DAISIES, choice dark scarlet and others 2s. 6d. to 5s. per 100, 15s. to 40s. per 1000.

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SAGE and THYME ROOTS, very fine, 2s. to 3s. per dozen, 10s. to 20s. per 100.

Any quantity can be supplied.
Large buyers liberally treated with.

And CATALOGUES and lowest prices also of FARM and GARDEN SEEDS, on application to
F. GEE, Biggleswade, Beds.

Special List of Cheap Ferns.

THE ABOVE SPECIAL LIST of a large number of varieties of FERNS and SELAGINELLAS, offered at very low prices, will be forwarded on application. Ferns being our Speciality, and having an immense stock, we are able to supply them at the most reasonable prices.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, have to offer the following, at per 1000 :—

ALDER, 2 to 3 feet, 20s.; 3 to 4 feet, 25s.
ASH, Mountain, 3 to 4 feet, 18s.; 4 to 5 feet, 25s.
DOGWOOD, Red, 1 to 1½ foot, 30s.; 1½ to 2 feet, 40s.; 3 to 4 feet, 70s.
FIR, Spruce, bushy, 1½ to 2 feet, 20s.
POPLAR, Black Italian, 3 to 4 feet, 20s.; 4 to 5 feet, 25s.
WILLOW, Huntingdon, 5 to 6 feet, 30s.
PERNETTYA MUCRONATA, transplanted last spring, 25s.
RHODODENDRON, hybrids, 6 to 9 inches, 65s.; £7 per 10,000
" " 9 to 12 inches, 75s.; £32 per 10,000.
" Stocks, for grafting, 80s.; £17 10s. per 5000.
WHINS, double, 1 foot, transplanted last spring, 80s.
YEWS, 1 to 1½ foot, 100s.; 2 to 3 feet, 200s.
LARCH, 2 to 3 feet, 25s.
BROOM, 1-yr., 2s 6d., 40s. per 25,000; 2-yr., 3s. 6d., 60s. per 25,000; transplanted, 2 to 2½ feet, 15s.
GORSE, 1-yr., 2s. 6d., 40s. per 25,000; 2-yr., 4s. 6d., 80s per 25,000.

Vines—Vines—Vines.

F. AND A. SMITH can supply the above, in strong close-jointed Canes, true to name, Fruiting and Planting. Price on application.
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To the Trade.

"PRIDE OF ONTARIO" POTATO.

H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.

Seed Growing Establishment, Wisbech.

New Cucumber, Sir Garnet Wolseley.

JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, post-free for 30 stamps.

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THE present year's issue of this CATALOGUE is now ready, and contains a fine selection of New, Rare and Hardy Perennials, also collections of Orchids and Carnivorous Plants; Bulbs, including Anemones and Ranunculus; Hardy Ferns, Aquatics, Bamboos, and Ornamental Grasses, &c. Also an abbreviated List of Hardy Florists' Flowers, consisting of such only as should be planted at this early season. Post-free on application.

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MESSRS. R. AND G. NEAL having to Clear a large portion of their Grounds (15 Acres), the Land being required for Building Purposes, at once, beg to offer the whole of the stock at a very low price, to effect a clearance. The stock consists of hundreds of thousands of FOREST and ORNAMENTAL TREES, such as Limes, Planes, Poplars of all kinds, Elms, Willows, Almonds, Laburnums, &c.; also thousands of large FRUIT TREES, SHRUBS, CLIMBING PLANTS, &c., and millions of SMALL PLANTS suitable for Nurserymen.

Special LISTS on application to

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ENORMOUS STOCK — THE LARGEST IN EUROPE.

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Their prices will remain the same as before the frost.

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ARE NOW SENDING OUT THE VERY DESIRABLE

NEW APPLE, "NORTHERN DUMPLING."

This large Culinary Apple, for which a Cultural Certificate was awarded by the Royal Horticultural Society of London in 1874, was raised from seed some years ago by Mr. J. Webster, Gordon Castle Gardens, as far north in latitude as 57° 38'. It is a cross between "White Moor" and "Stirling Castle," being much larger than either sort, and of a very different form; stalk, much sunk, short and fleshy; eye, hollow and slightly ribbed round the apex; shape, roundish oblong; colour, yellowish-green, with a rosy tint next the sun.

The "Northern Dumpling" has proved to be both hardy and prolific—much desired qualities in a British climate—combining the excellencies of the well-known old favourites with a constitution admirably adapting it for cultivation in cold and exposed districts.

☞ *A Coloured Lithograph of the Apple will be sent to every Purchaser of Six Trees.*

Price, 7s. 6d. each. The usual Discount to the Trade.

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WHY grow the old ordinary kinds when you can have the colours nearly as bright as the Zona Pelargoniums?

	Per pkt. s.	d.	
SWANLEY RED.....	5	0	These are totally away from all others, and even superior to the Chiswick Red and rubro-violacea which were awarded First-class Certificates last November.
SWANLEY PURPLE..	5	0	
SWANLEY CRIMSON	2	6	

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THE above is now admitted throughout the world to be the most replete Illustrated and Descriptive CATALOGUE of Florists' Flowers and the Seeds ever issued. No garden of the least pretence should be without this work; even the professional refers to it for guidance, as it describes all the best varieties (new and old) in cultivation, supplied either as cuttings, root cuttings, or plants, at the lowest price consistect with correctness.

CALCEOLARIAS (Spotted).—H. C.'s best Strain in 60's, 2s. 6d., by post; 2s. per dozen. Special price per 100 and 1000.

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THE HOME FOR FLOWERS,
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ALL FINE CLEAN GROWN PLANTS.

ALDER	2 to 3	feet	17s. per 1000
,,	3 to 4	,,	19s. ,,
ASH	1 to 1½	,,	10s. ,,
,,	1½ to 2	,,	14s. ,,
,,	2 to 3	,,	17s. ,,
,,	3 to 4	,,	23s. ,,
,, Mountain	3 to 4	,,	22s. ,,
,, ,,	4 to 6	,,	30s. ,,
BROOM	1½ to 2	,,	14s. ,,
,,	2 to 3	,,	17s. ,,
BUCKTHORN	12 to 18	inches	10s. per 100
,,	2½ to 4	feet	20s. ,,
CHESTNUT, Spanish	1½ to 2	,,	16s. per 1000
,, ,,	2 to 3	,,	25s. ,,
,, ,,	3 to 4	,,	30s. ,,
ELDER, Scarlet	1 to 2	,,	14s. ,,
ELM, Scotch	1 to 2	,,	14s. ,,
,, ,,	3 to 5	,,	30s. ,,
HOLLY, 2-yr. and 3-yr., mixed			6s. ,,
HORNBEAM	4 to 6	,,	28s. ,,
LIMES	2 to 3	,,	8s. per 100
,,	3 to 4	,,	12s. ,,
,,	4 to 5	,,	17s. ,,
,,	5 to 6	,,	40s. ,,
MAPLE, English and Norway	3 to 4	,,	30s. ,,
OAK, Evergreen, three times transplanted	2 to 3	,,	25s. ,,
,, Evergreen, do., do	3 to 4	,,	50s. ,,
,, Evergreen, do., do.	4 to 5	,,	100s. ,,
POPLARS, Black Italian, Balsam, and Ontario	3 to 4	,,	20s. per 1000
PRIVET, Evergreen	1½ to 2	,,	15s. ,,
,, ,,	2 to 3	,,	24s. ,,
QUICK	9 to 15	inches	9s. ,,
,,	12 to 18	,,	14s. ,,
,,	18 to 24	,,	20s. ,,
,,	2 to 3	feet	24s. ,,
SYCAMORE	3 to 4	,,	25s. ,,
,,	4 to 5	,,	40s. ,,
THORN, Black	1½ to 2	,,	18s. ,,
WHIN or GORSE	18 to 24	inches	15s. ,,
,,	2 to 3	feet	20s. ,,
WILLOW, Bedford and Huntingdon	3 to 4	,,	20s. ,,

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ASH	1-yr.	£6	0	0	per 100,000.
AUSTRIAN PINE	2-yr.	12	10	0	per 100,000.
CORSICAN PINE	2-yr.	15	0	0	,,
LARCH	1-yr.	6	0	0	,,
,, very fine	1-yr. 1-yr.	0	9	0	per 1000.
,, very fine	1-yr. 2-yr.	0	13	0	per 1000.
,, 15 to 26 inches,	2-yr. 2-yr.	0	17	6	per 1000.
,, 20 to 30 inches		1	5	0	per 1000.
SPRUCE	2-yr.	6	0	0	per 100,000
,,	3-yr.	7	10	0	,,

PETER S. ROBERTSON & CO.,
TRINITY NURSERIES, EDINBURGH.

MANGEL SEED.

JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.
Bardney Manor, Lincoln.

Potato Disease——Potato Disease.

THE FAMOUS SCOTCH CHAMPION,

ACKNOWLEDGED BY EVERYBODY TO BE
the best Disease Resisting variety grown.
Price List free on application.
QUANTITY OF OTHER VARIETIES.
Applicants will please state quantity and kind required.
PUBLIC INSTITUTIONS, HOTELS and FAMILIES, supplied with Table Potatos.

A Large Quantity of Carrots, Mangels and Swedes, for Horses and Cattle, for Sale.

APPLY
MATTHEW JONES,
Wholesale Potato Merchant,
252 and 253, BROAD STREET, BIRMINGHAM.

TO THE TRADE ONLY.

CONIFERÆ, half a foot high.
12s. per 100, Seven of each of the following sorts.
£5 per 1000, Seventy of each of the following sorts.

CHAMÆCYPARIS Boursieri argentea
,, ,, compacta
,, ,, fol. arg. var.
,, ,, fol. aureo var.
,, ,, gracilis
,, ,, minima glauca
,, pisifera
,, plumosa aurea
CHAMÆCYPARIS sphæroidea Andelyensis
JUNIPERUS glauca
RETINOSPORA filifera
,, leptoclada (squarrosa, Veitch)
,, squarrosa
THUJA Vervaeneana
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TOTTENHAM NURSERIES,
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TUBEROUS ROOTED BEGONIAS.

W. J. MARSH is now offering fine healthy Tubs of all the finest varieties, 10s. per dozen. Sample bulb for fourteen stamps. Cash with order.
Woodbridge, Suffolk.

VERBENAS, Rooted Cuttings, strong and healthy, in thirty-five choice varieties, 6s. per 100, post free.

PRIMULAS, saved from the flowers of which the Editors of the *Gardeners' Chronicle* said, "A very fine strain, the flowers being large, highly coloured, and nicely fimbriated." Per packet 1s., post-free. Cash with order.
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(*ESTABLISHED* 1785.)

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DESCRIPTIVE CATALOGUE of GARDEN and AGRICULTURAL SEEDS.

CULTURAL DIRECTIONS for the ROSE,
By John Cranston.
Sixth Edition. Price 2s., free by Post for 27 stamps.

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(LIMITED),
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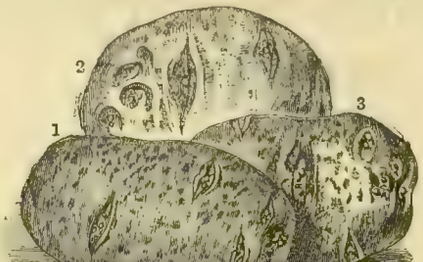
NEW AMERICAN POTATOS.



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MR. J. C. STEVENS has been instructed by Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 11, at half-past 12 o'Clock precisely, a grand Importation of CYMBIDIUM EBURNEUM, in masses of unusual size and health; CŒLOGYNE ASSAMICA, Rchb. f., a free flowering new species, yellow and white, centre beautifully spotted purple; the new DENDROBIUM RUCKERI, Lindl., just brought home by Mr. W. B. Freeman; a fine lot of the splendid ODONTOGLOSSUM LUTEO-PURPUREUM SCEPTRUM, Rchb. f., ODONTOGLOSSUM VEXILLARIUM; also BARKERIA CYCLOTELLA, Rchb. f. Flowers and Drawings will be shown on the day of Sale.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

ODONTOGLOSSUM ALEXANDRÆ, &c.,

EX SS. "MEDWAY."

MR. J. C. STEVENS has received instructions from The New Plant and Bulb Company, Colchester, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 15, at half-past 12 o'Clock precisely, a large Importation of ODONTOGLOSSUM ALEXANDRÆ, collected in the BEST LOCALITY in the neigbourhood of Bogota. The species offered as specimens are extremely large, from fifteen to twenty-five bulbs each, and commencing to break freely; the bulbs are also individually very large. Also CATTLEYA MENDELII, ODONTOGLOSSUM PESCATOREI, O. BLANDUM, O. TRIUMPHANS, &c.

Further particulars next week.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

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MR. JAMES ANDERSON,

NURSERYMAN and VALUER, MEADOWBANK, UDDINGSTON, GLASGOW,

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Mr. Anderson need scarcely point out how advantageous it is for buyers to get established plants direct from the houses in which they have been growing—thus avoiding the checks and chills, and injured growths which invariably follow those consigned to Auction Rooms. The Collection offers a rare opportunity for buyers in general adding to their stock at cheap rates, no matter whether it be beginners or those who are seeking for the rarest and best things in commerce.

Meadowbank Nurseries, March, 1880.

Notice! **Remarkable Success during the past Potato Disease Year.** **Notice!**

AMIES' ANTI-FUNGOID POTATO MANURE.

It is acknowledged by many of the leading Potato Growers to be the most valuable Manure ever offered to the public for aiding the culture of this important esculent. During the past few years the finest crops of Potatos have been produced with it. It is prepared with special attention to the needs of the Potato plant; at the same time it fertilises and acts directly on the soil. It gives health and vigour to the plant, and provides the particular foods required for its proper nourishment and development during the various stages of growth, producing large sound tubers of uniform size. It is an anti-fungoid, and affords exceptional protection against the various parasitic destroyers of vegetable life, and in numerous well-authenticated instances has been found to **BE A GREAT PREVENTIVE OF THE POTATO DISEASE.** *From the foregoing it will be seen that this Manure is peculiarly suitable for the cultivation of the Potato, and a great desideratum to Potato Growers.*

The extraordinary success that has attended the use of this Manure during the past season (1879), in which the Potato disease has been so prevalent, induces us to offer it to the public with the utmost confidence. A few of the numerous reports we have received, testifying to the value of the Manure, will be found in our new pamphlet, which may be had, post-free. The following report by the celebrated agricultural chemist, Mr. Bernard Dyer, F.C.S., A.I.C., and the extract from the *Mark Lane Express*, a leading agricultural journal, will be read with interest:—

Mr. BERNARD DYER'S REPORT.

"I have examined a sample of this Manure and find that it contains **Phosphate of Lime, Ammonia and Potash Salts, in suitable proportions,** and is compounded in addition with certain chemical ingredients of an antiseptic nature, which, if the Manure is used in accordance with the directions supplied, may be expected to check fungoid growth in soils, to discourage the existence of insects, and to favour the healthy development of sound tubers."

"MARK LANE EXPRESS," March 3, 1879.

"We have ourselves proved by direct experiment, very carefully conducted, the value of the Manure supplied for Potatos. We do not believe in any Manure as a perfect preventive of Potato disease, though anything which promotes the health and strength of the plants enables them to some extent to resist the attacks of disease, and it may be that the chemical effects of the Manure are unfavourable to the free development of the fungus. As an insecticide our experiment rendered us disposed to decide in favour of the Manure. It is only fair to say, that there are few fertilisers with respect to which the verdict of those who have tried them is so generally favourable as in the case of the Manure in question."

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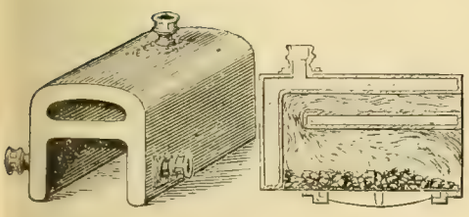

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BEGONIA, Splendid Mixed Hybrids. This splendid strain includes all the best and new named varieties, and has this season taken First-class Prizes at the Royal Horticultural and Royal Botanic Societies, and at most of the Provincial Shows	1 6
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and	1 6

From Mr. T. BEDFORD, *Gardener to the* Hon. Mrs. Barton, *July* 1, 1879.

"You will be pleased to learn that the Calceolarias grown from your seeds were the best that my employer has ever seen."

CINERARIA, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and	1 6

From Mr. GRAY, *Gardener to* — Walker, Esq., *January* 8, 1880.

"I am pleased to inform you that the Cineraria seed had from you last year has proved a grand strain, for I have some very fine flowers over 2 inches across."

CYCLAMEN PERSICUM, Brilliant (New) .. 5s. and	3 6
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All the above Cyclamen have received First-class Certificates from the Royal Horticultural and Royal Botanic Societies.

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Flower Seeds Post-free.

VICTORIA AND PARADISE NURSERIES,

UPPER HOLLOWAY, LONDON, N.

THE

Gardeners' Chronicle.

SATURDAY, MARCH 6, 1880.

ART IN THE CONSERVATORY.

YOUR readers must have felt indebted to Mr. Adams for his paper on Art in the Conservatory. It has given rise to considerable variety of opinion and some discussion. The subject is, however, by no means threshed out. Nowhere is Art more needed, nor less often found. Not that I believe in or desire what are called artistic conservatories: these have been mostly the toys or crotchets of architects, and the horror and despair of cultivators. At one time, and that not so very long ago, no one was considered qualified to plan or put up a glasshouse but an architect or great builder. The results were often highly ornate and expensive houses of the least possible use for cultural purposes. Attached conservatories, especially, destroyed rather than conserved plant life; they were made to harmonise and fit in with the mansion—no matter whether they suited the plants or not. As a rule, they were far too lofty and too dark for cultural purposes.

As the nature and requirements of plant-life became better understood, there was a sudden rebound from these pretentious dormitories or hospitals to mere glass sheds. Like most reactions, the rebound from excessive formality to severe simplicity went too far. Cultivators had learned by bitter experience to hate the name of art as applied to glasshouses; architects and all their horticultural works were alike shunned and condemned. Not only was a new race of horticultural builders called into existence, most of whom did good work for horticulture by building houses to suit the plants rather than to please the eye, but almost every successful grower became his own builder. The glass erections slipped from the hands of architects into those of gardeners. This was a decided gain to horticulture, but it is no disparagement to practical men to say that the change was not all gain or wholly for the better. Many good growers proved indifferent designers or builders, as the numbers of mere glass sheds up and down the country testify.

Horticultural architecture has now assumed such national importance as to require t assistance of the best taste and the highest talent the nation has to bestow upon it. It is no disparagement of the practical talent which is the very backbone of horticulture, to affirm that the assistance of architects may be needful to design and give plans for the construction of conservatories and other glasshouses. Such plans should, however, invariably be submitted to gardeners in regard to their internal and cultural arrangements. In a word, the architect may at times be required to find taste and to provide stability and safety—the gardener all else the plants need. No doubt gardeners often have found both, and some so-called gardeners' houses are among the most ornamental as well as the most useful to be found

up and down the country. Still we look upon it as one of the most promising signs of the times, that architects like Mr. Adams are turning their attention to the subject of Art in the Conservatory; for while we may be said to teach and represent the highest art in the plants grown in glasshouses, we are also solicitous that the buildings themselves should be artistic. Mr. Adams also seems to be fully alive to the importance of light, heat, and air to plant-life and healthy growth. There is little to be added to these essentials—only those of occasional shade and an abundant supply of soft water, which may generally be collected from the roofs themselves.

But it is most important to impress on all concerned the fact, that the most severe regard for utility is by no means incompatible with a proper amount of ornament. Not only are utility and beauty compatible; but the latter forms no small portion of the former, inasmuch as congruity, that is, fitness, is an essential element of beauty. For example, all water-jugs, vases, glasses, may be said to hold water equally well; but the more chastely they are designed, the more elegantly formed, or the more perfectly finished—in a word, the greater their beauty, the more pleasant are they to look upon and to use; and thus their utility is enhanced in the exact ratio in which their beauty is heightened. The same remark would hold good of dwelling-houses, household furniture, the formation and adornment of gardens, &c. In fact, there seems to be far more truth than appears on the surface in the statement that beauty is probably the most useful quality or thing in the world.

Be that, however, as it may, it is as possible as it is desirable to combine beauty with utility in our conservatories and other glasshouses. Those attached to, or forming portions of, mansions or dwelling-houses, should be expressions of Art in their external appearance as well as models of cultural convenience in their internal arrangements. The great majority of conservatories are too lofty. For cultural purposes few need exceed a height of from 6 feet to 15 feet. Of course houses for Camellias, Rhododendrons, Tree Ferns, Palms, &c., may need to be more than double or treble the maximum height here indicated; but for all-round conservatories—that is, houses in which to grow flowers, or preserve such plants as Pelargoniums, Fuchsias, Heaths, Azaleas—these heights will prove ample. For it is found in practice that not only must plants be exposed to the light, but many of them thrive best when their heads are pretty close to the glass. The cultural failures in so many architectural conservatories arose quite as much from their extreme height as from their opaqueness. The plants, instead of developing into fine specimens, seemed always engaged in a race for the glass roof, which attenuated them into semi-skeletons. By placing the roof as close to them as is compatible with practical attention to their wants, and a full display of their beauty, the plants thrive better and it costs less to keep them warm.

The latter is a very important point in practice, for whatever ratio of proportions of pipe to area of cooling surface is adopted it is certain that the less air there is to be heated the less pipe will be needed and the smaller the coal bill. We would rather not pronounce *ex cathedra* on the amount of pipe needful per cubic foot of air. The great practical point is to have sufficient pipe. Pipe is bought but once, coal annually, and hence in the end pipe is far cheaper than coal. As much or more heat may also be diffused through the atmosphere of glasshouses from a greater surface of pipe, moderately warmed, than from a smaller quantity of pipe at a higher temperature; besides, the risk of injury to boiler and pipes rises with the temperature. As in running it is the speed that kills, so in heating it is the pressure that bursts boilers, tries joints, blows the water out of pipes, smelts furnace bars and doors, and not seldom ruins all; hence the wisdom of over rather than under piping conservatories and all glasshouses. In all calculations of pipe to area it is wise to take zero as a starting point, as zero is reached occasionally; and meanwhile and always the extra piping will ensure greater economy of fuel; hence conservatories should have at least 1 foot of 4-inch pipe to every 20 or 25 cubic feet of air; and plant stoves, early vineries, and forcing-houses 1 foot of pipe to every 15 or 20 cubic feet of air.

There is also much room for the exercise of skill and even art in the form and disposition of the pipes used. Cylindrical pipes are probably the cheapest and safest, but it seems doubtful if they are the most economical. Pipes, or rather trays, 2 inches deep, a foot wide and a yard long, have been thought to radiate more heat from an equal amount of fuel. Oval pipes have also been recommended in our pages.

The usual plan of sinking the pipes beneath the iron gratings is the most artificial that could be conceived. Most of the heat absorbed by the bottom and sides of such chambers is lost to the warming of the air of the house. There is also probably a good deal of loss alike of pipe and heat in the usual plan of carrying pipes all round the conservatories and other houses to be treated. Heat, the most volatile force in Nature, is led with iron reins to every possible point, as if it were motionless as lead when left to itself. It would seem almost as reasonable to mount one's hunter in a farm waggon, and proceed thus after the hounds.

By the concentration of heating surfaces with ornamental coils, radiating tables, boxes, stages, shelves, a reduction of area might be effected, and a more thorough circulation of air insured. The latter is of the utmost importance from a cultural point of view. It is not enough that the air should be warmed, it must also be moved. Heat is the great moving force, and yet most of our heating arrangements proceed on the principle of distributing an equal amount of heat to every part of the house. In so far as it is possible to accomplish this, the internal atmosphere is forced to remain still and stagnant. Probably the next great advance in horticultural heating will consist in arranging the heating surfaces at convenient points at considerable distances apart. The heated air will speedily distribute itself, and in its search after an equilibrium of temperature the whole atmosphere of the house will be kept in perpetual motion. By thus concentrating the heat at different and relatively distant points, and raising the whole heating power well out of the ground, readily available sources of bottom-heat may easily be provided for cultural and forcing purposes, and the whole of the heat be utilised and turned to better account.

A good deal more art as well as common sense might also be employed to good purpose in the ventilation and shading of conservatories, as well as in the storing and distribution of water for cultural purposes; the law of proportion is also too often grievously sinned against in their construction. Of these and their most inartistic internal arrangement we shall probably have something to say on a future occasion. *D. T. Fish.*

Saxifraga Burseriana.—This lovely winter flowering alpine is now a very attractive object in the York Nurseries, as also on the rockwork at Chiswick. The flowers, which are produced in great profusion, are pure white, borne on slender dull scarlet stems, arising from a dense tuft of greyish silvery leaves. There is also a a beautiful variety of it flowering most freely, S. Burseriana var. major. The plant is larger in all its parts, and the blossoms fully twice the size of those of the ordinary type. It will be a welcome addition to our winter flowering rock plants.

New Garden Plants.

Odontoglossum ramosissimum, *Lindl.*; *varr.* xanthinum *et* viride.

We are rather at a loss in our knowledge as to whether the yellow and the green Odontoglossum of this name grow mixed with the original variety with white and lilac flowers. I believe they grow separated. We must hope to get good information from an intelligent traveller, like Mr. Lehmann, who is always desirous to help science.

I have at hand a branch of the xanthine variety, a nice thing with yellow flowers, wavy twisted sepals and petals, with mauve-purple streaks and spots. The callus of the lip is of an indifferent ochre colour; around and before it is an area of radiating mauve-purple rays. It was sent by Mr. Harry Veitch, who states that it flowered with Mr. Vanner, of Chislehurst. The green variety is not recommendable to amateurs. It is one of those plants which sell easily when out of flower. *H. G. Rchb. f.*

Odontoglossum Wilckeanum, *n. hybr.**

This is one of the most lovely Odontoglossa one can imagine. It is just intermediate between O. crispum and O. luteo-purpureum, and in olden times it might have been regarded as evidence of the two species being one and the same. The plant is said to be identical with plants of O. crispum. The peduncle bore a raceme of five very well developed flowers—very many for a tiny plant; thus furnishing another illustration of the free-flowering habit of hybrids, as was remarked the other day by Sir Trevor Lawrence when speaking of Cypripedium Sedeni. The texture of the perigone is as it is generally in O. crispum (Alexandræ). Sepals and petals of lightest whitish-yellow, far lighter than in Odontoglossum Coradinei. Sepals triangular, very crisp. Tepals oblong triangular, much broader, with some projecting angular laciniæ. Both kinds of organ have elegant brown blotches, which are marginal in the petals, transverse in the sepals. The lip is that of O. crispum, without the cartilaginous toothletted lateral thickened plates, with three to five small tendril-like processes each side, and two ragged keels, which are free at their ends, including an intermediate apiculus, orange at the base, elsewhere lightest yellow with some brown blotches. Column pale whitish-yellow, with a few brown spots.

This beauty came with a quantity of O. crispum (Alexandræ), first into Mr. S. Low's hands in 1878. Then it came into the possession of M. Massange, whose collection of Orchids at Baillonville, near Marche, Belgium, stands in high reputation. Herr Wilcke made a point of growing the Alexandræs altogether, and this, the weakest one, by preference. It is but justice to him, and a great pleasure, too, to dedicate to him this splendid plant. *H. G. Rchb. f.*

THE EDINBURGH ARBORETUM.

The laying out of the Arboretum at Inverleith Row has now made such progress that it may be hoped the grounds will be opened to the public in the ensuing summer, and be available for purposes of botanical study in the course of next year. Already it seems evident that the Arboretum will prove one of the most interesting and attractive places of resort that the citizens have at command; as not only will there be educational benefit derivable from the study of the various groups of trees and shrubs, but also much to admire in the fine views of the city and surrounding country that open out from several points. The design adopted in laying out the ground has been, first, to enclose the whole with a border belt of young trees and shrubs of the average breadth of 40 feet, protected on its outer line by a Holly hedge, and then to intersect the area with winding walks, which encircle planting plots varying from half-an-acre to 2 acres in extent.

The formation of the boundary plantation was begun by Messrs. Methven & Sons about six weeks ago, and has now been completed; and the same firm are at present digging and trenching the "corners" of seven of the inner plots, in order that these too may be planted; after which the Arboretum, it is understood, will be handed over by Her Majesty's Board of Works to the authorities of the Botanic

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* *Odontoglossum Wilckeanum*, nov. hybr. inter O. crispum et Alexandræ, vegetatione O. crispi.—Racemo quinquefloro, grandifloro; sepalis triangulis, tepalis multo latioribus lacero angulatis, labello basi adnato, lamina oblonga antrorsum angustata apiculata, marginibus crispatis serrulati, callis pugionatis 3—5 utrinque in basi, carinis medianis ancipitibus antice liberis serratis, apiculo interposito; columnæ auriculis laceris.—Flores albido-sulphurei; castaneo maculati.—Labellum basi aurantiacum, ceterum albido sulphureum, brunneo-maculatum. Inter. Odontoglossum crispum (Alexandræ) introductum.—Dom. Wilcke, Orchidearum cultori egregio dicatum. Floruit apud dom. Massange. *H. G. Rchb. f.*

Gardens. In the outer belt some 9500 trees and shrubs have been placed, forming a miscellaneous collection of hardy plants, in which about 300 varieties are represented. In this plantation, which, apart from its own interest, will serve the important purpose of sheltering the inner groups, Coniferous trees form a prominent feature; and as the capabilities of several varieties which have not yet been thoroughly tested by foresters may be here brought out, valuable information will in all probability be gained by those who are charged with the care of timber-growing on estates throughout the country.

The Crimean Pine, Abies Nordmanniana, for example, a form of the Silver Fir which is believed by some to be even better adapted for planting in this country than the variety now in favour, has been freely introduced; and other trees that stand well out are the Cembran Pine, the Mount Atlas Cedar, the Himalayan Cedar, the Canadian Hemlock Spruce, the Archangel Spruce, the Wellingtonia gigantea, the Scotch Fir, grown from seed brought from Braemar; the Pinus nobilis, the variegated black Austrian Pine, several of the choicer Coniferous trees that have their native habitat in China and Japan, and a number of similar specimens from the north-west coast of Vancouver's Island and the north-west coast of North America. In the central plots family groups of specimen trees will be planted, including, besides the more common kinds, as many of the rarer and more costly varieties as the amount of the expected Government grants will provide.

The ground may not be fully furnished for a year or two, but in the meantime it is fortunate that a large quantity of the old timber which still stands within the Arboretum supplies considerable materials for study. In course of time these trees, where too thickly planted, as they are in many places, will be thinned out; but several of the groups of Scotch Fir, Beech, Sycamore, Elm, and Walnut, are as fine as it is possible to have. One of the Sycamores is quite a curiosity of tree life, the original trunk having been stunted in its growth, and developed into a large misshapen knot of apparently dead timber, out of which spring two thick limbs, one of them, like the parent stem, lifeless, but the other healthy and vigorous. *Scotsman.*

GARDEN GOSSIP.

By a Lady.—II.

An Alpine Garden.—In order thoroughly to appreciate the charms of an alpine garden it is necessary to have but one house, and to live in it all the year round. What can a lady care for an alpine garden who leaves the country to go up to town for the loveliest season in the year? It is in the spring that the alpine garden is the most attractive, but its interest does not die out entirely at any season, even in the winter the evergreen foliage of Saxifrages, Sempervivums, Pinks, and many others make it lovely, when the borders, which were gay with bedding-out flowers in the autumn, show nothing but bare earth.

But the alpine garden has the greatest charms for those who like to tend their flowers themselves, for the less the gardener is admitted the better will the plants succeed. Alpines must be let alone; moreover, there are many which have a tendency to hide their heads under-ground for a great part of the year, and that not always in the winter, and these are apt to fall victims to the gardener's spade if he is allowed to interfere. Let the lady weed her own alpine garden, and if it occasionally have fresh soil (laid carefully on with a trowel round the roots of the little plants), and be well watered in dry weather, she will require very little assistance from masculine hands.

Two causes have combined to lead me to take up "alpine gardening"—one is that I do not care so much for the masses of colour in a bedded-out garden, as for the individual flowers which are used to produce them (especially, it goes to my heart to have to pick off the blossoms from plants grown only for the sake of their variegated leaves); the other is that I have taken under my special protection a small piece of terraced ground with a north-west aspect, which is so exposed to the prevailing winds that all my attempts to make a "mixed garden" of it proved failures. It was a source of perpetual disappointment to me, till the happy thought occurred of converting it into a rock garden. Alpines do well there, perhaps on account of our elevation—about 650 feet above the sea level, and we have abundance of limestone rock close at hand, with which to plant our beds; for the natural slope is so great that there is no necessity to raise rockery. I put many of my alpines into beds which were originally made for Pelargoniums, merely sinking rocks into the soil sufficiently to protect their roots, and to keep up the general appearance of a rock garden.

But an alpine garden cannot be made in a day, except at a greater expense than is consistent with the limited means of the villa residents, for whom alone I pretend to write. To apply to a gardener to stock a garden with alpine plants so well established as to ensure flowers the first year, would entail a long bill, and even then the lady would probably have to content herself with the commonest kinds. It is better to be satisfied at first with mixing alpines with commoner flowers, and gradually to weed these out as the former get established and come into beauty. In this way alone can she avoid being asked the question which used to annoy me, "At what time of year will your garden be in beauty?"

I have found it a great interest to get my friends, when travelling abroad, to send me seeds or roots in their letters of any pretty wild flowers they come

Fig 53.—Cerastium alpinum.

across; in this way I have established in my garden plants from the mountains of Algeria, Norway, Switzerland, &c., which have a personal and geographical interest to me, independent of their intrinsic attractions; and I find it interesting to notice the different habits of the plants from different countries. Those that have reached me from Norway are mostly identical with the mountain plants of Great Britain, but not the less acceptable in a lowland garden.

The accompanying sketch of Cerastium alpinum (fig. 53) is made from a plant raised from seed sent me from Norway three years ago. Like many Norwegian plants, it nestles close among the stones, as if to avoid the fury of mountain winds, the short flower-stalks bringing the dead-white starry blossoms in close contact with the rather dark foliage. It blossoms early, and is therefore valuable as helping to keep up the succession of flowers, which is one of the chief difficulties in managing an alpine garden. *A. B.*

Leptotes bicolor, from the Organ Mountains, is attractively in flower in the Cambridge Botanic Garden. Its leaves quite conceal the attachment of the plant to the block on which it grows, and resemble as much as anything a bunch of pods. From among these proceed the spikes, on which are about six open flowers; they have narrow forward-curving sepals and petals, and a painted labellum, rose-coloured about the centre. This is a very neat-looking species, and not common.

NOTES FROM SYON.

Although the extensive crescent-shaped range of plant-houses at Syon, known as the conservatory, is supposed to typify in a high degree the beauties of art in that particular description of garden erections, it is very doubtful whether a duplicate of such buildings will ever again be erected for plant culture even by the most enthusiastic Art-architect. In spite of all the drawbacks incidental to the culture of plants in such unsuitable houses, yet they ever possess many points of interest, and just now the horns of the crescent are full of huge Camellias remarkable for health and cleanliness, and, alas! for the paucity of bloom—in fact, where there should be thousands there are barely tens. Mr. Woodbridge tells us that this scarcity of the noble white flower is general, and that it results from the almost entire absence of sunshine and ripening heat that marked the past summer. Its effects are now seen in numerous unexpected ways.

In the central house, where Palms, Bamboos, Ferns, Musas, and plenty of other things make up a miniature tropical forest, there are plenty of features worthy of remark—the marvellous Bamboo stems almost rivalling in rapidity of growth the famous beanstalk of the fairy tale—the huge bunches of Bananas springing from the base of noble leafage—and not least, because most novel, if not particularly striking, is the yet immature fruit-spike of the Monstera deliciosa, which it is hoped when ripe may prove all its name implies. The effects of the tremendous hailstorm of last summer, and which committed such great devastation at Syon, are yet to be seen in the foliage of the tropical denizens of this large house, and it will be a long time ere all traces of it will be removed.

Not caring for the trouble incidental to the growth of pot Roses for the production of cut blooms, a few years since Mr. Woodbridge converted a late vinery into a Rose-house, planting his climbing Teas outside, and running them up the sloping trellis inside. Now the roof is covered nearly to the top, and of all in bloom none are more striking, perhaps none half so effective just now, as are the blooms of Cheshunt Hybrid, for the flowers are of perfect form and the colour a glorious reddish-crimson. This should form a companion Rose to Maréchal Niel, Homer, Catherine Mermet, and Lamarque in every Rose-house. Looked at from beneath, the buds do not look abundant, but step outside and cast a glance up between the roof and the trellis, and the plants are seen to be bristling with buds literally by hundreds, which will produce for a long time a grand succession of blooms.

Gardenias planted out in a raised bed along the front of a lean-to house are covered with buds, and the plants are remarkably clean. Scale and bug give no trouble, but after some three years of growth the roots will often exhibit a tendency to rust or canker, and then another succession bed is made in an adjoining house. Perhaps the most beautiful of all white flowers, equal to the snowy Eucharis for purity, and exceeding it in grace and elegance, are the blooms of that as yet somewhat scarce plant, Hymenocallis macrostephana, produced in clusters on a stout stem, and each flower having a firm stem of 6 inches in length. Although less productive of bloom at one given period, Mr. Woodbridge favours it in preference to the Eucharis, because it is possible with a succession of plants always to have flowers. Because of the six narrow pendent segments that project round the edge of the cup, and which serve to give such an air of elegance to the blooms for table-glasses, epergnes, or other table decorations, the flowers are less suited for packing for market than are those of the Eucharis, but in private establishments it presents a fine accession to white-flowering winter plants.

Owing to the vicinity of Syon to town there is a much greater demand upon the establishment for plants and other material suitable for table and house decoration than is the case where gardens are remote. Specially for table, vase, and window decoration a large number of shallow zinc pans of all sorts of needful shapes are now filled with Selaginella, to form a carpet of greenery. In and about this are stood large quantities of small Ferns of any diminutive species, grown in small 60's. Instead of dividing old plants and potting up, it is the practice to sow Fern seed, chiefly of Adiantums and Pteris, in pans, and when the seedlings are large enough to prick them out in tiny clumps in these little pots, and push them on in gentle heat; the tufts of Ferns thus

obtained are not only varied in foliage, but come much better and earlier than if otherwise propagated.

Amongst the hundreds of foliage plants employed, none are more elegant or graceful than small plants, about 14 inches in height, of the Screw Pine. These are raised from seed, and so produced are far more perfect and pleasing than if propagated from side shoots. A flower of singularly rich colour, quite a deep maroon-crimson, is that of the Amaryllis formosissimus, a small species grown in 5-inch pots in the warmth of a vinery, and throwing up abundant bloom. The petals are long and narrow, the entire flower as far removed as possible from the ideal of the florist, but resembling in form a huge crimson Pea flower. It is most highly prized as a companion flower to the Hymenocallis, its deep rich hues showing up grandly by gaslight. A dwarf carpet plant, largely grown for vase decoration, is the compact Pilea muscosa nana, which does not apparently in its advanced growth exceed a height of 3 inches, and has mossy foliage of great beauty.

Some interest attaches to a couple of Pine pits now converted into early vineries; in one the Vines are planted out in a temporary bed, and in the other the Vines remain in pots. In the former house there are nearly double the number of bunches there are on the pot Vines, the wood and foliage are more robust, and the bunches larger and having finer berries. Altogether the experiment goes a long way in favour of the planting out of Vines even for temporary work, but the planted-out canes may remain another year, when they will start even earlier than they now do. A large quantity of dwarf French Beans are grown in pots; the earliest now fruiting is Osborn's Early, and it is very dwarf and even in habit. It is here preferred for the first gatherings only, as, though free, the pods are short. As a succession Improved Syon House Bean is coming on, and these, with successive sowings of the same kind, will keep up the supply till the summer.

Outside, on a south border, Cauliflower plants put out in 9's under hand-lights have stood the winter well, having had no further protection than the glass. Five plants from each light will be presently taken out and planted elsewhere, and thus a good succession will be secured. Amongst the garden green crops the fog and hoar-frost have worked much mischief, Syon, from its low position near the river, being peculiarly liable to frosts. Many of the evergreen trees, the Oak especially, have largely suffered. Bays, Escallonias, Euonymus, and many fairly hardy shrubs are also severely injured, but it is too early yet to say how far things are affected by the winter, which seems to have done quite enough harm here already.

ARTIFICIAL MANURES.

A recently published report by Dr. Voelcker to the Council of the Royal Agricultural Society respecting the merits of certain artificial manures submitted to him for analysis by members of that Society, exhibits in a most deplorable way the sort of commercial morality that appears to exist amongst some manufacturers and dealers in these manurial articles. In numerous cases the prices charged to the members were more than double and treble that awarded by the eminent analyst as being its manurial and mercantile value. One manure, sold at £14 per ton, is estimated at £8; another, at £13, at £5; another, at £5, as hardly worth 21*s.*; another, sold at £8, as not worth £2; and so on. It is fortunate for farmers who are large consumers of these manures that through the instrumentality of the Royal Agricultural Society, if they are members of that society, they are protected against the unmitigated rascality that is by Dr. Voelcker so ably exposed. Gardeners of all sections are also fast becoming large consumers of artificial manures, and every few weeks some fresh article is being offered to their notice as possessing certain valuable and indeed almost magical properties. In one sense gardeners can fairly protect themselves by purchasing only a small portion of any kind and testing its usefulness; but it is none the less desirable that they should also know something of the nature of the article they are purchasing before using it too largely. Why cannot horticulture have its analytical chemist, to whom could be submitted for test all the hundred and one manures now in commerce? To obtain a certificate of value from a qualified chemist should be the aim of all dealers, and if the sample received by the purchaser was not equal to the guarantee, the purchaser should be entitled to recover from the vendor. Some such action as this would serve to show gardeners that they too were protected.

RAISING SEEDLING ABUTILONS.

The incidents which have led up to the production of some very fine and useful forms of the Abutilon by Mr. J. George, of Putney Heath, make up a particularly interesting chapter of the records of floricultural work done by raisers in the present generation. What he has done—and his successful work sprung more from a happy accident than from any design he had planned—was commenced in a spirit of trust and hope, which reaped abundantly of the harvest he wished might follow.

"With trembling hand
'Tis ours a little seed to sow;
Knowing the law will firmly stand
That bids it into richness grow."

In April, 1877, Mr. George noticed a pod of seed on one of two varieties of the Abutilon he then had in cultivation. They were the orange-flowered A. Darwinii and the pure white Boule de Neige, but at this distance of time he has forgotten which of these was the seed-parent, and he made no record of it at the time. He infers that the one had been fertilised with the pollen of the other, possibly by the intervention of some insect or other cause. The seed was sown as soon as gathered, and some fifty plants resulted. The seed was placed in a temperature of from 60° to 65°, and the seedlings kept there till the plants were 6 inches in height, and they were then shifted into 32-sized pots, in which the plants flowered. The first to bloom opened its blossoms in the latter part of July; and the plants were then nice healthy specimens about 18 inches in height. From this batch of plants he had flowers of several shades of orange, and these varied in shape and size, as would probably be the case in the instance of a cross between the long-petalled Boule de Neige and the short-petalled Darwinii; there were also shades of rose, and rose and salmon, varying also in shape and size, but no white. Of this batch of seedlings a few varieties were named, and in February, 1878, four of them were selected for distribution by Messrs. Osborn & Sons, of the Fulham Nurseries: one of these, named Lady of the Lake, was awarded a First-class Certificate of Merit at the spring show of the Royal Botanic Society, held soon after.

Seeing so much had resulted from chance fertilisation, Mr. George was led to think much more of benefit might result from artificial impregnation. This was resorted to, in a manner which has not been recorded; and in April, 1878, another batch of seed was sown, which resulted as before, in producing much variation in colour and form; but, singular to state, only one or two of the seedlings came white flowered, although the pollen of Boule de Neige was freely used. From this batch Messrs. Osborn & Sons selected six varieties in the September following, when they bloomed, and which were distributed the following spring.

Having among these a seedling with small flowers, but with more of red in the colour than Mr. George had yet met with, on this he tried the pollen of Hibiscus sinensis, and not, as he thinks, without result, as he states "The plant is quite distinct from any other I have, the flowers being above the average size, as well as richer in colour." Another seedling has flowers of even a richer and deeper colour, but the blooms are much smaller and more globular, like the Darwinii type. This, with the preceding, has been secured by Mr. Cannell.

Mr. George quite endorses the opinion that the Abutilon should be grown as an autumn and winter-flowering plant. The blooms come much better in colour, and, indeed, in every respect, than when the plants flower in hot weather under glass. He also states that the best time for sowing seeds is in April or May, and the plants will bloom in the months of September and October following, and continue to flower all the winter, if kept in a temperature of from 55° to 60°. Mr. George uses for the culture of the Abutilon a compost made up of loam, leaf soil, peat, and a little sand. *R. D.*

JAPANESE CONIFERS.—X.

(*Continued from p. 275.*)

Picea Glehnii*.—This is a dwarf dense growing Spruce, with spreading branches and red, hairy or almost shaggy, shoots. The cones are sometimes very small, and resemble those of P. obovata. It was first discovered in the island of Sachalin, by Schmidt, and subsequently in the south-east coast of Yesso, by Maries, by whom seeds were sent to Messrs. Veitch, who are, we believe, in possession of living plants. It also occurs, if we are correct in our identification of Maack's specimen, in Amurland.

Branches spreading, cylindrical, with short internodes, reddish, covered with shaggy down; smaller branches given off at an angle of about 50°; pulvini or cushions oblong-linear, the free portions twisted on the under surface.

Buds subglobose, scales resinous, brown, ovate, the outer ones thick and cushion-like, so that there is a more abrupt transition between the pulvini and the thin bud-scales than usual, and the bud in consequence appears as if imbedded in the end of the branch.

Leaves crowded, in many rows, ascending at an angle of about 45°, curved, linear, 4-sided, sharply pointed, concave portions slightly glaucous, convex portions green. Internal structure as in Alcockiana and obovata.

Cones 1—2 inches by 5—10 lines, linear-oblong, cylindric, or ovate-oblong; scales leathery, slightly striated, light brown above, darker at the base and wedge-shaped, upper free portion rounded, denticulate; bracts much shorter than the scale, broadly lanceolate, denticulate.

Seeds 3—4 lines long, wings obliquely obovate, membranous, pale brown.

This plant resembles a dwarf form of Alcockiana or of obovata, but it may be distinguished from the former by the hairy branches, by the pulvini, which are less prominent and scarcely obovoid, by the thinner cone scales, persistent bracts and wider wing to the seed. From P. obovata it differs in the pulvini, and in the shorter and broader wing to the seeds (Schmidt). The cones vary considerably in size, some being very small. The scales in the case of old cones are ragged and recurved at the margin, so that at first sight they appear pointed. *M. T. M.*

PRUNING PALM ROOTS.

Some little interest having been excited by this subject in your columns of late, I may perhaps be allowed to express a few words by way of caution to those who would undertake the operation. Your correspondents who have related their experience have doubtless succeeded in attaining their end, but that such has been the case with every one who has tried the practice I should greatly doubt. That it can be done in many cases with benefit is well known in certain classes of Palms, but in others it is a mere process of destruction. I have found, as a rule, that many Palms, although of easy cultivation, will not bear to have their roots disturbed, and since residing in the tropics I have had no cause to change my opinion, but in almost every case I have had it strengthened. That they will stand a fair amount of hardship while their roots are intact is not disputed, provided the supply of heat and moisture suitable to their various requirements be adequate; but that they will stand an indiscriminate slicing or pruning is far more than my experience leads me to believe.

Although they may appear to the eye to be in good health, and even making fair progress, it will be found in many cases that the following result takes place after the system of root-pruning has been adopted, especially in those species having large succulent roots. If attentively examined it will be found that where the roots have been injured either by a clean or ragged cut, no matter which, that their centre dies, and gradually induces decay, which, running through the main roots, in the end reaches the centre of the stem, causing decay there also. This is first noticed in the fact that the centre or axis is very slow in producing leaves. The young growth then decays, leaving a hollow stem, which is generally attributed to the plant having had too much

* 1866. Abies Glehnii, Fr. Schmidt, Reise in Amurlande und auf der insel Sachalin, 1866, p. 176, fig. (Mem. Acad. Imp. Sc. Petersb., vii. ser., t. xii., n. 2 (1866). Hab.—In ins. Sachalin, Fr. Schmidt, in herb. Kew!; in ins. Yezo, Maries, n. 72!; ad fluv. Ussur, Maack!

water overhead, the outside leaves continuing for some months in apparently the best of health, being supported by those fibrous roots which escaped injury.

Palms as a rule will stand being pot-bound for a considerable length of time, and when planted from pots into the open do not suffer so much as exogenous plants that have been similarly treated, on account of their new main feeders being produced in concentric circles from their outer base, which again is a part of their system very liable to injury. The roots spread or ramify outside the pot-bound mass, and are therefore secure from the inevitable strangulation which attends the roots of most exogens when allowed to be planted in that condition.

A singular instance of the hardship undergone by a Palm may be seen on the wharf of the Royal Mail Steamship Company in Kingston. The plant is a male of Phœnix dactylifera, and is growing near the sea. Annually the stem of this Palm is covered up with steam-coal 15 to 25 feet high, the moisture of which causes it to produce large quantities of fibrous roots at varying heights, which hang in tangled masses when the coals are removed. Being uncovered sometimes for months, and exposed to a dry atmosphere, they of course lose all vitality, only however to be renewed by a succeeding batch when the stem is again surrounded with coal, the growth and appearance of the tree in the meantime seemingly not altered in the least; which I think may be accounted for from the fact that the roots produced in the coals are simply auxiliaries, the main feeders which form the principal support to the plant being in the natural soil of the shore, and uninjured. *J. Hart, King's House, Kingston, Jamaica.*

Early Leafing.—Near the veteran Eucalyptus at Kew, which we are pleased to see has not been materially injured by the frost, is a Horse Chestnut which some ten days ago had already expanded its first leaves. Ribes speciosum against a wall was almost in full leaf.

Forestry.

Value of Scotch Fir Plantations at Fifty Years' Growth.—I have taken the liberty of altering the title of the subject of discussion, and my reason for so doing is that others may more distinctly see what is and wherein lies the difference between Mr. Smith and myself. At p. 238 Mr. Smith expresses regret at my not furnishing him with statements, other and better than I have done, of the woods and plantations in Stathspey and Banffshire. Now I always like to give a reason for my doing, or not doing, as the case may be, and in the present instance my reason for not giving a more flourishing account, or one different, from that adduced, is simply because I have none to give.

I have traversed the woodlands and forests of Dulnanside hundreds of times, and I can assure Mr. Smith his ideal or apocryphal plantation is not to be found there. I have also seen, and in many cases closely inspected the best and most important subjects on both sides of the Spey from Badenoch to Garmouth, embracing of course the far-famed and justly celebrated forests of Glen Fishie, Rothiemurcus, Glenmore, and Abernethy, but all in vain have I looked for the thing that is not there, never was, and probably never will be. Again at Cullen House, where the woodlands are admittedly as extensive, varied, and valuable, as any in the county, there is no subject there to be met with to satisfy Mr. Smith either now or probably hereafter unless he will greatly modify his demands and come down from the regions of vision where he dwells. Mr. Smith's good common sense and wisdom might show him that witnesses in giving evidence are sworn to tell the truth, the whole truth, and nothing but the truth; and as he and I stand in a similar attitude towards each other, and to the public as well, we are bound to be faithful and true, according to the best of our knowledge and belief, let the issues be what they may.

Mr. Smith incidentally refers to and deprecates my system or practice of thinning. Well, I will at the proper time refer again to that subject, and go into details with Mr. Smith if he wishes it, but it may in the meantime be left in abeyance.

Mr. Smith also demurs to the low prices of wood, and says that while I get 6*d.* per foot for Fir, he, or some else gets 1*s.* 2*d.* per foot. Now on this head I have respectfully to ask Mr. Smith who is paying or receiving 1*s.* 2*d.* per cubic foot for wood of trees containing only 7 cubic feet of timber, and not over fifty years old? I know of no such market, and may add I never did. The wood of such trees is too soft and young to command such a price, and also of too small size.

Mr. Smith again reflects seriously upon me for not getting higher prices for the wood sold, and my defence under that charge is, that I invariably get as much as I can, but I never get more than purchasers are pleased to give; and if Mr. Smith will inform me how and when to get more, I shall be very much indebted to him.

Depasturing plantations with sheep, &c., is a subject of no small importance, and requires a true and faithful record and representation in all its phases; and it might be safer for Mr. Smith to defer his conclusions until he has more fully ascertained all particulars, both as to the amount of damage done by sheep to the trees after fifteen years' growth, and other neglects. I entirely disagree with Mr. Smith as to his computation of the value of evidence, when in substance he says mine loses half its value for want of quantity, for I had always thought evidence was more valued for its quality than quantity. This point, however, I will not further dispute if Mr. Smith contends for it.

On what estate, and in what parish, I again humbly ask, is the 20 acres of Scots Fir plantation at fifty years' growth value £2000 to be found? If Mr.

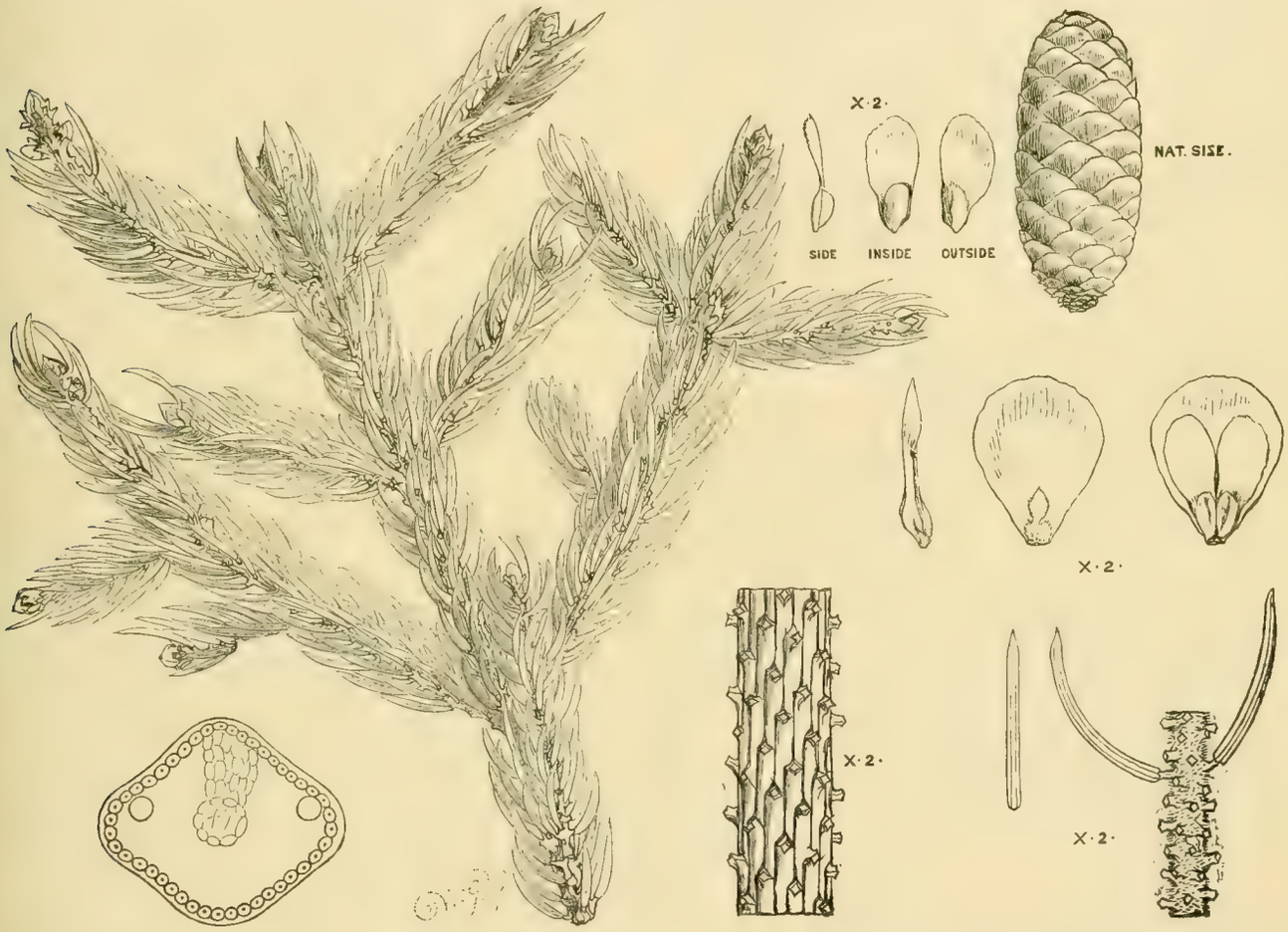


Fig. 54.—Picea Glehnii: branch and cone nat. size; shoot, detached leaves, scales, and seeds, magn. twice; transverse section of leaf highly magn. (see p. 300.)

Smith really knows of such a plantation, he need not be ashamed to point to it. I think Mr. Smith will agree with me that it will be more convenient and edifying to all concerned if we confine our remarks as closely as possible to the subject in hand, and not traverse at one time the whole domain of forestry, as we should be led to do by following the outline of his concluding observations. I am neither weary nor impatient of this discussion, but shall gladly say good-bye to it when I have seen on the ground, or even know where I can see for myself, a Scots Fir plantation, of 20 acres less or more, growing upon moorland known as barren and worthless, not over fifty years old, and worth as a marketable subject, not £131 14*s.* 6*d.* per acre, according to Mr. Smith's estimate, but the modest sum of £50 per acre, including value of thinnings throughout, but deducting expenses of labour of thinning. *C. Y. Michie, Cullen House, Cullen, Banffshire.*

Florists' Flowers.

Seasonable Notes on Greenhouse Florists' Flowers.—Azaleas.—As soon as the first flowers open on any plants in the forcing-house let them be removed at once to the greenhouse to open gradually. Those still in the forcing-house had better not be subjected to too much artificial heat; syringe occasionally to maintain a healthy state of growth in the plants. Those plants in the greenhouse that are allowed to open their flowers without forcing must be well supplied with water at the roots. Fumigate to prevent the attacks of insect pests, or to destroy them.

Begonias.

In the case of the tuberous-rooted section, it is necessary to place the pots containing the tubers in a warm house now, if it is intended to flower the plants early. The plan I adopted last year was to shake the plants out of the soil as soon as they started, repotting in smaller pots than those they flowered in the previous year. As the Begonia is a succulent rapid growing plant after it starts, it is very desirable to place the plants near the glass to cause a stocky growth, and also stout healthy leaves. Place the pots containing the tubers for late flowering on a shelf near the glass and supply them with water.

Calceolarias.

Examine the large plants in their flowering pots frequently. When the plants are well grown a mass of large healthy leaves quite covers the surface of the soil in the pots at this time; these may look all right from a casual glance, but it is very desirable to see that there is no decay underneath, which soon spreads, to the serious injury of the plants. It is there that greenfly appears, and it must be destroyed now else it will scarcely be prevented from destroying or at least seriously crippling the plants. Late seedlings may yet be potted. Shade from very bright sunshine coming suddenly on the plants this month.

Chinese Primulas.

If the plants are now near the glass and air is freely admitted without allowing gusts of wind to blow upon the plants, the flowers will continue to open freely, bright in colour, and of good quality. Give occasional waterings of weak manure-water.

Cinerarias.

See that the large specimen plants now coming into flower are not placed too close together. Even if the stage is near the glass, it is still desirable to place the plants on inverted flower-pots, as the air circulates most freely underneath them; tie the trusses into their places, give very weak manure-water at each alternate watering. Mildew and greenfly must both be carefully guarded against. The plants require a plentiful supply of fresh air, but drying winds cause the leaves to flag when the plants are not suffering from want of water at the roots.

Cyclamens.

These beautiful plants are now in full bloom, and most beautiful they look either arranged in groups or as isolated specimens amongst other plants. If any of the flowers are required the stems must not be cut or broken; pull them out from the corm, the old cut stems rot and are injurious. Place any superior varieties by themselves, out of the influence of the ordinary stock. If such plants are placed on a shelf near the glass they will produce seeds. By a little care in this way good varieties can be reproduced very nearly true from seeds. Continue to prick off seedlings into thumb-pots as they become large enough.

Fuchsias.

The plants start very freely in a gentle heat, and as soon as it is seen that the buds have started turn the plants out, reduce the balls, and pot in the same sized pots. The plants delight in being dewed overhead with rain-water slightly warm. Take cuttings as soon as the shoots are 2 inches long, and strike them in a gentle bottom-heat. This plant does not like too much heat, and it objects to a stagnant atmosphere.

Hyacinths.

The house ought to be quite gay with this queen of spring flowers now, and there ought to be a good display for the next five weeks. By what I have seen of them this year I should say the bloom will be much under the average; for this there can be no help, as well-ripened bulbs are essential to the production of good spikes, and we could not have this essential, neither did we obtain a good potful of roots before the plants were removed indoors. Those who have to force their plants a little to get them in by a certain date for exhibition must place them near the glass, and bring them on very gently at first. Give weak manure-water at every watering. Polyanthus Narcissi, and early flowering Tulips require very similar treatment to Hyacinths.

Pelargoniums, Large-flowered.

In this class is included the "decorative" section. March is a month when the lack of attention or mistake in management may ruin the prospects of a good blooming period. Water has been applied with caution hitherto, and probably some of the plants have become rather too dry near the base of the ball, where the greatest portion of roots are. Give each plant a thorough soaking wtth rain-water slightly warmed. Specimen plants for the May shows are in that stage that the shoots must be fixed in proper position, using sticks to hold any fractious growths in their place. Cleanse the foliage from dust and dirt, by giving the plants a thorough syringing. Now is the time to cleanse them from aphides by fumigating. The growths of any plants intended to flower in July should now be stopped; these should be the latest potted plants. Fancy varieties require in all respects similar treatment, nor must it be forgotten that they can do with a higher temperature.

Pelargoniums, Zonal.

In recommending these as decorative subjects for the greenhouse of the highest class, the aim of the cultivator ought to be directed to producing a good display of flowers at a time when the garden is not over-coloured with the bedding varieties out-of-doors. Specimen plants for the summer exhibitions will require to be trained as recommended for the other sections; the other treatment will be the same, but insect pests are not to be feared. Small plants to be grown into flowering specimens by the end of the season should be placed near the glass, a little heat will cause a more rapid growth, and the points of the shoots must be pinched out to produce bushy specimens.

Verbenas and Petunias.

These plants may be placed together as far as cultural requirements at this season are concerned. The Verbena is much more liable to the attacks of greenfly, and if this pest, with mildew, is kept from the leaves the culture is easy enough. Like all rapid growing plants the principal thing is to see that after the plants start growing they do not receive a check from any cause. It would not yet be too late to put in cuttings to produce good flowering specimens this season. If the cuttings put in early have not been potted off see that it is done as soon as they are fairly rooted; those that have been potted off should be placed on the shelf in some cool house or greenhouse, but they will be none the worse if just a little heat is applied to cause a more free growth. *J. Douglas, Leyford.*

Fremontia californica.—We grieve to see this fine and very interesting shrub so severely hurt against one of the walls at Kew—hurt, we fear, beyond recovery, as the main stem is split from top to bottom, and the side branches are completely killed. No means were apparently taken to protect the stem of the tree.

Garden Operations.

FLOWER GARDEN, ETC.

I would reiterate the desirability of at once completing all shrub pruning, hedge cutting, shrubbery clearing up, and pointing over, turf laying, levelling, and sowing grass seeds, verge cutting and rolling, walk repairing and re-surfacing with gravel, all of which operations, if left beyond this period, I look upon as "extras" that interrupt routine duties, and which are now presented in plenty, one of the first being attention to the welfare of spring flowers and bulbs. Beds containing these require pointing over, and in some instances picking over, to remove the decayed foliage, for the frost has been rather severe on Myosotis, Wallflowers, Silenes, &c.; others again, having been upheaved by frost require well pressing in the soil, whilst Hyacinths and Tulips that are very forward should have some slight protection in frosty weather. Such autumn-sown annuals as have survived the winter should be thinned out and fresh patches planted with the thinnings, or, what would be a better plan to give a succession of flowers, make fresh sowings, and thin out as soon as the seedlings can be handled. For this mode of culture, and to sow now, the following are well adapted:—Candytufts, Clarkias, Collinsias, Eschscholtzias, Godetias, Larkspurs, Limnanthes, Mignonette, Nemophilas, Silenes, and Virginian Stock.

The hardy fernery and rockwork now require their annual putting in order. In the former remove the dead fronds and protective mulching, and with a hand-fork stir up the soil and remove weeds, also give additional soil to such plants as are likely to be benefited by it, and re-arrange and make additions as desired. Amongst the hardy Ferns at this place we have clumps of Snowdrops, Daffodils, wild Hyacinths, Primroses, and Foxgloves; they seem quite at home among the Ferns, and add interest to the scene. Rockwork gardens require similar attention as to the general clearance of weeds and pointing over, but with the exercise of additional care. All the plants will now safely transplant, and most of them increase by division, which may also now be done. The addition of a few shrubs will relieve the baldness of the scene.

Beds and borders that have been filled with plants for winter effect only, being now vacant, should be got in readiness for the summer bedders, by digging or trenching, as may be demanded by the nature of the intended occupants; and this suggests that summer bedding arrangements should now be settled, not only for the reason that the beds may be appropriately prepared, but that the right number of plants may be forthcoming at planting time by an early commencement of propagation, which is easy enough in itself, the difficulty being room to grow on the plants till putting out time, in which strait most gardeners are compelled to have recourse to inventiveness, such as at this season planting out Calceolarias and Verbenas in the newly prepared Celery trenches, and covering up with mats at night, or planting them at the foot of south walls that are protected, and utilising the frames they have occupied for the planting out of Lobelias, Petunias, and the like, and by other modes, scheming and contriving to find space for the desired number of plants.

Plants that have been wintered in out-of-the-way places must now be brought out and placed in a growing position and genial temperature. Among these are Dahlias, Salvia patens, herbaceous Lobelias, Marvel of Peru, Cannas, and herbaceous Begonias these latter are likely to prove popular for bedding purposes, as the flowers withstand the rain better than Pelargoniums. A frame should be prepared in which to sow Asters, Stocks, Zinnias, Everlastings, Tagetes, Lobelia, and Pyrethrum. Bottom-heat is not essential, but a more kindly germination would be ensured if a little were afforded by the making up of a bed of leaves, and placing on it about 4 inches of light soil—loam and leaf soil in equal parts. Keep the soil moist by an occasional syringing and the frame closed till the seedlings appear, when ventilation must be freely given. In the South of England Pyrethrum, if sown now on a south border in the open ground, will be in ample time for bedding purposes. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

The effects of the odd blinks of sunshine with which we are favoured are already becoming visible in the swelling of the buds of fruit trees trained, not only upon walls, but also upon standards in the open garden. The work of pruning and nailing will therefore have to be pushed forward with all despatch, so that the latter operation, if performed by juniors, will not be rendered more difficult by an inherent dread of doing mischief to the buds, which will now develope rapidly with increasing warmth. It cannot be doubted that the longer the branches of fruit trees

can be kept from close contact with the walls the greater will be the probability of obtaining a crop, for if the blossoms are only retarded from opening for a few days they may just escape a period of inclement weather. Where the walls are wired, and two or three competent hands can be spared who are acquainted with the work of training, I should have no hesitation in allowing trees of Peaches, Nectarines, and Apricots to remain untied until the pink pips are visible in the buds. It is a prudent course to keep the work well in hand. My experience of wired walls has not been extensive enough to warrant me in forming a definite opinion upon the question of injury or non-injury to the branches of trees by direct contact with the wire, but with this exception—a vital one it must be admitted—the system has everything else in its favour. It may be necessary this season to make sacrifices in pruning, which those who are behind with their work will now have the opportunity of doing by a close inspection of Plums and Apricots; these frequently have the best show of fruit on spurs, which certainly do not adorn a tree, but under the existing state of affairs it would be a culpable act to remove them for the mere sake of appearance. Peaches and Nectarines will require more thinning than what is technically understood as pruning or shortening back the branches. There should be no hesitation about a thorough thinning out of unripened and weakly shoots so long as there is a base left for furnishing the trees afresh with wood which it is to be hoped will be better matured during the present year. Overcrowding the shoots is a misfortune in any case, and it will be especially so during the present year after the ordeal the trees have passed through. The same remarks will apply with nearly equal force to the pruning of Morello Cherries, which although not work of a very pressing nature as yet, will nevertheless demand early attention.

The rapacity of birds for the buds of fruit trees in this district is so desperate, that I find shooting is the only effectual remedy for them. Late pruning or netting is the best mode of protection for Gooseberries and other small fruits. Raspberries should be pruned, and the roots thinned out where it is considered necessary. Give a good coating of rich manure on the surface after the ground is cleared of weeds and slightly pricked over with a five-pronged fork. Strawberry plantations should be hoed between the lines, and the plants divested of dead leaves, afterwards giving them a good mulching of cow-manure, if the soil is poor, and if not, a less rich application of lighter material will be equally beneficial in so far as it retains moisture, encourages surface roots, and presents a better surface to the action of the sun. *W. Hinds, Canford Manor.*

FRUIT HOUSES.

Vines.—Where spring planting is anticipated, preparations should be made for turning out the young Vines early in April. In all cases where the houses are arranged for external and internal borders the Vines should have the run of the inside border only the first year, and this need not exceed 4 feet in width to start with. Directions as to the formation of Vine borders, as well as the quality of the compost, having been so frequently given in these pages, that it is not necessary to enter into details here, the main points being thorough drainage, sound turfy loam in a rough state, crushed bones, and some kind of gritty matter for keeping it sweet and open. If cut-back Vines of last season are to be planted they may be shaken out and placed in position either before they commence growth or after the buds have broken; in the latter case the soil should be allowed to become moderately dry and warm before the roots are placed upon it. Cover lightly at first, and give a little water at a temperature of 85° to 90° to settle the soil about them. Should eyes of the current year be decided upon, I should give preference to Mr. Thomson's system of striking them in thin squares of turf placed close together over bottom-heat, but owing to the length of time it takes to get them into free growth and fit for planting out, it will not be necessary to proceed with the new borders quite so early. It will, however, be of great service to them if the compost can be well warmed ready for their reception by the time the roots have found their way through the sods. When well carried out this system will fill a house with clean healthy young rods in one season. Grapes now in bloom will require a night temperature of 65° to 70° with a circulation of air at all times; run up to 80° by day and 85° to 90° from sun-heat. Fertilise Muscats with foreign pollen, using a camel-hair pencil in preference to drawing the hand down the bunches, as the latter when the body is warm sometimes produces small brown spots on the point of the berries which greatly disfigure the appearance of the Grapes when ripe. All late Grapes, particularly Muscats, Gros Colmar, and Black Morocco, which require plenty of time, should now be on the move. Many Grape growers condemn the latter as being a shy setter, with us it sets as freely as a Hamburgh. It requires a sound deep internal border resting on good drainage, abundance of water when growing, and careful fertilisation when in flower. Vines intended for fruiting in pots next year should now be fit for the final shift. Use good rough turfy loam, crushed bones and a little old rubble to keep it open. Let the pots, 12 inches in diameter, be clean and well crocked; pot firmly; half plunge in a bottom-heat of 80°; keep them close, and shade them from bright sunshine for a few days. *W. Coleman, Eastnor Castle.*

Cucumbers.

To plants in full bearing give copious supplies of tepid liquid manure in a weak state. Where the drainage is ample, and the plants are making a free growth, there will be no occasion to apprehend danger through applying this stimulant too frequently to the roots. Let the night temperature range from 65° to 70°, and from 75° to 85° with sun, running up to 90° after being shut up with plenty of moisture in the house. The old lateral shoots and leaves of established plants should be gradually removed to make room for the young growths as they push forth from the principal leading shoots. These should be tied—leaving sufficient space between the ligature and the shoots for the development of the latter—and trained regularly but not too closely over the trellis, so that the shoots individually may be exposed to the influence of light and air, which will cause a consolidated growth. Young plants will now require due attention; the plants having been previously stopped on attaining the third wire of the trellis the young lateral growths resulting therefrom must be trained to their allotted position. A little soil of the same composition as previously recommended can be placed about the hillocks now, and must be added to as the roots push through the soil, and until the allotted space is filled. Make, where considered necessary, successional sowings and plantings. See that the linings of hotbeds are duly attended to, and should any rank steam be likely to arise in the frame at night it will be advisable to tilt the sashes up sufficiently high to allow of its escaping. Let a quantity of fermenting material be kept in readiness in the reserve yard for present and future use. *H. W. Ward, Longford Castle.*

Melons.

Plants growing in hot-water and dung pits, and which have been stopped some time since, will now require to have their laterals arranged, three or four of which—all the superfluous shoots being pinched out—should be trained regularly over the surface of the bed, and stopped when they have made eighteen or twenty inches of growth, which will result in the production of fruit-bearing shoots. Impregnate the blossoms on fine days when the pollen is dry, and maintain, as far as practicable, a rather dry atmosphere while the plants are in this interesting stage of growth, until they have set their fruits. Stop the shoots at one joint beyond the fruits, which, when they are thoroughly set, and have commenced swelling off, should be thinned out, leaving four of the best and most even-sized fruit on each plant, having the same as regularly distributed over each plant as possible. It will be advisable on bright mornings to put a chink of air on when the thermometer registers 75°, which, moreover, should be added to progressively as the temperature of the house increases, and *vice versâ*. Maintain a bottom-heat of from 75° to 85°, with a night temperature of 65° to 70° according to the external condition of the weather, and 75° without sun by day, running up 10° with sun. Shut up the house at 85° on bright days, and run up to 90° with plenty of atmospheric moisture. Add some soil of the same description as that in which the plants are growing to the hillocks as soon as the roots protrude through the sides of the mound, and tread it firmly together. Successional sowings and plantings must now and for the next few months be made in accordance with the prospective demands for the Melon in each individual establishment. Let the linings of dung-frames in which Melons are growing be duly attended to. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

Ferneries.—Ferns of most kinds are now on the move, and it is high time, therefore, that the whole stock should receive an overhauling, as, although only a portion may require repotting, the remainder will be greatly benefited by receiving a surfacing of fresh soil, especially in the case of all such as are planted out in artificial rockwork and grown after the natural manner. It generally happens with these, after having been kept somewhat dry for the winter, that the mass of earth shrinks away from the sides of the pockets, leaving cavities down which the water courses without benefiting the roots. To prevent this it is very important that these vacant spaces be filled in at once—an operation that may best be done by means of a stout flat stick, using for the purpose a mixture of dry turfy loam and peat, which may be rammed in firm and all made secure. This done and a top-dressing given, the next thing is to turn on the hose, or with the garden engine or a coarse-rosed pot administer sufficient water to thoroughly soak and settle the whole body of soil, but beyond removing any dead or shabby fronds the less trimming the plants have for the present the better. In regard to the pot kinds that are used for special purposes, such as table decoration or for furnishing vases, when they have to be kept to a limited size, it will be found that their health will be improved by reducing the old balls as much as possible, even to the sacrificing of a good portion of the roots, that they may have fresh soil afforded, which for the Gymnogrammas and other choice kinds should have a little finely broken charcoal or cinders, with a fair sprinkling of sharp sand mixed in to keep it open and porous—a condition that is very essential for the successful cultivation of Ferns. Where it is desired to increase any of the kinds quickly recourse must be had to division, to which most submit readily, especially Adiantums and others of that class, which may be split up into small pieces by cutting right through the crowns with a large sharp knife, but the safest way to deal with Gleichenias and such as have hard wiry rhizomes like them, is to layer any portion that may stray beyond the pots or can be brought there, when after a time they will become established, and may be severed at once. Seedlings of most sorts are always useful, and the raising them from spores is a very easy matter and a most interesting occupation. To make sure of getting the seed to germinate freely, 6 inch pots should be prepared by putting plenty of drainage into them, on which some tough fibry loam should be rammed firmly, leaving the surface even where the spores are to be placed, and then covered by laying a sheet of glass over the top. The pots must then be set in shallow pans kept constantly supplied with water, which the crocks will draw up gradually, and keep the soil in a regular moist condition. Any light shady place in the stove or other warm house will do to stand them in, although the brisker the heat the quicker will the seedlings come.

Greenhouses.

These structures will now be gay with a miscellaneous variety of things, from which some or other are being turned out as they go out of bloom, a time in a general way when they lose a good deal of attention, and have to shift for themselves. Much of this arises from want of space to accommodate them, but it is a matter of the greatest importance that even the hardiest of plants which have been forced should have some shelter, and be well treated till their growth is complete, and the weather is such that they can be trusted out without the protection of glass. Epacrises, and the early-flowering, free-growing Heaths, such as hyemalis, gracilis, melanthera, and others, although impatient of artificial heat and confinement later on, are greatly benefited by being stood where they can get a little warmth and a moist atmosphere now after being cut back, as it is of much assistance in giving them a fresh start, and as soon as they get this it will be a good time for repotting. This should be done in the best fibry peat, made as firm as possible by the use of well-prepared potting stick, solidity of the soil being very necessary for all plants having such fine hairlike roots as the above-named.

Pelargoniums of the show and fancy class will now require close watching for greenfly, as at this season they breed and spread at a rapid rate, and soon cripple the tips of the shoots, to prevent which a whiff of smoke should be given occasionally, and to insure a stocky short-jointed growth the plants must be elevated so as to enjoy full light, and be allowed plenty of space between that the under leaves may have their share of sun and air, without which they soon lose colour, and become disfigured by spots. The zonal section, so valuable for coming in during the summer and autumn, should now be set to work by shaking-out and repotting such old stock as have been saved from last year, plants of these being much the best for yielding a fine display of bloom early, which they do if not shortened back to any great extent, and are placed where they can get a dry heat of 45° to 50°, with free ventilation, as when so accommodated, the growth they make is exceedingly solid and very floriferous. To have Cinerarias and Primulas when they are of most service—in the dead of winter—seed must be sown at once, and for succession again later on. The double kinds of the latter are so beautiful and useful for cutting as to be deserving of the most extended cultivation, but unfortunately these can only be propagated by offsets, which require great care to get them to strike. To aid them in doing this the plants should be rested for a time by being kept dry, when the side shoots should be taken off with as much of the old stem with each as can be obtained, and inserted singly, after being properly trimmed, in small pots containing light peaty soil with plenty of sand, and if these are then placed under handlights in a warm dry house on a slate near the glass out of reach of the sun, they will emit roots in a few weeks and be ready for shifting on and growing in any cold frame. *J. Sheppard, Woolverstone.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	Mar. 8	Sale of Imported Orchids, at Stevens' Rooms.
Tuesday,	Mar. 9	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
Wednesday,	Mar 10	Sale of Established Orchids, Imported Lilies, and other Roots, at Stevens' Rooms.
Thursday,	Mar 11	Sale of Imported Orchids, at Stevens' Rooms.
Friday,	Mar 12	Sale of Scientific Instruments, &c., at Stevens' Rooms
Saturday,	Mar 13	Sale of Hardy Shrubs, Fruit Trees, Roses, &c., at Stevens' Rooms.

READERS of this journal some quarter of a century ago will remember the frequent references made at that time to the excellent work done by the late Professor HENSLOW. That great-hearted man did not confine himself to the duties of a Professor of Botany in the University of Cambridge, nor even to the ordinary duties of a conscientious parish priest. It is needless for us to say how thoroughly those duties were fulfilled—his memory still lives in the minds of those who had the good fortune to know him and his works. But there is one phase of his life-work which circumstances have brought to our notice, and to which we deem it well again to refer. We allude to the instruction he gave to the village children of his parish in natural history, and especially in botany. To make peasant children spell out such words as "Dicotyledon," "Phanerogamia," and the thousand similar hard words which constitute the language of botany might seem to superficial thinkers but an empty and an irksome task. HENSLOW, however, thought otherwise; he took care to teach the meaning of the language he used, or rather he made the children by gentle insistance and genial persuasion, find out for themselves the real meaning and significance of these words. No man better than he recognised the three-fold nature of his pupils—the sensual, the intellectual, the spiritual. By directing and guiding the first—cultivating and fostering the spirit of curiosity and interest in children, in other words by stimulating the faculty of observation which every child has, in its degree, as a natural heritage, he let loose the spring of their intellectual faculties and, unconsciously it may be, developed their reflective intellectual powers. Through these he pointed the way to yet higher spiritual truths which many endeavour to instil by dogmatic means, more calculated to engender superstition than a purer apprehension and a more intelligently felt reverence.

Be this as it may, no one knew better than he the value of botanical training for children, or did more to practise what he felt. What better training can there be for the majority of children than one which first attracts attention by dealing with the natural objects so dear to every child, then systematising the observations which every child makes, and ultimately leading them to reflect and reason upon sound bases?

What study is more calculated than that of natural history to engross the sympathies of the child or the youth, and to debar the growth of lower and debasing tendencies? From the physical point of view, what better exercise for the body than that involved in the outdoor study of natural history? What is true of natural history generally is specially true of botany. Impediments and obstacles of various kinds prevent the introduction of other branches of natural science into village schools, but the fields and the hedgerows, the woods and the gardens, supply means for study and recreation which are always at hand, which require no expensive apparatus for their elucidation, no practices which can offend the prejudice or hurt the sensibilities of any one. From this point of view it is gratifying to see the son of the late Prof. HENSLOW treading in the steps of his father, and following an example, than which he could have none better, by publishing a little volume* expressly intended for the instruction of children in the elements of botany. Mr. HENSLOW'S plan is to take a number of well selected wild flowers and pull them to pieces, so as to show their construction, compare one with the other, illustrate their uses, and suggest, rather than enunciate the wide-embracing principles which flow naturally out of these apparently simple matters. It is an incontrovertible truth that the life-history of the meanest weed that grows, the lowest creature that has life, involves considerations more pregnant with important issues to the human race and to all the dwellers upon this planet than the march of an ALEXANDER or the decree of a CÆSAR. A study of the methods and aims of natural science is, therefore, all-important, while for those whose business leads them to deal in an especial manner with living things no training is more important than one in the elements of biology, of which science, for the reasons we have hinted at, the department of botany must have the preference. Young gardeners, especially, should familiarise themselves early with the elements, and constantly increase their knowlege of vegetable form and of vegetable physiology. The illustration at p. 309, which serves as a frontispiece to the work we have mentioned, will serve to recall to many the good work done in times past in the most simple and unpretending manner. That others may be stimulated to take up the work and continue it in every village school, is a consummation devoutly to be wished.

—— A TEMPLE GARDEN IN JAPAN.—The view which we are enabled to give of a temple garden near Yokohama (fig. 55) is taken from one of the series of very interesting photographs brought home from Japan by Mr. MARIES. To the left is seen the entrance to a temple, with large bronze lamps on either side. Standing a little back in front of the central edifice is a tree of Pinus Massoniana with the branches trailed on a trellis, according to the Japanese custom. To the reader's right is a bell-tower, and in the centre is a magnificent specimen of Cycas revoluta, with a branching trunk, and surrounded by a low railing. Some idea of the climate may be gained from the circumstance that this tree grows in the open air, protected during the winter by a few mats. The fierce sunlight and the deep blue sky, indicative of atmospheric purity, are sufficient in the warmer months so to build up the tree and strengthen its tissues as to enable it to resist the winter's cold. The strikingly picturesque buildings might well serve as models for summer-houses, boat-houses, and the like. Temple bells are, Mr. MOSELEY tells us, always hung in a separate building and never far from the ground—2 or 3 feet only. They never have clappers, but are rung by means of a long beam slung at two points by ropes. The beam is drawn back and allowed to swing with its end against the bell. The temple roofs show well the catenary curve preserved in all Chinese and Japansse roofs, probably copied originally from tents, the ancestors of the Japanese having been nomadic.

—— HELLEBORES.—At Kew a bed has been made for these at the Richmond end of the herbaceous ground, sheltered by the pretty rockwork in that situation. The sorts now in bloom are niger, niger var. major, lividus, fœtidus, atrorubens; and very many others are just showing bloom.

—— LABEL FOR BOTANIC GARDENS.—We lately saw a good form of label at Kew, devised, we believe, by Sir JOSEPH HOOKER. It consisted of a rod of iron some 2 feet in length, the thickness of the little finger, and expanding at the top into an oblong or square frame, into a groove of which is slipped one of MAW'S tile-labels, with the name permanently imprinted on it. At a little distance the rods are scarcely perceptible, while the label itself is easily read, and yet is not large enough to be a dissight.

—— THE NEW FOREST.—According to the *Journal of Forestry*—a publication which increases in value with every succeeding number—the income of this national forest amounts to £8930 6*s.* 8*d.*, and the expenditure to £8876 7*s.*: giving the utterly ridiculous sum of £53 19*s.* 8*d.* as the annual rental or profit derived by the State from this splendid but wretchedly mismanaged national property. This sum represents a rental of less than one farthing per acre. The new Deputy-Surveyor, the Hon. GERALD LASCELLES, is well spoken of by our contemporary, as having had a good training for the office to which he has been appointed.

—— POST OFFICE REGULATION.—Great inconvenience is sometimes experienced by advertisers and others by overlooking the rule of the Post Office, which forbids the postmaster to receive letters addressed by initial or fictitious name only. Thus a letter addressed "A. B., Post Office, Chelsea," or wherever it may be, will not be received, but will be sent at once to the Returned Letter Office.

—— CAMELLIAS OUT-OF-DOORS.—The Camellias planted out at Kew have not been greatly injured during the winter, although some of them have dropped their leaves.

—— DR. BOISDUVAL. — The French papers announce the death of this learned entomologist, to whose labours we owe one of the best treatises on the insects which affect garden plants. Dr. BOISDUVAL was an ardent horticulturist, and a leading man for some time at the Central Horticultural Society of France. He died in his eighty-second year.

—— OLD SEED.—It may be expected that a considerable portion of old seed will be sent out this spring, to compensate, in a measure, for the scanty supplies of fresh seed last autumn. So long as the seed in question is not so old as to have lost its germinating power, it may be considered fortunate if the merchants are able to furnish their clients at all. The age of seeds may be determined (according to M. LADUREAU, in the *Annales Agronomiques*) by chemical analysis. Fresh seeds contain a neutral oil, which becomes more and more acid in proportion to the length of time the seed is kept. The increased acidity coincides with a diminished germinative power. The simple test of growing a few as a sample is, however, a better test, and one within the reach of every cultivator. Well ripened dry seeds undergo chemical change less rapidly than seeds under the opposite condition, and retain their power of growth in proportion.

—— FUCHSIA EARL OF BEACONSFIELD.—For the information of a correspondent of the American *Gardeners' Monthly*—who asks in what year this Fuchia was raised, and who was its raiser?—we may state that it was raised some seven or eight years ago at the Forest Hill nursery of Messrs. JOHN LAING & CO. Mr. LAING fertilised flowers of the old Fuchsia fulgens with the pollen of some of the best florists' varieties of that day, and in due time raised about a hundred seedling plants, amongst which were some very curious things—which were subsequently thrown away—and the subject of this note, which was certificated by the Royal Botanic Society on June 21, 1876, under the name of Laing's Hybrid, and again in July of the following year by the Floral Committee, under the name it now bears. It is undoubtedly one of the most beautiful and most useful decorative varieties that we have, but it has one fault, and a very curious one—it will not bear seeds.

—— HARDY PLANTS IN BLOOM AT KEW.—We saw the first common Coltsfoot in bloom a week or so since at Kew, together with Petasites albus, Colchicum bulbocodioides, lusitanicum; Crocus Imperati—one of the most lovely of all, C. Olivieri, etruscus, alatavicus, susianus, and chrysanthus; Bulbocodium vernum. Among the Saxifrages were oppositifolia and the white variety Rocheliana, and the lovely Burseriana, alluded to in another column.

* *Botany for Children.* By the Rev. GEORGE HENSLOW. (STANFORD.)

—— The Winter and the Conifers.—At Kew recently we noticed that the following species had lost their leaves or been more or less injured :—Pinus Sabiniana, P. Webbiana ; Abies bracteata, A. Pinsapo, A. bifida ; Picea Smithiana, Cedrus Deodara, Sequoia gigantea (Wellingtonia).

—— Frame Potatos.—It has long been a moot-point between various schools of Potato cultivators as to whether deep or shallow planting was most adaptable to the nature of the Potato, and which most calculated to produce a good crop of tubers. As far as regards the best method of planting frames for the obtaining of early forced crops, the practice long adopted by Mr. Denning at Coombe Gardens seems to present very strong evidence of the value of shallow planting. Mr. Denning plants all his Potato tubers intended for frame-work first in small pots, the top of the tuber just projecting from the soil. In this way only the roots that are developed at the base of the shoots are enticed into the soil, whilst all the tuber rootlets remain exposed to the air. When the plants are about 8 inches in height they are planted out in frames 10 inches apart each way, the tuber rootlets being just buried. The stems afterwards receive two earthings by added soil of about 1 inch each in thickness ; and "the result of this mode of culture," says Mr. Denning, "is that the young tubers are produced far earlier, are finer, and there is a better and more regular crop than is found where the tubers are planted perhaps from 4 to 5 inches deep at the first." This plan, it is evident, admits of the strongest being selected to plant up together, and the weaker ones remain until they are more advanced in growth, and thus make up a successional planting. This routine of potting and planting begins early in the year, and continues as long as required. Most advanced cultivators of Potatos now advocate the tubers being well prepared, shallow planting, late enough to avoid late spring frosts, and two or three earthings, as being promotive of early cropping and avoidance of disease.

—— Seedling Disas and Droseras at Glasnevin.—There is at present in one of the span-roofed pits here a sight which we venture to assert could not be witnessed elsewhere in Ireland, nor perhaps in England either, namely, a large seed-pan full of Disa grandiflora. There are several hundreds in the pan, in fact it closely resembles a good "hit" of Lobelia speciosa. Already Mr. Moore has been successful in transferring some of the tiny seedlings to another pan, and they appear not to have felt the disturbance in the least. We also noticed a pan of Drosera spathulata, containing some hundreds of plants, all of them fit for transplanting—in fact some had already been transplanted. *Gardeners' Record.*

—— Libonia floribunda is extremely fine in colour and development in the stove of the Cambridge Botanic Garden. Its flowers show a deep red colour, unlike that of the smaller yellowish ones usually seen. This peculiarity has been noticed, and the question is suggested whether Libonia is so properly a greenhouse plant as usually supposed, being much finer in this case with warmer treatment. Several seedling Abutilons in this house are sufficient to show that ornamental forms are easily raised from seed. Fine shrubs of Eranthemum pulchellum have long been in bloom ; another blue is supplied by the useful Conoclinium, and among the softer rose tints of several Centradenias a scarlet Nægelia shows with considerable brilliancy. Toxicophlæa spectabilis is much superior to any white Ixora, and possesses a delicious fragrance. Eranthemum Ecbolium remains continually in flower ; growing beneath the stages there is always a succession of shoots. Passing a few other showy flowers, among which is a good form of Imantophyllum miniatum, we light upon a rarity in the shape of Begonia albo-coccinea, introduced some years ago by Messrs. Veitch, now prettily in flower, as it has been all the winter. Its leaves are very ornamental and distinct, appearing like those of a small Nelumbium. The charm of its flowers is in the pretty combination of white and red, the outside surfaces of the buds and flowers being deep red, the inner pure white. It is a native of India.

—— Removal of an Old Yew Tree. — A correspondent informs us that the famous old Yew tree in the churchyard of Buckland, near Dover, has been moved to a position some 60 feet westward of its previous site. The tree is of very ancient date, and is supposed to be one of the oldest in the United Kingdom. In course of time the roots had become deeply embedded in the soil, and the earth was first entrenched all round to a depth of some 5 feet, and then boxed, as it were, with deal boards. An easy incline towards the west was constructed, up which, after rollers had been introduced under the box by pulleys

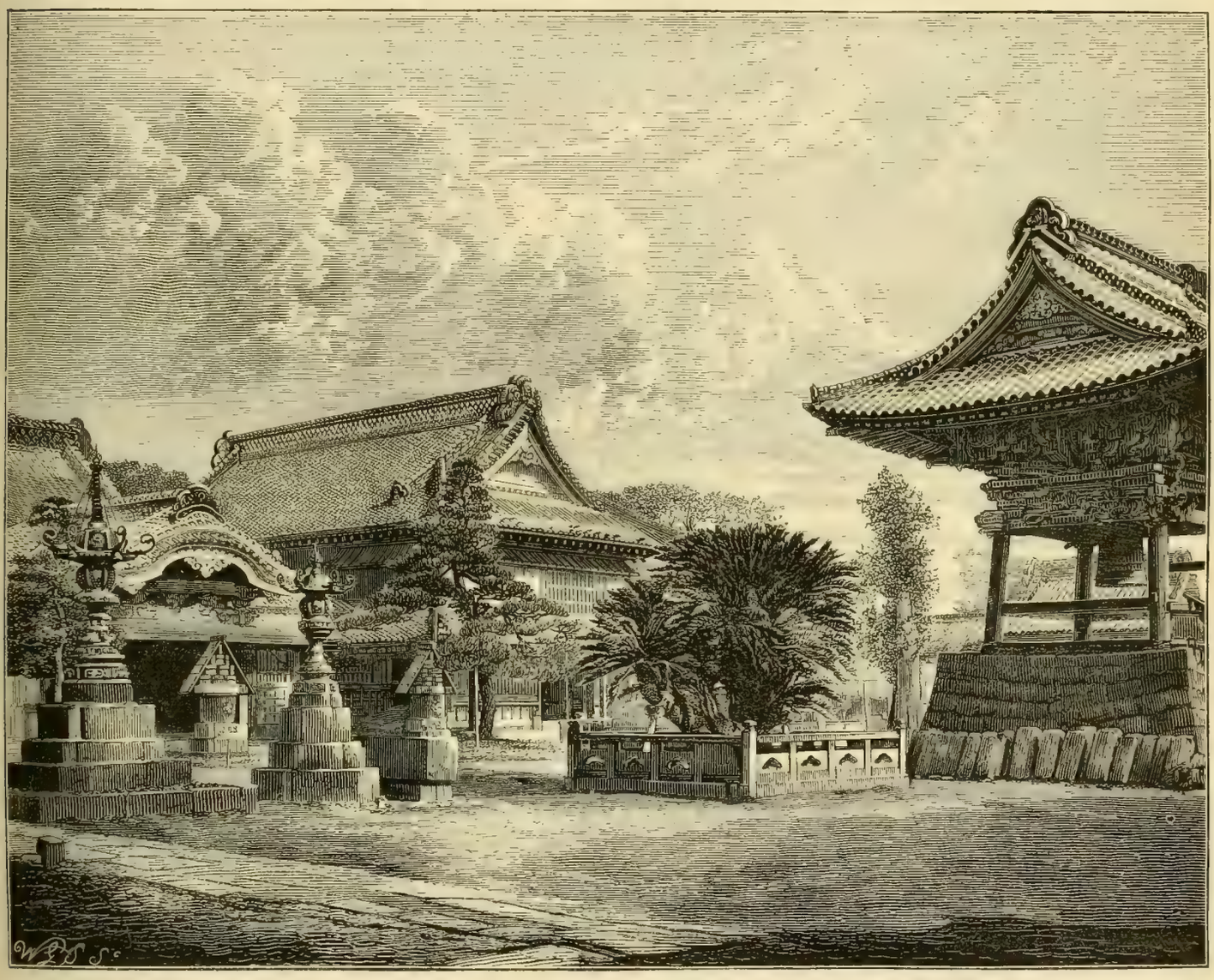


Fig. 55.—A temple garden near Yokohama. (see p. 304)

and other mechanical appliances, the tree, with its earth as it stood, was hauled and placed into position by means of one of Mr. W. Barron's Elvaston transplanting machines. We should deem the removal of such a tree with such a history an act of sacrilege, and should the death of the tree result, as is only too probable, those who counselled it will have but a tarnished reputation. We sincerely hope that our correspondent may have been misinformed, and that no such gross Vandalism has been perpetrated. The custom of planting Yew trees in churchyards is a subject which has given rise to much antiquarian discussion, and it is said that the original purpose was to protect the church from storms, though some assert to provide the parishioners with bows when the practice of archery was so much followed. Several ancient laws were enacted for the encouragement of archery, which regulated many particulars relating to bows, but it does not appear that any statute directed the cultivation of the Yew. Although the scarcity of bow-staves is a frequent subject of complaint in our ancient laws, yet, instead of ordering the Yew tree to be cultivated at home foreign merchants were obliged, under heavy penalties, to import the material from abroad. On the other hand, a statute of Edward I., which settles the property of trees in churchyards, recites that they were often planted to defend the church from high winds, and the clergy are requested to cut them down for the repairs of the chancel of the church whenever required. It is said the custom of planting Yews in churchyards singly is of very ancient date. Statius in his *Thebaid* calls it the solitary Yew, and it was at one time as common in the churchyards of Italy as it is now in North and South Wales. In many villages of those two provinces the Yew tree and the church are coeval with each other.

—— Eremurus turkestanicus.—This is a fine Lilaceous plant, bulbs of which were sent by Dr. Albert Regel from Turkestan, and which is figured in the *Gartenflora* for January. Although not so fine a species as E. robustus, it is a very ornamental plant for warm situations. It requires, however, a warmer drier summer than we enjoy in this country, and therefore it is very suitable for pot culture. The flower-spikes, irrespective of the naked part of the scape, are about 2 feet long, and the flowers are copper-coloured bordered with white. It is in the hands of Messrs. Haage & Schmidt.

—— Epping Forest.—We note, for the information of those who may care to read *in extenso* the paper read before the Society of Arts, on January 28, on "The Future of Epping Forest," that Messrs. William Paul & Son have reprinted it in pamphlet form, and we advise all those interested to read and profit by it.

—— Asplenium Prenticei.—This is an Australian Fern, described as a new species by Mr. M. Bailey in the *Proceedings of the Linnean Society of New South Wales*, vol. iv., p. 37. The author states that it is a very distinct species, in habit resembling Lomaria discolor. It inhabits the deep gullies of the Trinity Bay range.

—— Opium in China. — Recent reports from China show that the cultivation of the Poppy, and the manufacture of opium, is still increasing in that country; consequently the returns of some of the Chinese ports show a decrease in the quantity of Indian opium, which, however, is compensated for by the increased production of the native drug. Malwa opium has hitherto been—and, indeed, is still—in greater demand than any other Indian opiums in China, but the Persian kind is, it seems, now rapidly taking its place. Regarding the moral aspect of the question of opium smoking, the British Consul at Kiungchow says it must be treated as any other necessary evil that legislation cannot prevent. Compared with drink, one contrast is very marked—it has not produced one-half the misery or crime. A pipe of opium is by some considered to the Chinese workman what a glass of beer is to the English labourer—a climatic necessity; and, accepting facts as they are, that their use has become so engrained that one must look to the spread of education only to prevent abuse.

—— Amphiscopia Pohliana.—This Brazilian Acanthad is decidedly worthy of general cultivation as a decorative stove plant. It flowers well, even in a young state, and the combination of dark glossy green leaves, deep red bracts, and purple flowers, renders it strikingly handsome. It is of a neat dwarf habit, the somewhat large leaves are sessile, and narrowed to both ends. The branches are terminated by a closely packed, cone-like mass of somewhat large, deep red, imbricated bracts, which, even without the long purple flowers, are sufficiently showy to render the plant a conspicuous one. It only needs to be known to be more largely grown. There are now several specimens in bloom in the Palm-house and elsewhere at Kew.

—— Primula nivea as Furnishing White Flowers.—Plants of this species cultivated in pots, if strong and well-established, will furnish a large number of flowers at this season of the year in a cold greenhouse. It can be cultivated by those who have no convenience for forcing into bloom such things as Deutzia, Prunus, Eucharis, Tulips, &c., which supply white flowers at this season of the year. P. nivea grows generously, and flowers with remarkable freedom, and the blossoms being produced in neat trusses can be used in many ways. In a free soil and a somewhat dry position, it will live through an ordinary winter; but to have it in all its snowy purity, it should be cultivated in pots through the winter in an ordinary cold frame.

—— Illustrations of Australian Orchids.—Part v. of Fitzgerald's magnificent work on *Australian Orchids* reached this country by the last mail, and its value, as descriptive not only of the mere form but of the life history of the plants, is of a very high order. We have already alluded to the absence of numeration of the plates and pagination of the text, and as each part appears it becomes more and more difficult to find a particular plate. What the final arrangement is to be the author does not say. The part before us contains figures of Prasophyllum fimbriatum, P. nigricans, Thelymitra nuda, Sarcochilus falcatus, S. olivaceus, S. Hillii, Pterostylis curta, P. pedunculata, P. reflexa, P. acuminata, Caladenia cœrulea, C. deformis, Cleisostoma tridentatum, and Bolbophyllum Sheperdi (*sic*), besides the following new ones: — Thelymitra megacalyptra, Sarcochilus montanus, and Dendrobium falcorostratum. The last named plant is a large-growing white-flowered species discovered by the author, and first described by him in the *Sydney Mail* newspaper! The flowers are of medium size and produced in numerous large panicles, and they are said to exhale a delicious perfume, distinct from that of any other Australian species. The flowers of Prasophyllum fimbriatum are not resupinate, hence the labellum is uppermost, and, being irritable when an insect alights on the outside, or what would be termed the under side of it, it is at once thrown forward upon the column, closing the flower for an hour or two. With the exception of the Dendrobium none of the epiphytes figured in this part are very showy. Cleisostoma tridentatum is described as a veritable air-plant, sometimes hanging and flourishing by a single thread-like root. It is, however, only found on trees overhanging streams.

—— Typhonium divaricatum. — Specimens of this somewhat rare, extremely interesting, and pretty Aroid, are now in flower in the T range at Kew. Were it not for its abominable odour, the gracefully formed and richly coloured spathes would recommend it for more general cultivation. It is a stemlesss herb with cordate acuminate leaves, somewhat less than those of the common Arum maculatum; the recurved spathe is longer than the erect subulate spadix, the latter as well as the inside of the spathe being of a beautiful deep crimson colour. A native of Malabar, and, according to Roxburgh's *Flora Indica*, of China also, as plants of it were received at the Calcutta Botanic Gardens which had been sent from Canton by Mr. W. Kerr.

—— Exotic Plants Naturalised in Queensland.—The last volume of the *Proceedings of the Linnean Society of New South Wales* contains an interesting article by Mr. F. M. Bailey, on some of the introduced plants of Queensland, from which it appears that the character of the flora is undergoing a rapid change. Many foreign plants, be they accidentally introduced weeds, be they ornamental, and first cultivated in gardens, spread over the country in a surprisingly short period. Some of them prove formidable enemies to the cultivators of the soil, whilst others add to the charms of the native flora. To the latter category belong such plants as Ricinus communis, several varieties of which have established themselves on the railway banks and elsewhere, and are exceedingly effective. Passiflora edulis has become one of the commonest climbing plants in the scrubs. Mr. Bailey remarks that a more acceptable example of acclimatisation could hardly be found, as its fruit is abundant, ripens readily, and proves most acceptable to the traveller. Ageratum conyzoides is already widely spread, as is likewise Lantana camara, whose beautiful and abundant flowers hardly compensate for the extent of good land it occupies. The pretty Asclepias curassavica has overrun the whole colony, and from a welcome visitor it has sunk to the rank of a perfect nuisance. Nothing seems to feed on it except an aphis, which has no power to destroy, and a butterfly, supposed to have been introduced. Opuntia vulgaris has spread widely and rapidly in Queensland, and in New South Wales, especially along the Upper Hunter River, its spread is described as really formidable. The beautiful Solanum sodomæum, with orange-coloured fruits, has become very common in the forest country. The Watercress (Nasturtium officinale) has become naturalised in many streams, and is regarded as a most wholesome and useful plant. Centaurea melitensis, Verbena bonariensis, Datura Stramonium, and Medicago denticulata, are some of the most troublesome weeds. On the other hand, Carduus Marianus has proved a great boon in dry seasons; for when pasturage is scarce, horses, cattle, and sheep, eat it readily, and thrive upon it. Mr. Bailey states that during some recent droughts horses became quite used to knocking the seeds out of the dry flower-heads, ate them with a great relish, and even fattened upon them. The Horehound is naturalised only near stockyards, and some of the graziers consider it as very beneficial to sheep.

—— A Midland Counties Potato Exhibition.—This is an appropriate title for an exhibition of Potatos under the auspices of the Harborne and District Potato Society, to take place in the Masonic Hall, Harborne, on September 17 and 18. There are not less than twenty-seven classes for Potatos, a considerable number being for single dishes of specified varieties. In one class prizes are offered for the best dish of cooked Potatos, one variety only, to be judged just as they are cooked, the competing tubers to be handed to the committee at 12 o'clock noon precisely on the first day of the show. It would appear that a society has been formed at Harborne, called The Harborne and District Potato Society, there being a number of Potato fanciers in the neighbourhood; and the schedule of prizes is a very straightforward attempt not only to encourage good cultivation, but to discourage as far as possible errors and confusion in nomenclature. One rule states that every dish of Potatos must be correctly named, or it will be disqualified. Only one other feature besides Potatos is included in the schedule of prizes, and that is a class for twelve blooms of Dahlias, distinct varieties, correctly named; and for three, Mr. E. Chatwin offers a first prize of not less than 30 cwt. of best coal. There should be a huge competition in this class. Potato exhibitions are on the increase, and the Borough of Hackney Chrysanthemum Society, whose exhibitions take place at the Royal Aquarium, have added some good classes for Potatos, as well as for collections of vegetables, to the schedule of prizes to be given at their annual exhibition in November next.

—— Pituri: A New Narcotic.—It is a marvellous circumstance that the black man of Central Australia should have dropped upon the same narcotic principle (nicotine) as the red man of America. The forest is the home of the native, and there the white man often feels his own inferiority—as the native often puts himself on a meal under circumstances where the white man would starve. As a hunter the black man is perfection itself. These remarks occur in a paper read before the Queensland Philosophical Society by Dr. Bancroft, who there adds materially to our information concerning the Pituri, or Pitch'ery, of Central Australia. Pituri is a plant not far removed from the Tobacco plant which grows in Central Australia. The leaves of the

plant are chewed, by the aborigines who trade with it far and wide. The plant yielding it has been determined by Baron von Mueller to be the Anthocercis or Duboisia Hopwoodii, *alias* D. Pituri. Chemical analysis shows that the alkaloid, on which the peculiar poisonous properties depend, is nicotine, the same substance to which Tobacco owes its effects. Pituri causes extreme retraction of the eyeballs. It is much sought after by the natives, who will give anything they possess for it, not for the purpose of exciting their courage, or of working them up to fighting pitch, but to produce a voluptuous dreamy sensation, such as the opium eater experiences. The natives in some districts are said never to travel without it on their long marches, using it constantly to deaden the cravings of hunger and to support them under excessive fatigue. King, the survivor of the Burke and Wills expedition, who had lived seven months with these natives when rescued by Howitt, states that when his food became so scarce and bad as barely to support life he sometimes obtained a chew of Pituri, which soon caused him to forget his hunger and the miseries of his position. It also plays an important part in the social rites of these natives. At their big talks and feasts the Pitchiri (for it is spelt also in this way) "quid" is ceremoniously passed from mouth to mouth, each member of the tribe having a chew, from the "pinaroo"-man or head-man downwards. This singular wassail cup never fails to promote mirth and good fellowship, or to loosen the tongues of the eloquent. There is a curious mode of greeting on Cooper's Creek. When friends meet they salute with, "Gaou, gaou"—"Peace, peace"; and forthwith exchange Pitchiri quids, which, when well chewed, are returned to their owners' ears. They extended this custom to their European visitors; but the fullest appreciation of their hospitality in offering their highly-prized, and, indeed, only stimulant, could never overcome their repugnance to the nauseous morsels, hot and steaming from their mouths, of the natives.

—— Veronica Traversii.—We are glad once more to note that this fine New Zealand shrub has passed the winter quite unhurt at Kew.

—— Mr. Boyd's Orchids.—We hear that Mr. Anderson, of Meadowbank, has purchased the entire collection of Orchids of Mr. W. B. Boyd, of Ormiston House, Kelso, at a very considerable outlay, and is now distributing the plants to those who desire to participate in the sale. They are said to be about the best grown little lot of Orchids to be met with, the credit of bringing them to this condition being due to Mr. Fairbairn, formerly gardener at Syon House.

—— A Seedling Lachenalia.—We have received from the Rev. J. G. Nelson, of Aldborough Rectory, Norwich, a seedling Lachenalia, raised between aurea and luteola, which will be a welcome addition to our limited stock of these pretty Cape bulbs, and which appears to combine the rich yelk-of-egg-yellow of the former with the free-flowering and free-growing habit of the latter. We believe Mr. Nelson intends exhibiting his nursling at South Kensington on Tuesday next; and it would be a welcome addition if any one who has a collection or good examples of Lachenalias would show them at the same meeting. In the case of Mr. Nelson's seedling, aurea was the male parent and luteola the female. The seed was sown in the autumn of 1877, and the batch of seedlings are blooming in the spring of 1880, which is pretty quick work for a bulb. We should like to hear the experience of our readers in growing Lachenalias. Some, as aurea, have the property of taking long rests, lying dormant for a whole season, and many persons fail in keeping them in health. From our own observations of fifty years since, when we knew of some which were admirably cultivated in the window of an ordinary living-room, we are inclined to think they like a drier atmosphere than they generally get.

—— Acacia longifolia var. mucronata.—This pretty Australian species merits mention on account of its being the earliest bloomer among the Acacias in the Temperate-house at Kew. It is a somewhat dense-habited shrub, with linear phyllodes, from the axils of which, near the tips of the branches, spring a profusion of spikes of pale lemon blossoms. This species is totally uninjured by the severity of the past season—several times the house was much below the freezing-point—whilst the Silver Wattle, Acacia dealbata, alike remarkable for its magnificent panicles of golden-yellow flowers and the elegance of its Fern-like foliage, has suffered severely.

—— Billbergia Liboniana.—Among the large collections of Bromeliaceæ at the Royal Gardens, Kew, the species at present most worthy of note is Billbergia Liboniana. It is easily cultivated, is not of large size, and flowers freely during the winter season. The plant is cæspitose in habit, producing an abundance of runners, which furnish numerous rosettes of green leaves. From the centres of these rosettes spring the scapes bearing the handsome flowers, 2 inches or more in length; the outer perianth segments, which are of a beautiful coral-red colour, are about half as long as the inner ones, which are whitish at the base, and a splendid purple-blue upwards. A native of Brazil, from whence it was introduced to Europe by the collector in whose honour it is named. Morren, in the *Belgique Horticole* for 1877, says that it is apparently very rare in its native country, as Libon found but a single plant of it, and the species is wanting in herbaria.

—— Scottish Pansy Society.—The thirty-sixth annual competition of this Society is announced to be held in the Calton Convening Room, Waterloo Place, Edinburgh, on June 18.

—— Chertsey and District Horticultural Society.—The summer exhibition is fixed to be held at Mount Felix, Walton-on-Thames, on Thursday, June 17.

—— Weston-super-Mare and East Somerset Horticultural Society.—Tuesday, August 10, is the day fixed for holding this Society's annual show.

—— Maidenhead Horticultural Society.—The annual show of this Society will take place in the Hambletonian Grand Hall, Maidenhead, on Wednesday, August 25.

—— Publications Received.—Dickens' *Dictionary of Continental Railways, Steamboats, &c.* (London, C. Dickens, 26, Wellington Street).—*Strawberries all the Year Round.* By William Hinds, gardener to Sir Ivor B. Guest, Bart., Canford Manor, Wimborne.—*Fifth Annual Report of the Board of Commissioners of the Department of Parks for the City of Boston, U.S.A.*—*The Valley Farmer:* a Monthly Live-stock and Poultry Magazine, published at Staunton, Virginia, U.S.A.

—— The Weather.—General remarks on the weather during the week ending March 1, issued by the Meteorological Office, London:—The weather has been very boisterous, changeable, and showery in all the western and northern parts of the kingdom, with some hail and snow at many of the Irish, Scotch, and northern English stations; in the east and south, however, the weather, though squally and unsettled, was less disturbed, and the amount of rainfall was comparatively slight. The temperature was about equal to the mean in "England, S.W.," but slightly above it in all other districts, the excess being greatest, 3°, in "Ireland, N." The highest of the maxima were registered in most places on the 28th or 29th ult.; at Durham the thermometer went as high as 58°, but no higher than 55° or 56° at any other station. A rather sharp frost occurred over central and eastern England on the 25th, the lowest reading observed being 26° at Shrewsbury. The wind at the commencement of the period was northerly or north-easterly, but from the 25th to the 28th it varied in direction between W. and N.W., and on the two following days between W. and S.W. In force it was (except on the 24th) fresh or strong very generally; hard gales were frequently experienced on all our western and northern coasts, and occasionally in the S. and S.E. also. The rainfall was rather more than the mean in Ireland, in "Scotland, W.," and "England, N.W.;" equal to the mean in "Scotland, E.;" and below it in all other parts of the country.

—— Gardening Appointments.—Mr. F. Morris, late Foreman at High Cross, Framfield, has been appointed Gardener to J. Ebden, Esq., Coghurst Hall, Hastings.

Home Correspondence.

Green Glass.—I am not sufficiently learned in the history of glass-making to know when crown glass was first made of a green colour, or whether at the time it was made for any special purpose. In a paper in the *Gardeners' Chronicle* of January 31, Mr. Maurice B. Adams, when speaking of plants requiring artificial shade to protect them from the scorching heat-rays of the sun, and referring to the shading of large hothouses such as the Palm-house at Kew, says "It would be almost impracticable to adopt any system of shades or blinds which would be effective, and it was therefore thought possible that by the aid of tinted glass, which should not in itself be objectionable in appearance, the most scorching of the heat-rays might be arrested. Mr. R. Hunt made the suggestion, associated with Sir Wm. Hooker and Dr. Lindley. The glass eventually used, after a long series of experiments, is that which we now see employed in the Palm-stove and several of the buildings at Kew, and which I am informed by Mr. Smith (my successor), the able Curator, is in every way a success." For Mr. Adams' better information, I will briefly state my first acquaintance and subsequent connection with green glass. On my entering the service of the Royal Forcing Garden at Kensington, in 1820, new pits were being erected for rearing the young Pine-apple plants, and when the pits were ready for glazing I was sent to a glass warehouse in St. Martin's Lane, accompanied by a man with a spring cart to take charge of, and bring home, the glass, which had been previously ordered; and well do I remember the dark sombre green the glass presented on my seeing it in bulk. The glass was selected by Mr. W. T. Aiton (then Director of the Royal Gardens), who called it Stourbridge green. On my coming to Kew I found most of the original plant and fruit-houses glazed with green glass. There was then no fixed material used for shading: occasionally on very bright days in summer one or more mats were thrown over the roof above any special plants that it was supposed would suffer from the burning rays of the sun; this was specially the case with the propagating-house, in which there was a pit 20 feet in length and 7 feet wide, containing 200 bell-glasses for striking cuttings, and mats were thrown over the roof, often causing the breakage of the glass. To obviate this I, in 1824, received Mr. Aiton's sanction to use canvas, for which I had 3 feet 7 inch rollers made, to work in sockets and fixed to the rafters inside the house, and to these the canvas was attached. This was the first canvas shading used in Kew. At this time the glazing was done by contract, under the supervision of the Board of Works, and it followed that in repairs clear glass was often used, which with the original green glass gave to the houses a motley look. In time clear class became general, especially after 1845, when the duty was taken off. At this time the improvement in the hothouses commenced under Sir W. J. Hooker, and clear glass was used; then canvas shading became absolutely necessary in the Orchid, Fern, and other tropical plant houses, and it has continued to the present time; but I must say that, even with the green glass, as used in the Palm-house, shading is necessary for Orchids, Ferns, &c.; and the reason why such was not found out in early times, is because there were but few of these plants then in cultivation. Now with regard to the glass used for the Palm-house: the erection of that building commenced in the autumn of 1844, and was not finished until the summer of 1848, during which time all the details as regards the mode of heating, degree of temperature, airing, and supply of water were arranged. On this point Sir Wm. Hooker says, "they all (*i.e.*, the architects and contractors for the building) acted in concert with the Director and Curator of the establishment, who are responsible for the successful cultivation of the plants." As much of the "successful cultivation" depends upon the proper adaptation of the above points, which, whether good or bad, the Curator would have to make the best of, Mr. Richard Turner, the contractor for the building, was directed to consult me on all these points. The mode of ventilation was arranged to be as it now is, but my plan of arranging the pipes for heating was not adopted, and the unnatural iron-grate flooring (strongly opposed by me) was adopted. With regard to the glass: on my asking Turner what kind he was going to use, he said, "Oh, it will be so clear that you won't see that glass is there!" My answer was, "This will be very pretty, but how is it to be shaded in summer? for if not shaded by some material the plants will be all scorched;" and I called his attention to the plant-houses in the garden being covered with movable canvas shades during summer. This both he and I saw readily could not be done in the Palm-house; but as a substitute I suggested that the heat-rays of the sun would be greatly reduced by passing through green-tinted glass. After many *pros* and *cons* by all parties regarding the glass to be used, the Commissioner of Works demed it expe-

dient to take scientific opinion upon the subject, and accordingly the matter was placed in the hands of Mr. R. Hunt, of the Geological Survey, to whom I was ordered to send leaves of Palms, to enable him to experimentally determine the best glass medium that would check the burning rays, so as to prevent the leaves of the Palms being scorched; at the same time I was requested to furnish him with specimens of the green glass originally used at Kew, of which I found squares still remaining in one of the old fruit houses. In due time he furnished an elaborate report, which it is not necessary here to remark upon: it simply ended by recommending the glass tinted green, as in the samples sent. By this decision, Mr. Aiton's "Stourbridge green" in its old age officially received the stamp of science. *J. Smith, Ex-Curator of Royal Gardens, Kew.* P.S. See my remarks on shading in *Ferns, British and Foreign* (p. 336), and I may add that in tropical houses, especially for Ferns, Orchids, and other epiphytes, one-half the glass now used in the roof and sides might be dispensed with. The question is, What would be the best opaque material for the other half, to range alternately with the green glass? *J. S.*

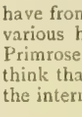
Tree Pæonies.—I can verify the hardiness of the tree Pæony as well as M. Baumann, for within 10 feet of them here Portugal Laurels and Rhododendron Nobleanum are killed to the ground. Not even the extreme points were injured, though the thermometer in sight of them registered fully 10° below zero. As Mr. Fortune observes, the early spring frosts do most damage after the growth begins, as they do to many of our Conifers, &c., though otherwise quite hardy. *Henry Knight, Floors.*

Some Notes on the Season.—Among the anomalies of the fruit season of 1879-80, I noticed that the very late sorts of Pears generally bore much more than the ordinary productive and earlier ones. I should not attach much value to this, but that the same thing occurred in the case of others; and on no theory is it clear to me why, for example, Duchesse de Mouchy and La Quintinie, as also Marie Guise—all three very late and really worthless sorts—bore well, and not only so on one exposition, but on various. Probably these are naturally hardy setters, but there is not sun enough in our climate to ripen them, and so the lesson (if any) to be learnt is to select hardy setters of their bloom-buds. Wind and rain, I find, cause more ruin than dry frosts. *M. C. Bréhaut.*

Broccoli.—There can be no question, I think, but that the tenderness of these in ordinary seasons arises in a great measure from over-cultivation, as I have always found those on poor hard soils in exposed situations stand the winter far better than others in good rich land, where they make huge soft stems and leaves full of sap, with little of the hard fibre so essential to enable them to endure the vicissitudes of the weather. This was forcibly brought under my notice some years ago when the bulk of our plants were killed, but all those standing within the influence of a large Cedar of Lebanon and partly starved by the roots escaped, although they were on the north side of the tree. Their immunity from injury was therefore entirely owing to the comparatively stunted growth they made, and the consequent hardness of the tissues, which rendered them proof againt frost. There is a vast difference too in the enduring powers of the principal sorts, the most reliable that I have met with in that respect being Cattel's Eclipse, a most valuable late variety, turning in with close heavy heads long after the greater part of the others are over. Mr. Gilbert's plan of planting Broccoli after other crops without digging the land is a good one, and if more practised losses amongst them would be considerably less, as it induces a sturdiness of habit unattainable in any other way. The next best system of culture is in rows at wide intervals, so as to admit plenty of sun and light between, as it is a well-known fact that Broccoli always stand better in open fields than they do in walled-in gardens. I was surprised to see by the letter of a correspondent that such tender early sorts as Veitch's Autumn, Osborn's, and Penzance had escaped with him. We have these, Snow's, and Backhouse's laid in and protected by straw, but I do not think they would have been saved without. I hear this is how all the market growers about Cambridge manage theirs, but it is to be feared that the supply will be a poor one everywhere this year, as even old Cabbage stumps are killed, and gardens present a generally bare appearance, with but few vegetables of any kind to gladden the eye. *J. S.*

Novelty in the Chinese Primrose.—The new "punctated" or speckled flowers recently introduced from the Continent offer some distinctive, and, to those who do not judge Primulas solely by a florists' ideal, very attractive features. Any break in this beautiful winter flower that gives variety in colour, marking, and form can secure abundant admiration, but in depth of colour without doubt is seen the most attractive point. The new Chiswick Red simply presents a very deepened hue of madder on the old carmine, but one of the more novel punctated forms gives quite a maroon-shaded crimson, not all of one hue but flushed and flaked, and showing the most striking of all the red forms yet seen. The blooms have true thrum eyes, orange centres, and the margin is not so much fringed as finely laciniated, whilst all over the edges of the petals are seen minute white specks. An exact duplicate of this kind in form and markings has a very delicate ground of rosy mauve. Both have good habit and are robust, blooming as freely as the best kinds. The crimson kind will make a fine variety for the hybridist. A very curious sport has just presented itself on a plant of the purple kind here—one bloom, and that one only having a centre of white paste exactly like that seen in the alpine Auricula. It was pure and thick and altogether dissimilar from the centres of any other flowers. I have self-fertilised it in the hope that it may seed and perhaps perpetuate a paste-eyed strain. Had the whole of the blooms shown this feature it would have made a noise amongst the quidnuncs, who would have pronounced it the result of a cross with the Auricula. I have from time to time, however, tried crosses with various hardy species of Primula upon the Chinese Primrose but have never been successful, neither do I think that any one else has yet obtained results from the intermixture of species so widely distinct. *A. D.*

Iron Rafters.—I, for one, am much obliged to Mr. Baines for his interesting accounts of London market gardens, market plants, plant houses, and boilers. In his paper of the 21st ult. he speaks of the iron bars forming the rafters of Mr. Beckwith's houses being 1¼ inch breadth, but does not say if they are simply flat, or made of T-iron. I presume the rafters must be the ordinary T angle-iron. Would he please say? I am struck with the simplicity of structure, and I am sure others would be glad of the same information. *P. P., Dublin.* [The bars in Messrs. Beckwith's houses are not of the ordinary T-pattern, but sash-bar iron, the shape of which is shown in the accompanying transverse section. The material used is the best Low Moor iron, rolled in Scotland to Messrs. Beckwith's pattern. They receive them in bundles, like ordinary rod-iron, of the length they require. Messrs. Beckwith point to the necessity of the bars being perfectly free from twist, otherwise, when bent as required, they would not range true for the glass. T-iron would not answer, as Messrs. Beckwith have it without purlines, ridge-pieces, or anything to strengthen the roofs, the dispensing with which admits more light, and saves cost. As will be easily seen, a given substance of iron standing edgeway, as Messrs. Beckwith use it, is very much stronger than the strength if T-shaped. *T. Baines.*]



The Frost and the Apricots.—The late severe frosts have been cruel to our Apricot trees, and on some of the varieties they have proved deadly. The varieties thus done for beyond hope are the Peach Apricot, the Turkey Apricot, and the Roman Apricot. The Moor Park and Breda, especially the Moor Park, are comparatively uninjured. Fortunately, more than two-thirds of our trees belong to these varieties, and we have good hopes yet of their well-doing. Were I planting any number to-morrow, I would never plant any other kind but the Moor Park, for it has proved here the most prolific and the hardiest of any of the above varieties. *Henry Knight, Floors.*

Abies bifida.—I long ago came to the same conclusion to which you have arrived in regard to A. firma and bifida. I enclose a few leaves, all taken from the same plant in my garden. The short spathulate ones from the upper branches have already nearly, or in one or two cases quite, lost the bifid character. The new growth at the end of the lower branches still retains the bifid character of the young plants. This plant, like the other Japanese Conifers, is perfectly hardy here, but in habit it is one of the most undesirable of all trees, the branches being short and early deciduous, giving it a weak miserable appearance. This is true of all the specimens I have ever seen. *S., Boston, U.S.*

Sea Sand.—When I inform you that I exhibited at the Chiswick shows in the late Dr. Lindley's time you will perceive I am not very youthful. Seeing your remarks on Mr. Cannell's experiments in striking cuttings in sea-sand, and having for many years used it largely, not only for striking cuttings but mixed freely with soil for almost all kinds of plants, I can strongly recommend it, also for a dressing over the flower-beds and borders after they have been dug up in the autumn. It causes the earth to work easily in the spring, and has a good effect in giving vigour to seeds sown or plants put out, and further it keeps the ground moist in dry weather. I have often wondered that farmers and horticulturists do not use it more than they do. I will give you a strong case: A workman at the harbour here saw a quantity of refuse loam shot on a waste near the sands; he, having some idea of garden work, at once set-to at odd times and dug into it a large quantity of the sand. He then planted some Cabbage plants, which grew wonderfully fine, with dark green leaves, with large hearts, which quite surprised him. In the spring he planted a few Vegetable Marrows and some French Beans, both of which also grew freely and bore abundantly; this he repeated for three years, and frequently boasted of his garden and the great produce he got from it, attributing the success mainly to the sea-sand. *William B. Miller, Elms, Ramsgate, March 2.*

Chrysanthemum frutescens Etoile d'Or.—Seeing by your issue of February 21, p. 242, that there has been, and perhaps may still be some misconception as to the origin of Chrysanthemum frutescens Etoile d'Or, perhaps you will allow me as a duty, and in respect to a departed friend, to say that it was raised in or about the year 1874 by Nicholas Desgeorges, deceased, the then gardener to M. Adam, also deceased, of Villa des Bruyères, Golfe Juan, *près* Cannes, and was from seed gathered from Chrysanthemum frutescens var. Comtesse de Chambord, known in the locality as "Anthemis à grandes fleurs," and is no doubt a cross between it and the yellow variety mentioned, which were growing together at the same time, and was I think disposed of by the widow of the said gardener to M. Nabonnaud, horticulteur, Golfe Juan, and by him named, but not until it had found its way into one or two private gardens of the neighourhood. *S. E. F.*

Uprooting of Conifers. — Notwithstanding what your correspondent says at p. 246 in favour of earthing-up trees 2 feet with soil, I still maintain that it is in every respect wrong. It is quite contrary to Nature, for every tree properly planted forms a base or collar, and as it advances in years and loses the lower branches this base gives to the tree a much more pleasing appearance. Who ever saw a tower, monument, or column without a base? and when Smeaton chose the Oak tree for his model of the Eddystone lighthouse, it was not an earthed-up stem, but a fine tree, with a magnificent bole and base, as Nature ordained it. If the locality is dry and the subsoil gravelly one can easily apply the mowings of the grass around to mulch the young tree till it fairly lays hold of the soil. Besides, earthing up the stems of trees often does kill them, as I saw in the west of London last week. Parson's Green was ordered to be raised 2 feet, which was done, and the result is that, with three exceptions, the trees are all dead or dying. Again, if earthing-up the stems of trees is not injurious, why is it that those in charge of our public parks invariably place dry bricks or stones around the collar to protect it when they have occasion to raise the soil around it? A young Willow tree may, and a Grape Vine in some instances also might be earthed-up with impunity, and they will throw out fresh roots and revel in the new soil; but to earth-up the stem of any Coniferous plant is neither wise nor in good taste, and in saying this I feel sure that ninety-nine out of every hundred of the arboriculturists of this country will agree with me. *J. Rust, Eridge Castle.*

The Surface-Dressing of Conifers and Other Trees.—I have much pleasure in confirming the statements of Messrs. Rust and Cox on this subject. Of course it must not be overdone, though in regard to the latter a good deal of misunderstanding prevails. Most trees, and Conifers more than others, resent the heaping up of soil against their boles; that, however, may generally be avoided. Moreover, that is the worst possible place to top-dress—few or no roots will be found there. Top-dressings are most effective from a yard to 6 feet from the boles; they are easily given if the trees are properly planted and treated from the first. The chief beauty and crowning perfection of Conifers is to have their lower boughs sweep the turf. Trained thus the top-dressing is well nigh invisible. In other cases the green carpet under Conifers often becomes far too dense for their well-being. It is not perhaps so much that the grass roots exhaust the soil, as that the compactness of the masses of grass and fibres together shut out the air. The grass, too, is unnatural. Fir needles or leaves constantly destroy the grass, and they form without doubt the best possible covering, and perhaps food for the roots of the trees. They decompose slowly, and form a mould that seems very congenial to the roots. It is well in cases where no other dressings can be given to give this one of natural leaves. The needles blow about but little, and the worms speedily pull them in by one end and make them fast. I never could quite make out what the earth-worms wanted with the leaves of Conifers. One would have thought the turps could hardly prove very tempting food for them; neither does it appear certain that they eat them. Are they ventilators for

worm-casts or nests, or decoys to baulk the birds? But this is wandering from the main subject, which was to confirm the immense advantage of top-dressing Conifers by several striking examples that have come under my own observation. Top-dressings, ranging from 6 to 18 inches, have been used with the best results. It need hardly be added that the latter thickness was the result of necessity rather than choice. Ground at different times and places has had to be levelled and raised so much to please the eye, and by keeping the boles clear the trees have in every case benefited by the heavy dressing. From 4 to 6 inches, however, is sufficient at one time, and in the case of rapid growing trees once every six years is by no means too frequent for a top-dressing. Bricks, stones, or masses of wood over roots have also had beneficial effects. But the action of these is probably mostly mechanical. They likewise conserve the strength of the earth and the moisture it contains. How far, then, mere weight acts as a stimulus to the growing force of the roots, and, as it were, draws them to the surface, is a difficult problem. That the roots rise more freely under such conditions is certain. Can this arise from the fact that life everywhere is at war with the inertia of death, and that the roots resent and endeavour to throw up and off the dead pressure of brickbats and stones? There are other advantages in thus weighting the roots with dead matter totally unfit for food. These root-loads prevent trees from being blown over by the wind. The latter is seldom high enough to snap over the trunks of trees, but using the top as a leverage it upheaves the roots with their covering soil *en masse*, and thus throws the trees over. By sufficiently weighting the roots either with soil or other heavy matters the wind-power would be vanquished by inert dead weight over the roots, and the trees would thus be enabled to withstand the fiercest gales. *D. T. Fish.*

A Hardy Broccoli.—The gardener at Blackadder, Berwickshire, Mr. Reid, at which place 23° below zero was registered this winter, told me to-day that, notwithstanding this severity of cold, he had a fine lot of Broccoli, which had stood entire without injury. On asking the name of the variety he said it was Russian or Miller's Dwarf, a kind that he got from Dicksons & Co., of Edinburgh. In seasons such as we have had of late, varieties of hardy vegetables cannot be too well known. I rather envy Mr. Reid, for two-thirds of mine are gone bad though covered with snow, like his, and I had 13° of frost less than he. *Henry Knight, Floors, Feb. 28.*

Peach Twigs and Galvanised Wire.—Allow me to correct an error in the article on the above subject in the *Gardeners' Chronicle* of the 21st ult. The Peach shoots which I laid before the Scientific Committee on the 10th ult. were taken from trees outdoors from a west wall. "J. S." seems by his article to infer that the injury is more likely to be attributed to tight tying and the past bad season than to injury caused by the wires. Had I not been so thoroughly convinced in the cases plainly to be traced to the wires, and the wires only, which have occurred to the trees here, I should not have taken the proceedings which I did. I can at the present time show any one who may feel interested in the subject several cases of injury resulting from the galvanised wire. Some shoots are entirely killed for about 2 inches in length where they cross the wire, and that too where they do not touch the wire at all (a case of this I send with this paper to the Editors). Only a few days back Mr. Roberts, my neighbour of Gunnersbury Park, was inspecting the cases I have mentioned, and so thoroughly convinced is he of the evil results of using galvanised wire, that when recently making some important alterations he used copper wire only, and some galvanised wire which had been previously fixed he contemplates taking out and replacing with copper. The walls here were wired early in the season of 1876, before I took charge in the following summer. At the winter pruning we found quantities of shoots killed where coming in contact with or intersecting the wires. This has occurred more or less every season, this year more than usual. The wires here are fixed 1½ inch from the wall and 6 inches apart, and strained horizontally. Had I superintended the fixing I would have had them as close to the wall as possible, to prevent a current of air behind the trees. I have no doubt the system adopted by "J. S.," and described in the *Gardeners' Chronicle*, vol. xi., p. 52, is far preferable. If I had occasion to fix any wirework myself, I would certainly adopt his plan, but nevertheless I would still adhere to the old but sound system of nailing, which, when properly and carefully done, will not materially injure the walls for many years. It is better in my opinion for the walls to be partially disfigured than to have the trees, for which the walls were built, injured, and eventually killed in many cases. Of the two evils choose the less, and this in my experience is on the side of nailing when carefully done. It would be instructive to know the chemical constituents used in the process of galvanising, and also if there is more than one process, so that some galvanised wires may be more injurious than others. I am about to paint the wires here, and another season I will, if spared, give the result. In conclusion, I would state we have used the utmost caution in tying each season, so that the soil, on which "J. S." so much relies for the injury caused, will not avail in the case of the trees here. *J. Hudson.* [The specimen sent bears out all the statements of our correspondent. We shall revert to the subject on another occasion. Eds.]

—— The remarks made by "D. C. P." relating to the above only go to show Peach trees do not suffer from canker or become injured by contact with a painted wire trellis—a fact known long ago; and he brings forward no proof that they do from an ordinary galvanised one, and as the latter is so much superior in appearance and a saving of labour and expense after it is up, it is on this that people wish for information: but there is this satisfactory thing about it, no one can be far wrong in using the galvanised wire, as the paint, if required, can always be added, whereas if common wire be used it must be painted to prevent rust. If galvanised wire were inimical, we should I think have discovered it here, as we have it indoors and out; and in both instances it has been in use some ten or twelve years, but although this is the case we never find a shoot affected except through pressure caused by tight tying, and the wood is green enough this winter to have suffered, if frost has anything to do with it—for here the thermometer fell to within 4° of zero, and yet the worst trees we have are those that are nailed, the joints of the bricks there being broken and damp. *J. S.*

—— If those who contemplate wiring their Peach walls have decided to have the joints pointed at the same time, they need, for their own and their employer's interests, to look very sharply after those whom they employ to do the work, or the consequences may be of such a nature as will take a year or two to rectify. As a caution to others, I will briefly state what occurred here last year. It was decided to have two of the Peach walls wired and also pointed, men from a neighbouring building firm being employed to do the latter portion of the work. Before they commenced the trees were all unnailed and carefully tied up; a peremptory order was given and several times repeated whilst the work was proceeding to be very careful over the trees, and not to bruise or knock off any of the buds; but irrespective of all that was said, the trees were bruised and hacked about in a frightful manner. Having other important work on hand at the time it was impossible to be with the men so much as one could have wished. The full extent of the injury done was only seen when the trees began to grow, then it showed itself to an alarming degree, gum exuding from all bruised places, shoots of the previous year dying back, some to half their length, others more. I now for my own part feel half inclined to forego all pointing in the future, unless the walls are in such a state as to render it absolutely necessary, and prefer to battle with whatever insects loose joints may harbour rather than have a repetition of such mutilation. Where it is possible I would strongly advise the employing of one or two of the estate bricklayers for work of this description; they will, I venture to say, be found much more careful than these 9*d.* an hour gentlemen. *J. Horsefield, Heytesbury.*

Fig. 56.—A village lecture, from the life. (see p. 304.)

The Winter and the Wall Trees.—It is almost too early as yet to write of the full effects of the winter on the fruit trees on walls. The winter may not yet be over by any means, and the full effects of severe frost do not become apparent in a few weeks. It is

also possible that the apparent effects of this winter's frosts will be worse than the real injury inflicted. The frost bit the trees while their leaves were yet green. It froze them through and fixed them on. The withered leaves shrivelled as if fire had at once scorched and impaled them — gave the trees a ghastly, wrecked, death-like appearance. Some of the greener wood shared a fate similar to that of the leaves, and has been severely bruised and discoloured. This bruising of unripe wood by frost is a singular phenomenon, which has been but little noticed, and seems rather difficult of explanation. The branches have all the appearance of the cold having hit them a violent blow, or as if they had been held vice-like in the cold crushing grip of the frost. Anyhow, the life of such branches is already as good as gone. Like wounded animals, they make a few convulsive efforts and then the struggle for life ends, and Death claims them for its own. This mode of putting it suggests another curious feature of frost-bitten trees, that is, the precocious haste with which they burst into flower and leaf. They seem the first to challenge the rude blasts of our cutting springs, as if they were so uncertain of their strength as to be impatient to put it to the test. The over-haste to grow of wounded and diseased trees is one of the mysteries of growth with which the cultivator would do wisely to reckon this season. It seems probably a result of weakness, which moralists assure us is ever in a hurry, while strength can afford to wait. Be that as it may, all protective expedients should at once be got ready, for the open weather of the past few weeks has already started the sap in Peaches, Nectarines, and Apricots on walls; and should the frost hit the wounded trees hard after the sap is in motion our last hope of a crop of fruit or the recovery of the trees would vanish. Even those who deprecate protection in ordinary seasons would be wise to use it this season, as the trees are no doubt more tender than usual, and consequently more liable to injury. The last year, unfavourable as it was to horticulture, suggested one fruit-cultural lesson of considerable importance; that was, that Peaches and Nectarines, especially in the Eastern Counties, enjoy a wet season. Seldom have trees so severely crippled in May recovered so rapidly or made such good growths as last year. Had the wood only ripened better or the frosts been less severe the crop would have been good. If, as our meteorological prophets affirm, and the small rainfall of the last four months seems to forbode, we are likely to have a dry summer, it will be well in all our waterings not to forget our Peaches and Nectarines on walls. They may enjoy their warm quarters at top while their roots are well fed and abundantly watered, but with their heads semi-roasted on hot bricks and their roots also hot and dry, it can surprise no one to find weakness, mildew, red-spider and other maladies, which in their cumulative effects are often almost as injurious and destructive as the frost itself. *D. T. Fish.*

Memoranda of Apricot Flowering. — The following is a copy of dates extracted from my note-book of the first expanded flower of Apricot blossom in the open air, on trees growing against a south wall in the gardens, Gordon Castle, as showing the earliness or lateness of the period for the last twenty-eight years :—

Year.	Month.	Year.	Month.
1853 ..	February 28	1867 ..	February 21
1854 ..	March 2*	1868 ..	March 2
1855 .	,, 8	1869 ..	February 12
1856 ..	,, 1	1870 ..	March 9‡
1857 ..	,, 1	1871 ..	,, 3
1858 ..	February 25	1872 ..	February 20
1859 ..	,, 22†	1873 ..	March 2
1860 ..	March 9	1874 ..	February 6§
1861 ..	February 24	1875 ..	March 7
1862 ..	,, 28	1876 ..	February 25
1863 ..	,, 24	1877 ..	March 3
1864 ..	March 2	1878 ..	February 23
1865 ..	,, 15	1879 ..	March 10
1866 ..	February 23	1880 ..	February 20

It will be seen that the earliest year was 1874 (February 6), and the latest 1865 (March 15), and the number of years on which flowers were open in February was fourteen, or exactly one-half. *J. Webster, Gordon Castle.*

The Mazagan Bean.—In addition to the reference to this well-known garden Bean made on p. 167, it appears to be pretty certain it is a Bean of very ancient date, that it has been known in this country from time immemorial, and is supposed to have been introduced by the Romans. The Mazagan Bean, though classed among the earliest of their type —indeed the Mazagan is always described as the earliest in seed lists—is yet a little later than the Longpod, the Seville Early Longpod, and the Dwarf Fan. An enterprising farmer in Buckinghamshire has discarded the old type of Horsebean, and grows the Mazagan for cattle food in preference, and finds that it gives a much better return — as much as 8 quarters, or 64 bushels, per acre, the seed being also of greater weight. In regard to the origin of the green forms of the Windsor and Longpod Beans, a M. Delauny, writing in *Le Bon Jardinier*, some fifty or sixty years ago, described the green Beans as "a new sort cultivated about Paris, called the green Bean of China." It was regarded as a good Bean, late, but productive; and it had the peculiarity possessed by the green Beans of the present day, that the seeds remain green even after being ripe and dried. Those who cultivate these green Beans for culinary purposes assert that they are of excellent quality for table, but probably the prejudice against their colour interferes somewhat with their more general growth in gardens. *R. D.*

* Ripe, July 26. † Ripe, July 29.
‡ Ripe, end of July; all over by August 25; heat great, and excessively dry.
§ Ripe, July 22.

Notices of Books.

European Ferns. By James Britten, F.L.S. With coloured illustrations from Nature by D. Blair, F.L.S. London: Cassell, Petter, Galpin & Co.

Of this somewhat expensive book, on a still popular subject, the first six parts are before us. It is of quarto size, and when completed will form a handsome volume. We do not, however, find in the parts issued any intimation as to the extent to which the work is proposed to be carried: the parts which have as yet been published deal only with a very small fragment of the subject.

The work presents three special features. There is first an introduction, giving a general description of the structure of Ferns, their classification, geographical distribution, and culture. Then come the descriptive notices of the European Ferns, of which portraits are given. Thirdly, there are the portraits themselves, which, as a circular note issued with the last part states, "specially characterise" the work.

The introduction is avowedly brief and a mere sketch of the subject, and possibly may not extend much beyond the portions already issued. Be this as it may, the author has given a very pleasantly written and intelligible explanation of the nature and character of Ferns as distinguished from other branches of the vegetable kingdom. This portion of the text will be very useful to those who need the information, as no doubt will be the case with a considerable proportion of the purchasers of a popular picture-book of this class.

Of the descriptive portion of the text we can only speak from the fragment before us. The arrangement adopted seems to be that of Hooker's *Species Filicum*; not, however, strictly so, for Athyrium and Ceterach are admitted into the table of genera, while Hooker merges them both in Asplenium. In the same table there is mentioned a genus Aspidium (which must be meant to include the modern Polystichum and Lastrea), while in the introduction two of our native Lastreas are referred to as Nephrodium Filix-mas and Nephrodium Thelypteris—a discrepancy which is suggestive of a halting between two opinions on the matter of nomenclature. The descriptions of the genera and species are carefully, and, so far as we have noted them, accurately written, in a popular and readable form, the usual style of attaching to each species treated on a specific character and technical description, with an array of synonyms, where they exist, being avoided; hence we conclude the book is intended as a popular rather than a scientific memoir on the Ferns of Europe. The distribution of each species gives material for an interesting paragraph, while, instead of a generic character, a note of some of the chief peculiarities presented by different species of the genus, whether European or extra-European, is given. All this Mr. Britten has worked out conscientiously and well. We note some old acquaintances amongst the woodcuts introduced, but which would have been quite as well omitted, in the shape of blocks that have done previous service in Dr. Deakin's *Florigraphia Britannica*.

The conception of the coloured plates is, we think, a mistake, in so far as they represent reduced figures of the plants pourtrayed. A reduced figure as a woodcut is seldom misunderstood, and if accompanied by a coloured plate in which portions of the plant are shown of the natural size, a very good idea of the plant is obtained. A reduced coloured figure is a totally different affair, and let it be ever so carefully labelled as being half or one-third natural size, an uninformed person will never realise the difference between the picture and the reality. Thus we may venture to say that no one would recognise the plate (by-the-bye the plates are not numbered) which professes to be a portrait of the well-known Hare's-foot Fern, and which happens to be labelled "one-third natural size," as that of Davallia canariensis, nor could any one possibly recognise the plant by means of the plate, the figure being far more suggestive of the very different Davallia bullata. In such a well-marked plant as Struthiopteris germanica (here called Onoclea) the objection is not of equal force, the habit being in this species unmistakable. In the plates of Woodsia and Cystopteris, where the figures are of the natural size, Mr. Blair has been much more successful; but in the representation of these genera, as of the others also, we should like to have seen more analytical figures introduced, especially clearly drawn enlarged figures of the fructification. The plate of Adiantum again, in part vi., is weak and ineffective, from the attempt to show two large tufts on the page. Still, on the whole, Mr. Blair has done his share of the work satisfactorily, so far, at least, as his special art is concerned.

We have thus distinctly indicated what we conceive to be the weak points in this volume in order that, as many more have to follow, an opportunity may be afforded to rectify them in the future. Though the book was not perhaps much wanted, it is not without use, inasmuch as it brings into one view a set of Ferns never before similarly associated; and taking it as whole, it is certainly a creditable production—creditable to the publishers for the tasteful manner in which it is brought out—to the artist for the fidelity of his figures, it being to the plan, not the execution of the plates, which we object—and to the author for the careful and comprehensive manner in which he has treated the subject from its many points of view, though we do not fall in with his notions of classification.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, March 3, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity Sat = 100.	Wind: Average Direction.	Rainfall.
Feb.	In.	In	°	°	°	°	°	°	°		In.
26	29.74	−0.06	49.0	39.0	10.0	43.2	+ 3.5	35.5	75	WSW	0.00
27	29.63	−0.18	48.8	33.2	15.6	40.5	+ 0.6	33.9	78	W WNW	0.00
28	29.40	−0.41	51.8	40.0	11.8	45.0	+ 5.8	42.4	88	WNW	0.02
29	29.47	−0.35	50.6	42.0	8.6	46.6	+ 6.4	41.9	85	W WSW	0.00
Mar.											
1	29.24	−0.58	52.5	39.0	13.5	45.6	+ 5.3	37.8	71	WSW	0.05
2	29.20	−0.65	51.8	34.8	17.0	44.3	+ 3.9	39.1	82	WSW WNW	0.01
3	29.20	−0.66	53.0	45.6	7.4	49.0	+ 8.5	43.2	80	WNW WSW	0.24
Mean	29.41	−0.41	51.1	39.1	12.0	45.0	+ 4.9	39.1	80	WNW WSW	sum 0.32

Feb. 26.—Fine till 3 P.M., then dull till 7 P.M. Cloudless afterwards. Windy. Slight shower at 8 A.M.
— 27.—A fine day, partially cloudy. Windy. Little rain before 9 A.M.; slight hail at 11 P.M.
— 28.—Generally fine, though dull at times. Rain in early morning. Cloudless at night.
— 29.—A fine day, dull and cloudy at intervals. Rather windy. Overcast at night.
March 1.—A fine day, partially cloudy. Windy. Smart showers between 7 and 8 A.M., and 4 and 5 P.M.
— 2.—Generally fine till evening, then overcast. Little rain at night. A gale of wind.
— 3.—A fine day, generally cloudy. Strong wind. Heavy rain in early morning. Few drops of rain at night.

London: *Barometer.*—During the week ending Saturday, February 28, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.80 inches at the beginning of the week to 30.47 inches by the morning of the 25th;

decreased to 29.52 inches by the morning of the 28th, and increased to 29.66 inches by the end of the week. The mean reading for the week at sea level was 29.98 inches, being 0.56 inch above that of the preceding week, and 0.02 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 51¾° on the 28th to 40° on the 24th; the mean value for the week was 46°. The lowest temperatures of the air observed by night varied from 28¼° on the 25th to 40° on the 28th; the mean value for the week was 34½°. The mean daily range of temperature in the week was 11½°, the greatest range in the day being 20½° on the 25th, and the least 5½°, on the 24th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Feb. 22, 38°.8, — 0°.3; 23d, 36°.5, — 2°.; 24th, 37°.3, — 2°; 25th, 38°, — 1°.5; 26th, 43°.2, + 3°.5; 27th, 40°.5, + 0°.6; 28th, 45°.9, + 5°.8. The mean temperature of the air for the week was 40°, being 0°.5 above the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 98½° on the 25th, 93° on the 22d, and 92° on the 26th; on the 23d and 24th the reading did not rise above 48°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 26° on the 25th, 29° on the 22d, and 29½° on the 23d. The mean of the seven lowest readings was 30½°.

Wind.—The direction of the wind was W.S.W., N., and N.N.E., and its strength strong. The weather was dull and wet during the first three days of the week, but fine and bright afterwards. Hail fell on the 22d, and fog and mist prevailed on the the same day

Rain fell on three days, the amount measured was 0.35 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, February 28, the highest temperatures of the air observed by day were above 53° at Truro, Plymouth, Cambridge, and Sunderland, and below 49° at Bristol, Bradford, and Leeds; the mean value from all stations was 51½°. The lowest temperatures of the air observed by night were below 29½° at Truro, Blackheath (London), Wolverhampton, and Nottingham, and above 34° at Liverpool, Leeds, and Sunderland; the general mean from all places was 31½°. The extreme range of temperature in the week was above 24° at Truro and Cambridge, and below 15° at Liverpool and Leeds; the mean range from all stations was 20°.

The mean of the seven high day temperatures was above 48° at Truro, Plymouth, and Sunderland, and below 45½° at Wolverhampton, Bradford, and Leeds; the mean value from all places was 46½°. The mean of the seven low night temperatures was below 35° at Blackheath, Wolverhampton, Nottingham, and Hull, and above 37° at Truro, Leeds, and Sunderland; the mean from all stations was 35¾°.

The mean daily range of temperature in the week was above 13° at Truro, Plymouth, and Hull, and below 9° at Liverpool, Bradford, Leeds, and Sunderland; the mean daily range of temperature from all places was 10¾°.

The mean temperature of the air for the week from all stations was 40¾°, being 5½° higher than the value for the corresponding week in 1879. The mean temperature was above 42° at Truro, Plymouth, and Sunderland, and below 40° at Wolverhampton, Nottingham, and Hull.

Rain.—The amounts of rain measured during the week varied from 0.44 inch at Bristol and 0.37 inch at Sheffield, to 0.08 inch at Nottingham and 0.06 inch at Brighton; the average fall over the country was a quarter of an inch.

The weather during the week was generally fine and mild, though cloudy with slight showers at times.

Fog prevailed at Cambridge on February 22.

SCOTLAND: *Temperature.* — During the week ending Saturday, February 28, the highest temperatures of the air observed by day varied from 56° at Paisley and 54½° at Aberdeen, to 47¼° at Greenock; the mean value from all places was 50½°. The lowest temperatures of the air observed by night varied from 30¾° at Aberdeen to 35½° at Glasgow; the mean from all stations was 33¼°. The mean range of temperature from all places was 17¼°.

The mean temperature of the air for the week from all stations was 42½°, being 7½° higher than the value for the corresponding week in 1879. The mean temperature was above 43° at Glasgow and Leith, and below 41½° at Greenock and Perth.

Rain. — The heaviest fall of rain was 1.38 inch at Greenock, and the least fall was 0.10 inch at Dundee; the average fall over the country was 0.41 inch.

DUBLIN. — The highest temperature of the air was 52°, the lowest 33°, the extreme range 19°, the mean for the week 43°; and the amount of rain 0.12 inch.

JAMES GLAISHER, F.R.S.

Obituary.

BY cable-message intelligence has been received of the death, at Melbourne, at the end of last week, of Mr. WILLIAM DUNNETT, eldest son of Mr. W. H. Dunnett, of Stour House, Dedham, a partner in the firm of Messrs. James Carter, Dunnett, & Beale. Mr. William Dunnett had been in delicate health for some time past, and by the advice of his medical attendant he went out to Melbourne in October last, the firm having one of their elaborate stands at the Melbourne Exhibition. The change, from which so much was hoped by his friends, failed to bring about an improvement in his health, and he died at the early age of thirty-two. His wife accompanied him on the journey, and was with him to the last. Mr. William Dunnett was brought up to take an active interest in the seed-growing establishments at Dedham and St. Osyth, and about eight years since he came to London to take the post of manager of the wholesale department at the Holborn house, under Mr. Beale. He was a thorough man of business, with a clear and penetrating insight and judgment, but physical weakness, endured with great patience under trying circumstances for many years, prevented that energetic action he would otherwise have displayed. As it was, he was most active in the discharge of responsible duties, and they were performed in a way that won for him the respect and esteem of all. In the home family circle, where filial and fraternal affection were ever present in its pleasantest form, his loss will be keenly felt.

—— We much regret to announce the death of Mr. THOMAS PARKER, of St. Michael's Hill and Stapleton Nurseries, Bristol. Not only in his own parish, where he was churchwarden, but all through the old city and neighbourhood his genial, pleasant temper and straightforward business habits combined to make him a most agreeable companion and to win for himself the respect of all whose good fortune it was to know him intimately. His industry and integrity have long been acknowledged by his many patrons and friends, and we sincerely hope that the success in life he thereby attained will be the good fortune of his two sons, who now succeed him in the business. Mr. Parker died on February 27, at the age of 59.

Enquiries.

He that questioneth much shall learn much.—BACON.

LEEDS RHUBARB.—The quotations of "Leeds" Rhubarb in your market reports tempts me to ask if any of your Yorkshire correspondents can give any information with reference to the production of the large supplies of forced Rhubarb which every season comes into the London markets from the locality named. I have been told that some of the exhausted mines in Cornwall are now used for forcing Rhubarb for market purposes. Any information on that point would also be appreciated. *Q.*

Answers to Correspondents.

BOOKS: *Gn. Tagore, Calcutta.* André's *L'Art des Jardins* has not been translated into English.

CAULIFLOWER LEAVES: *R. P. W.* The leaves have been badly affected by the thrips, probably in consequence of having been kept in heat too long after the seeds had germinated.

CINERARIAS: *Old Subscriber.* A showy strain, useful for home decoration, large and high-coloured, but in many cases too rough on the surface to take a very high position.

CONIFEROUS SEEDS: *Subscriber.* If of choice kinds, sow in pans of loamy soil and place them in a cold frame; in this case do not bury them too deeply. If they are of commoner sorts, they may be sown in well-prepared beds in the open ground.

GREVILLEA ROBUSTA: *Amateur.* A greenhouse plant. Sow in heat.

HURRY'S WEED EXTRACTOR: *Daisy.* We understand that Mr. Hurry has experienced some difficulty in getting his invention properly manufactured, but is now in a position to supply it. Pampesford, Cambridgeshire, is the inventor's address.

INSECTS: *J. E. D.* The insect which is devouring your friend's Vines is the weevil (Otiorhynchus sulcatus), which shams death when disturbed, and is easily captured. Spread a sheet under the Vines at night, tap the canes smartly, and the pests will fall into it.—*Veto.* The very minute white insects found in the soil of your garden are the common Podura terrestris nivea of De Geer (Lipura ambulans, Lubbock). Although found in great numbers, we do not think they are destructive to healthy plants—they are generally found in decaying vegetable matter. The *small brown thing* is the chrysalis of some two-winged fly belonging to the family Muscidæ, which it is quite impossible to determine in this state. A wash formed of sulphur, lime, and soot is beneficial to plants. *I.O. W.*

MATRICARIA INODORA FLORE-PLENO: *H.* It is to be sent out in May by Messrs. Dicksons & Co., Waterloo Place, Edinburgh.

MENTHA PULEGIUM GIBRALTARICUM: *G. W. H.* (p. 279). You will find the following an expeditious way to get up a large stock:—Spread about 4 inches of light soil—leaf-mould, or cocoa-fibre, and sandy loam—over the bottom of an ordinary cold frame; press it down firmly with a spade, and then prick in the cuttings, 1 inch apart, water with a fine-rose pot, and keep the lights closed, and, if sunny, shade. In a week all will be rooted and growing, and in a fortnight other cuttings may be taken from them, for the smallest bit strikes root as freely as the largest. *W. Wildsmith.*

MUSHROOMS: *A Foreman.* The manure for making up the beds is usually spread out and turned in the way you describe, and is afterwards thrown together into a heap, so as to get nicely warm before taking it into the house. The beds made of this material, and properly spawned and earthed over, seldom fail to yield good crops. In the other case the cause of failure seems to have been the raw state of the manure employed, which probably, when worked up into the bed, became over-heated.

NAMES OF FRUIT: *J. E.* 1, Beurré Rance; 2, decayed beyond recognition.

NAMES OF PLANTS: *E. W. Sewell.* Chrysanthemum frutescens, var. Etoile d'Or.—*Bob.* 1, Andromeda axillaris; 2, Herniaria glabra; 3, Kleinia repens.—*K. W.* Sparmannia africana.—*W. A. C.* 1, Coccoloba platycladon; 2, Adiantum caudatum, var.; 3, not found; 4, Columnea hirsuta; 5, Justicia flavicoma (calycotricha); 6, Centrostemma reflexum.—*E. C. M.* Six at one time is the limit. 1, Phlebodium aureum; 2, Cyrtomium falcatum; 3, Pteris crenata; 4, P. longifolia; 5, Asplenium lanceolatum; 6, Pteris cretica. The others next week.—*H. Freeman.* Cœlogyne flaccida.—*Querist.* The Fern is probably Polypodium neriifolium, but you sent no fructification. The Orchid is Cattleya labiata.

PHYLLOXERA AT THE CAPE: *R. Johnson.* See our numbers for February 14 and 21, pp. 208, 240.

RAFFIA: *R. W.* It is manufactured from the leaves of a Palm, Sagus or Raphia ruffia, a native of Madagascar. See our number for April 13, 1878, p. 470.

STOPPING VINES: *Walter Johnstone.* We prefer leaving one joint at first, and as close as may be necessary after, so as to leave room for proper leaf development.

VINES: *Walter Johnstone.* The precise influence of particular stocks for Vines is not yet clearly ascertained. We should prefer the Alicante in both cases.

CATALOGUES RECEIVED:—James Carter & Co. (High Holborn, W.C.), Catalogue of Farm Seeds.—Edward Webb & Sons (Wordsley, Stourbridge), Catalogue of Farm Seeds.—Frederick Bax (143, Bishopsgate Street Without, E.C.), Catalogue of Vegetable, Flower, and Agricultural Seeds.

COMMUNICATIONS RECEIVED.—O. C.—Mr. S.—A. M.—J. C. B.—K. W.—W. A. C.—C. H.—G. H. P.—W. B. H.—J. S.—D. T. F.—E. B.—J. C.—R. D.—T. B.—W. H.—J. A.—R. J.—G. Syme.—C. S. S.—H. N. M.—P. B.—M. P. W.—L. M.—C. B. C.

DIED, on the 23d ult., at Melbourne, WILLIAM HENRY, eldest son of W. H. Dunnett, Esq., Stour House, Dedham, Essex, aged 32. Friends will please accept this (the only) intimation. (*By Cable.*)

Markets.

COVENT GARDEN, March 4.

We have been very quiet here all the week, even imported goods falling off considerably. Outdoor vegetables are easier, and forced stuff is in better supply. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve ..	2 0– 6 0	Oranges, per 100 ..	6 0–12 0
— American, barrl.	18 0–30 0	Pears, per dozen ..	3 6– 6 0
Cob Nuts, per lb. ..	1 0– ..	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb. ..	4 0–12 0	Strawberries, per oz.	1 6– 2 6
Lemons, per 100 ..	3 0–10 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0–10 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle ..	1 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— English, p. 100 ..	12 0– ..	Mint, green, bunch ..	1 6– ..
— French, per bun.	7 0–25 0	Mushrooms, p. baskt.	1 6– 2 0
Beet, per doz. ..	1 0– 2 0	Onions, per bushel ..	8 0– ..
Brussels Sprouts, lb.	0 6– ..	— Spring, per bun.	0 6– ..
Cabbages, per doz. ..	1 0– 2 0	Parsley, per lb. ..	1 6– ..
Carrots, per bunch ..	0 8– ..	Peas, per lb. ..	1 0– ..
— French, per lb.	0 6– ..	Potatos (new), per lb.	0 3– 0 9
Cauliflowers, per doz.	2 0– 5 0	Rhubarb (Leeds), per bundle	0 9– ..
Celery, per bundle ..	1 6– 4 0	Seakale, per punnet	3 0– ..
Chilis, per 100 ..	3 0– ..	Shallots, per lb. ..	0 6– ..
Cucumbers, each ..	1 6– 3 0	Spinach, per bushel	5 0– 6 0
Endive, per score ..	4 6– ..	Tomatos, per dozen	3 0– ..
Garlic, per lb. ..	0 6– ..	Turnips, new, bunch.	0 6– ..
Herbs, per bunch ..	0 2– 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 150*s.* to 190*s.* per ton. German, 6*s.* to 7*s.* 6*d.* per bag; new English, 2*s.* per lb.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ficus elastica, each	2 6–15 0
Azaleas, per dozen	18 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz. ..	6 0–18 0	Fuchsias, per dozen	9 0–15 0
Bouvardias, per doz.	12 0–24 0	Hyacinths, per doz. ..	4 0–12 0
Cineraria, per doz. .	6 0–12 0	Myrtles, per doz ..	6 0–12 0
Cyclamen, per dozen	9 0–24 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	6 0–12 0	Pelargoniums, scarlet zonal, per doz.	6 0– 9 0
Dracæna terminalis	30 0–60 0	Primula, single, per dozen	4 0– 6 0
— viridis, per doz. ..	18 0–24 0	Solanum, per dozen .	9 0–24 0
Erica gracilis, per dozen	9 0–18 0	Tulips, 12 pots ..	8 0–12 0
— hyemalis, p. doz.	9 0–24 0		
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 6– 1 0	Narcissus, Paper-white, 12 spikes ..	1 0– 1 6
Arum Lilies, per dozen	4 0– 9 0	Pelargoniums, 12 spr.	1 6– 3 0
Azalea, 12 sprays ..	0 6– 1 0	— zonal, 12 sprays	0 6– 1 0
Bouvardias, per bun	1 0– 4 0	Primroses, per bun.	1 0– 1 6
Camellias, per doz. ..	1 0– 6 0	Primula, double, per bunch	1 0– 2 0
Carnations, per dozen	1 0– 3 0	— single, per bunch	0 6– 1 0
Cyclamen, 12 blms .	0 4– 1 0	Roses (indoor), doz.	3 0–12 0
Epiphyllum, 12 blms.	0 6– 1 0	— Roses, Fr., doz.	2 0– 6 0
Eucharis, per doz. ..	4 0– 9 0	Snowdrops, p bunch	1 6– 3 0
Euphorbia, 12 sprays	3 0– 6 0	Spiræa, 12 sprays ..	1 0– 2 0
Gardenias, 12 blms..	6 0–18 0	Tropæolum, 12 bun.	1 0– 3 0
Heliotropes, 12 sp. ..	0 6– 1 0	Tuberoses, per dozen	4 0– 6 0
Hyacinths, 12 spikes	4 0– 9 0	Tulips, 12 blooms ..	1 0– 1 6
— small	1 6– 4 0	Violets, Fr., per bun.	1 6– 2 6
— Roman, 12 spikes	1 0– 2 0	— English, p. bun.	2 0– 3 0
Lily of Val., 12 spr.	0 9– 2 0	White Lilac, Fr., per bundle	4 0– 8 0
Mignonette, 12 bun.	6 0– 9 0		

SEEDS.

LONDON: *March* 3.—There is now more doing in farm seeds, and the prevalent tone is less depressed. The unlooked-for Continental demand for new and yearling American Clover, which has recently been experienced, has made an appreciable inroad upon stocks; the Liverpool market in particular being considerably relieved thereby. A large fire in Chicago has just consumed 3000 bags of Clover seed, and 17,000 bags of Timothy. Alsike and Trefoil are quiet. In white there has been more business passing. Grasses about maintain late rates. For Tares there is an increasing request, and the tendency of values favours the seller. The Canary seed trade shows some slight improvement. Hemp seed is now remarkably cheap. Lentils and Haricots are also very moderate. In feeding Linseed there is no quotable variation. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade was dull at Mark Lane on Monday, and quotations were not so well supported as last week. No change was reported in Wheat, but millers operated very cautiously, and the tendency was certainly in favour of the consumer. Barley was slow of sale, and prices were unaltered. Malt was quiet. For Oats rates moved somewhat in favour of buyers; this applies also to Maize. Beans, and Peas were steady, without much inquiry; and flour was dull, rates in some instances being a trifle easier.—The tone of trade on Wednesday was rather dull. As regards Wheat the supplies fresh up were only limited, and holders were not anxious to press the market. Oats, Maize, Barley, and other classes of produce were also not in very good supply; but the demand was very poor, and where there was any change it was on the side of the buyer. Flour was very dull. —Average prices of corn for the week ending Feb. 28:—Wheat, 43*s.*; Barley, 35*s.* 2*d.*; Oats, 22*s.* 3*d.* For the corresponding period last year:—Wheat, 38*s.*; Barley, 33*s.* 10*d.*; Oats, 19*s.* 7*d.*

HAY.

Tuesday's Whitechapel Market report states that supplies were limited, but the trade being dull quotations were not very well supported. Prime Clover, 100*s.* to 128*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 95*s.*; inferior, 50*s.* to 70*s.*; and straw, 30*s.* to 36*s.* per load.—On Thursday there was a very short supply on sale. The trade was good, and prices were as follows:—Prime Clover, 100*s.* to 127*s.*; inferior, 60*s.* to 90*s.*; prime meadow hay, 80*s.* to 96*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 38*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 98*s.* to 105*s.*; inferior, 40*s.* to 78*s.*; superior Clover, 118*s.* to 124*s.*; inferior, 80*s.* to 98*s.*; and straw, 36*s.* to 40*s.* per load.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that good Potatos have been in fair demand, and the markets present a steady appearance. Scotch Regents, 140*s.* to 160*s.*; Champions, 160*s.* to 180*s.*; Lincoln, 160*s.* to 180*s.*; Victorias, 160*s.* to 180*s.* per ton. German reds, 6*s.* 6*d.* to 8*s.*; Dutch whites, 5*s.* 6*d.* per bag.—The imports into London last week comprised 106,273 bags from Hamburg, 1601 Bremen, 1069 St. Nazaire, 7670 Harlingen, 2425 Rotterdam, and 867 bags and 669 sacks from Boulogne.

Government Stock.—The closing price on Monday for Consols for delivery was $97\frac{3}{4}$ to $97\frac{7}{8}$, and for the account $97\frac{7}{8}$ to 98. On Tuesday business closed at $97\frac{3}{4}$ to $97\frac{7}{8}$ for delivery, and $97\frac{7}{8}$ to 98 for the account; the same prices were recorded on Wednesday. On Thursday the closing price for delivery was $97\frac{7}{8}$ to $97\frac{3}{4}$, and for the account, $97\frac{7}{8}$ to 98.

Lawn Mowers — Lawn Mowers.

THE GREAT SUPERIORITY OF

GREEN'S PATENT "SILENS MESSOR"

AND

"MONARCH" LAWN MOWER

Over those of all other Markers is universally acknowledged.

They will Cut

Either Short or Long Grass, Bents, &c., Wet or Dry.

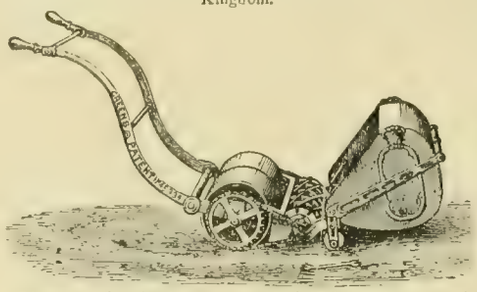
These advantages no other Lawn Mowers possess.

They have been in constant use for upwards of twenty years in

The Royal Gardens, Windsor,

Buckingham Palace Gardens
Marlborough House Gardens
Royal Horticultural Society's Gardens, South Kensington
The Royal Botanic Gardens, Regent's Park
The Crystal Palace Company's Gardens, Sydenham
The Winter Palace Gardens, Dublin
The Hyde Park Gardens
Hampton Court Gardens
The Zoological Gardens, Regent's Park
The Dublin Botanic Gardens
The Liverpool Botanic Gardens
The Botanic Gardens, Brussels
The Hull Botanic Gardens
The Leeds Horticultural Gardens

And in most of the Principal Parks and Squares in the United Kingdom.



They are the simplest in construction, the easiest to work the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

The above machines have proved to be the best, and have carried off Every Prize in all cases of Competition.

Every Lawn Mower is guaranteed to give entire satisfaction, otherwise it may be returned at once, free of cost to the purchaser.

The largest stock of Mowers kept in London, and including all sizes from 6 inches to 48 inches, is to be seen at our London establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, and have their orders executed the same day they are received.

			£ s. d
To cut	6 inches.	Can be worked by a lady	1 15 0
,,	8 ,,	,, ,, ...	2 10 0
,,	10 ,,	,, ,, ...	3 10 0
,,	12 ,,	Can be worked by one person .	4 10 0
,,	14 ,,	,, ,, ...	5 10 0
,,	16 ,,	This can be worked by one man on an even lawn	6 10 0
,,	18 ,,	By man and boy	7 10 0
,,	20 ,,	,, ,, ...	8 0 0
,,	22 ,,	,, ,, ...	8 10 0
,,	24 ,,	,, ,, ...	9 0 0

Prices of Horse, Pony, and Donkey Machines, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.

Carriage paid to all the Principal Railway Stations in the United Kingdom.

Illustrated Price LISTS free on application.

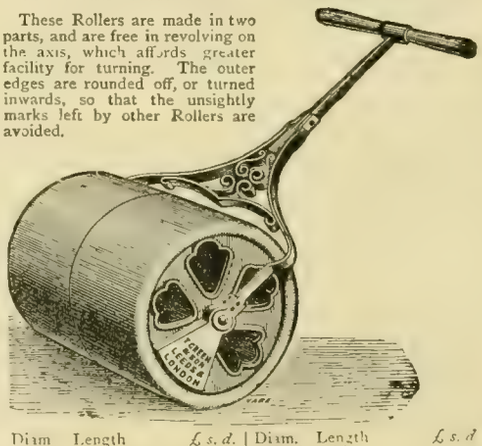
N.B.—Those who have Lawn Mowers to Repair will do well to send them either to our Leeds or London Establishments, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

GREEN'S PATENT ROLLERS

For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.

SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks left by other Rollers are avoided.



Diam	Length	£ s. d.	Diam.	Length	£ s. d
16 in.	by 17 in.	.. 2 15 0	24 in.	by 26 in.	.. 0
20 in.	by 22 in.	.. 4 0 0	30 in.	by 32 in.	.. 9 0 0

Prices of Rollers fitted with Shafts, suitable for Horse and Pony, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

THOMAS GREEN AND SON (Limited),

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And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

Carriage of Rollers Paid to all the Principal Railway Stations in Great Britain.

From the Rev J. R. EDWARDS, *Penstrowed Rectory.*
"I can praise your seed for cleanliness and purity beyond anything I ever received."

WEBBS' POPULAR BOXES of HOME-GROWN VEGETABLE SEEDS.

Price, 12s. 6d., 15s., 21s., 31s. 6d., 42s., and 63s. each.
Cottage Garden Collections at 2s. 6d., 5s. & 7s. 6d. each.

WEBBS' PRIZE LAWN GRASS SEEDS.

Price, 1s. per pound, 20s. per bushel.

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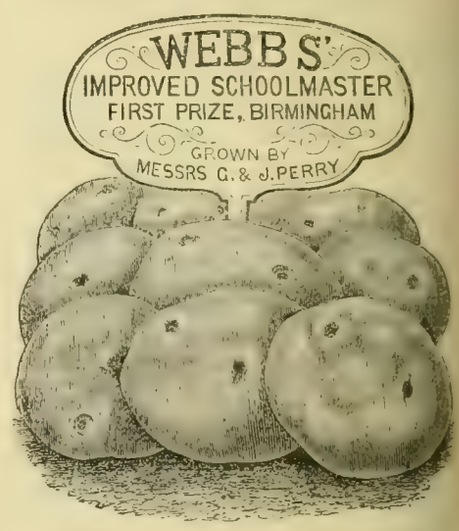
Gratis and Post-free.

WEBBS' DISEASE-RESISTING SEED POTATOS.



WEBBS' IMPROVED SCHOOLMASTER POTATO.

Price, 4s. 6d. per peck of 14 lb.; or, 15s. per bushel of 56 lb

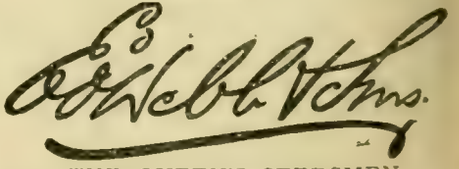
WEBBS' IMPROVED MAGNUN BONUM POTATO.

Price, 3s. 6d. per peck of 14 lb.; 11s. per bushel of 56 lb.; 30s. per sack of 168 lb.

Much cheaper by the Ton or Half Ton.

WEBB AND SONS being probably the largest growers of Seed Potatos in the kingdom, can offer other excellent varieties in large quantities on very advantageous terms.

Potatos and Seeds of 20s value carriage free.
All Garden Seeds (except Beans and Peas) post-free.
Five per Cent. Discount for Cash.



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,, 25	,, 29	,, 24
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Which comprises, amongst many others, the following excellent varieties, viz. :—

PRIDE OF ONTARIO (New),
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The above have been Grown from the Finest Selected Stocks, are of Splendid Quality, and Free from Disease.

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CHEAPER THAN ANY "STORES."

POCKET HANDKERCHIEFS.

For CHILDREN, Hemmed for use, all pure flax .. .. .. per dozen, 2s. 11d.
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Hemstitched for LADIES .. per dozen, 7s. 6d. | Hemstitched for GENTLEMEN ,, 9s. 11d.

Pocket Handkerchiefs, post-free, 4d. to 6d. per dozen extra.

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REAL IRISH LINEN SHEETING, 2 yards wide, from 15. 11d. per yard.
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DAMASK FISH NAPKINS, 3s. 11d. per doz.; DINNER, 8s. 6d. per dozen.

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ALL THREE-FOLD.

COLLARS for LADIES and CHILDREN, 3s. 11d. per dozen, in all the most useful shapes.
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Collars, post-free, 3d. to 4d. per dozen extra. Cuffs, 6d. per dozen extra.

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MY CINERARIAS, POLYANTHUS, and PRIMROSES.—They are now coming into flower, the finest Collection ever brought together (specially for seeding). Some of my Hybrid Seedlings are most magnificent, and must be seen to be believed.
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AN ACRE of VIOLAS and VIOLETS.—Can supply good plants, full of flower, at the very cheapest rate, either by the dozen or 1000. For the most correct and complete descriptions respecting them see H. C.'s "Floral Guide," post-free for twelve stamps.
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Strawberries—Wholesale and Retail.

H. CANNELL begs to announce that he has now 200,000 prepared very strong Runners of all the best Kentish varieties in cultivation, and if planted at once will produce fruit next year. Every one warranted true to name. LISTS (also those in pots) post-free. Special prices for large quantities.
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MARÉCHAL NIEL ROSES,
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FINE SPECIMEN PLANTS,
in 8-inch pots, trained for immediate flowering,
3s. 6d. each, 36s. per dozen.

Established in 4½-inch pots,
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CRANSTON'S NURSERY & SEED CO.
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RHODODENDRONS, for Covert Planting, &c., fine tree, 1½ to 4 feet high, £9 per 1000. A few Hybrid Seedlings, same size, £12 per 1000.
W. JACKSON, Blakedown, near Kidderminster.

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COCOA-NUT FIBRE REFUSE,
3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
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EXCELLENT PEAT FOR SALE, on the Mount Mascal Estate, within a mile and a half of the Bexley Station of the South-Eastern Railway. The Peat stands within a few hundred yards of the road, and there is a cart track to it in good order. Price per cubic yard, as it stands ready dug, 7*s.*; or contracts will be entered into to deliver it at Bexley Station, or other places, at special rates. For particulars apply to Mr. C. BOXALL, North Cray, Kent.

PEAT.—Superior Black or Brown Fibrous Peat, for Rhododendrons, Azaleas, Orchids, &c., as used by all the noted Growers. Trucks containing 6 tons loaded at Bagshot or Camberley Stations, S. W. R., £4 4*s.* Address, W. TARRY, Bailiff, Golden Farmer, Farnborough Station.

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Fresh SPHAGNUM, 10*s.* 6*d.* per bag.
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COCOA-NUT FIBRE REFUSE at Reduced Prices, as supplied to Messrs. J. Carter & Co., High Holborn, W.C.; at the International Agricultural Exhibition, Kilburn; and all the Principal Nurserymen and Seedsmen in England:—In 4 bushel bags at 1*s.*, bags included; 30 bags, bags included, 20*s.*; or truckload of about 250 bushels, 25*s.*, truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

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IMPROVED ROLLER-CRUSHED BONE.
One Inch, Half Inch, Quarter Inch, Dust.

The value of pure pulverised Bone has been of late amply exemplified by the immense bunches of Grapes now so universally seen upon Exhibition Tables and in our First-class Fruit Markets.
All the leading Gardeners, Fruit Growers and Exhibitors throughout the Kingdom, use this largely. Samples are constantly being exhibited at the Royal Horticultural, South Kensington, Crystal Palace, Brighton, Royal Pomona Gardens, Manchester, and elsewhere.
Price Lists post-free on application.
A Sample Peck sent to any address on receipt of 2*s.*

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SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1*s.* 6*d.*, 2*s.* 6*d.* and 12*s.* 6*d.* each. Special quotations for large quantities.
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TOBACCO CLOTH and PAPER may be had of
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GYDE'S AMAZONAS SANA COPIA, or DISEASE-RESISTING POTATO MANURE.
The very best Manure ever manufactured for the Potato.
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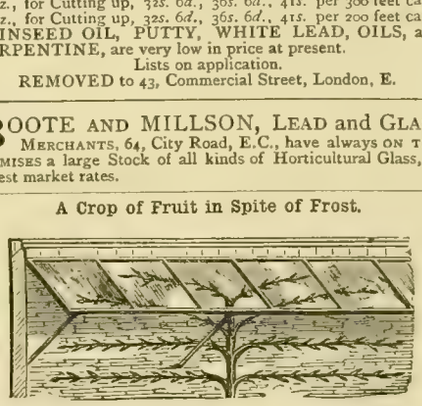

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A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. It is adapted for all Horticultural and Floricultural purposes.
Protection from Cold Winds, Morning Frosts, and Scorching Rays of the Sun.
Introduced by the late Elisha T. Archer more than 20 years ago.
Cut to any Lengths required.
To be had of all Nurserymen and Florists.
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GARDEN NETTING for Sale, in small or large quantities, for Protecting Fruit and Wall Trees, and Seed and Strawberry Beds from Birds, Blight, Frost, &c., 2 yards wide, 1*d.* per yard; 4 yards wide, 2*d.* per yard, and any quantity of Netting required will be forwarded on receipt of Post-office Order made payable to
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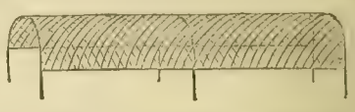
PER DOZ.  7s. 6d.

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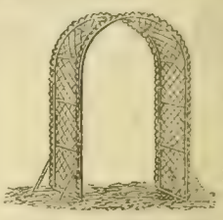

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AWARDED TO
J. J. THOMAS & CO.,
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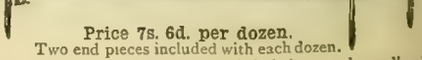
For Wire applied to Horticultural Purposes.

PEA AND SEED GUARDS,
GREAT SUCCESS.
REDUCED PRICES, SEASON 1880.
Superior Quality. Galvanised after made.
NEW PATTERN, WITH DIAGONAL STAYS.
No 76.—3 feet long, 6 inches wide, 6 inches high.



Price 7s. 6d. per dozen.
Two end pieces included with each dozen.
The above are strongly recommended, being much smaller in the mesh than the ordinary diamond pattern, and proof against the smallest birds.
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P.O. Orders to be made payable at 310, Edgware Road, N.

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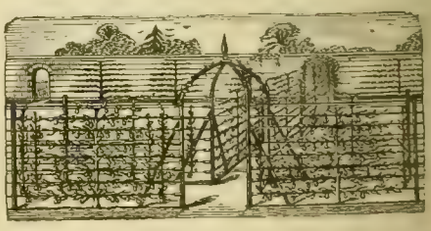
IMPROVED ESPALIER FENCING & WALL TRAINERS.



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"VILLA" AND "FAVORITE"

PATTERNS ARE THE BEST.

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MANUFACTORY: BANBURY, OXON.

HURST AND SON have received a parcel of fine RAFFIA. Can quote low. Price on application. 6, Leadenhall Street, London, E.C.

TO BE SOLD, a Lean-to GREENHOUSE, in excellent preservation, very cheap, say £36, on account of its having to be removed in a few days; is 100 feet long by 21 feet 6 inches over.
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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

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KENT PEATS or LOAM supplied at lowest rates in any quantities.
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TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.
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FOR LAWNS.

No one possessing a Lawn should be without this wonderfully useful little Invention.

The following particulars, from the *Gardeners' Chronicle* of August 2, 1879, will at once show the value of this useful, and comparatively costless, little invention, which can be used by ladies or children:—

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NEW and EXTENSIVE SHOW ROOMS,
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A LARGE STOCK OF GOODS ALWAYS ON HAND.

PRICE LISTS FORWARDED on APPLICATION.

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It being practically impossible to arrange or discuss within the scope of an advertisement all the conditions incidental to a trial of Boilers, we suggest that a Committee be formed for this purpose, and also for taking charge of the entire proceedings.

MR. BRAMHAM is in error when he presumes that we are not the actual makers of our Boilers, as at our Foundry and Boiler Works, Chelsea, the entire process of Boiler-making may be seen in daily operation.

J. WEEKS & CO.,

Horticultural Builders, Hot-water Apparatus Manufacturers and Patentees,

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CUPISS'S CONSTITUTION BALLS.

This justly celebrated Medicine for more than 30 years has proved to be the best and cheapest for

HORSES AND NEAT CATTLE,

Cheaper because required to be given only once a week, and not every second or third day,

PRESERVING HEALTH, VIGOUR AND CONDITION.

Their cost, too, is saved by the food turning to a better account, for it is a fact that Horses will keep up their condition better upon three feeds of Oats daily when a Ball is occasionally given than with four feeds without the Balls.

REARERS OF NEAT CATTLE

Will find the Balls most valuable, not only in case of disease, but in Rearing Young Stock, they will Grow to a Larger Size, come to Perfection Sooner, and to a Greater Weight with the same quantity of food if a Dose (see directions) of the Balls is given occasionally.

Prepared by the Proprietor,
FRANCIS CUPISS, M.R.V.C.S.,
DISS, NORFOLK.
Author of the PRIZE ESSAY on the "Diseases of the Liver of the Horse."

☞ Sold by all Chemists, in Packets at **1s. 9d.** and **3s 6d.** each; or **7** large Packets for **21s.**, or **7** small for **10s. 6d.**

Gentlemen using the Balls may consult the Proprietor gratuitously.

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MAKENZIE & MONCUR, from long practical experience in Horticultural Building in all its branches, and having extensive Works, with the newest and most approved Steam-power Machinery, are in a position to execute all orders entrusted to them with efficiency and despatch, on the most moderate terms. They use nothing but the very best materials in Iron, Timber, Glass, Paints, &c., and have always a large staff of sober, experienced workmen in the various departments.

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For COVERING, TYING, and PACKING,

are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T ANDERSON, 149, Commercial Street, Shoreditch, London, E.

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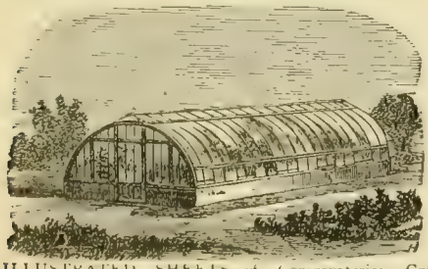

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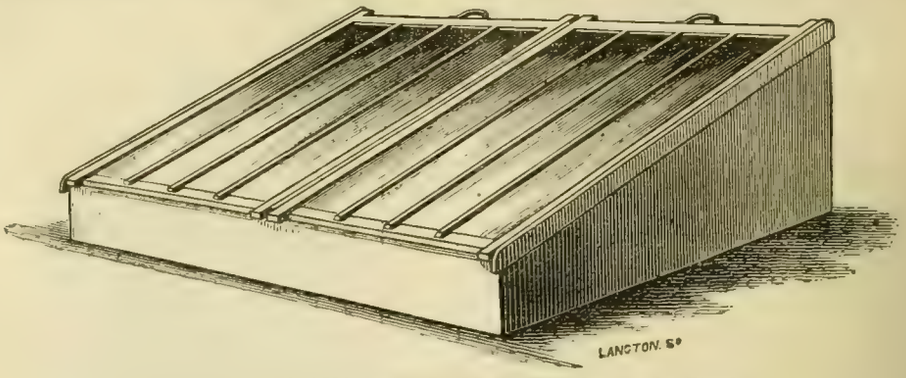

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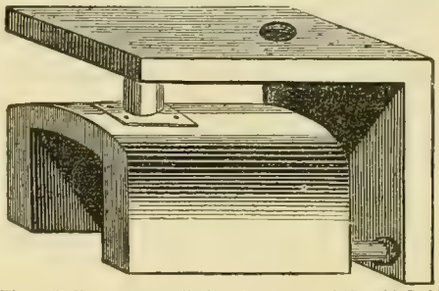

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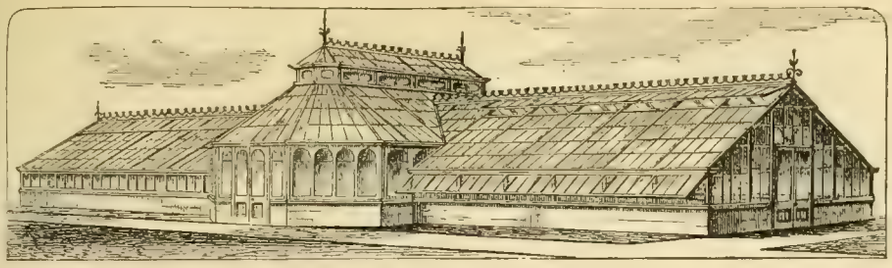

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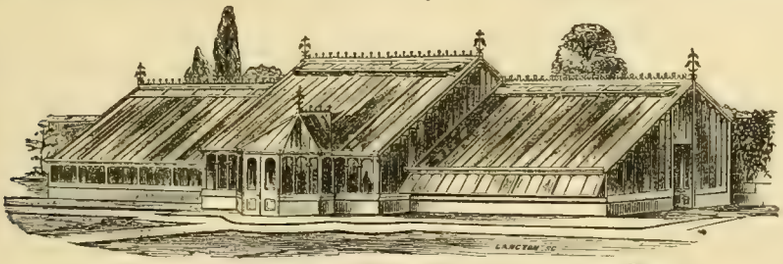

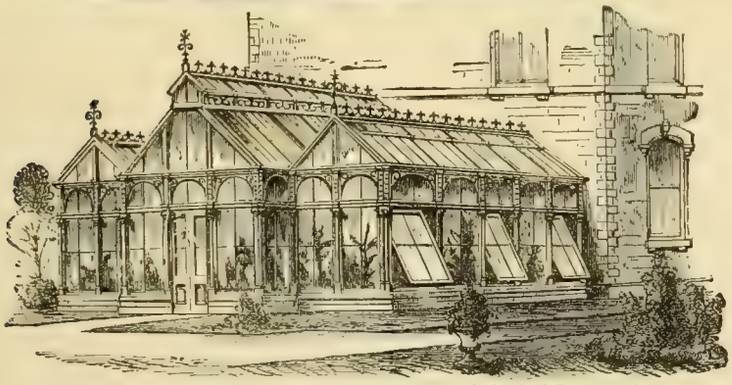

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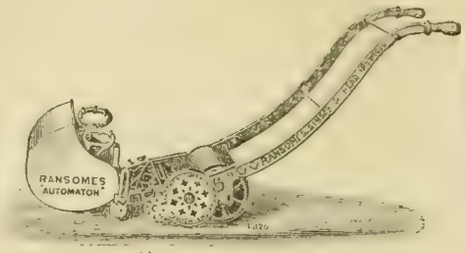

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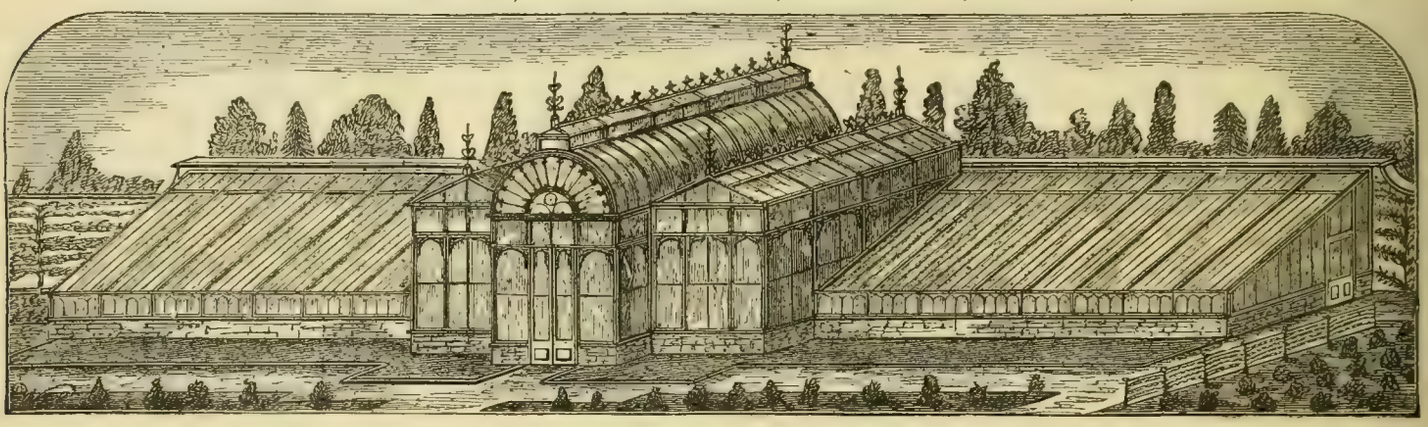

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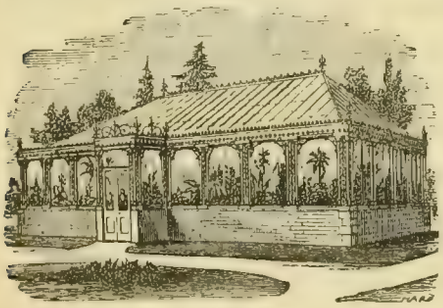

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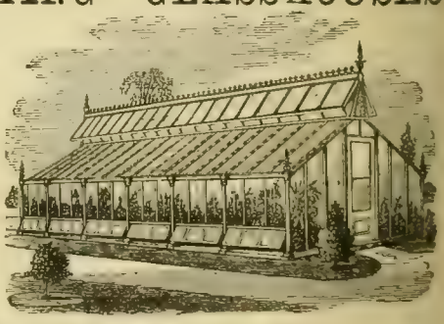

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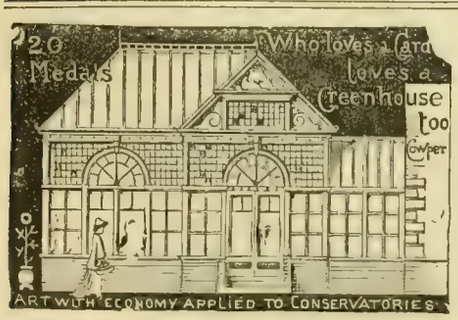

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
EXHIBITION of SPRING FLOWERS, WEDNESDAY, March 24. Gates open at 2 o'Clock. Tickets to be had at the Gardens only on vouchers from Fellows of the Society, price 2s. 6d. each.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
SPRING EXHIBITIONS of PLANTS and FLOWERS, WEDNESDAYS, March 24, April 21. SUMMER EXHIBITIONS, WEDNESDAYS, May 19, June 16. EVENING FETE, WEDNESDAY, June 30. Tickets, Schedules of Prizes, &c., are now ready.

CARLISLE AND BORDER COUNTIES HORTICULTURAL SOCIETY'S EXHIBITION, 1880, JULY 13 to 16: same date as the Royal Agricultural Society's Show.
Open spaces will be alloted for Horticultural Exhibits, and First and Second-class Certificates of Merit awarded. Spaces also for other Exhibits. Advertisements are solicited for official Catalogue; prices, and all other particulars, on application to the Secretary, G. E. EDMONDSON, Victoria Hall, Carlisle.
JOHN MOUNSEY, Hon. Sec.

THE ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY'S SUMMER SHOW, JULY 31 and AUGUST 2.
SPECIAL PRIZES £20 for 12 Plants, and £5 for 6 Distinct Varieties of Fruit. Schedules on application to
C. S. FUIDGE, Secretary.
39, York Street, Lower Avenue.

INTERNATIONAL POTATO EXHIBITION.
President, The Right Hon the Lord Mayor of London.
The SIXTH ANNUAL EXHIBITION will take place at the Crystal Palace, on September 22 and 23. Schedules of Prizes and all particulars may be obtained on application to
J. A. McKENZIE, Secretary.
Tower Chambers, Moorgate, E.C.

BLUE BELL, the best Bedding VIOLA. Strong plants, 8s. per 100.
GEO. COOPER, Florist, Hackwood Road, Basingstoke, Hants.

Seeds—Seeds—Seeds.
WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application. Highgate, London, N.; and Barnet, Herts.

EUCHARIS AMAZONICA in various sized pots, clean and healthy.
Also CHAMÆROPS EXCELSA, strong plants, in 60's.
Price on application to
GEORGE EDWARDS, Balham Nursery, London, S W.

Strong Scots Fir (true Native).
THOMAS METHVEN AND SONS have a quantity of the above to offer, 2 to 2½ feet high, well rooted. Price on application.
Leith Walk Nurseries, Edinburgh.

To the Trade.
LARCH, 300,000, from 1 to 3 feet. Also ASH, 3 to 5 feet.
Prices and sample on application to
HIRAM SHAW, Richmond Hill Nursery, near Sheffield.

LAPAGERIA ALBA.—Plants from 21s.
W. HOWARD, Southgate, N.

FRANCIS & ARTHUR DICKSON & SONS have to offer very fine, well-rooted, bushy plants of the Common, Variegated, and Hodgin's HOLLIES, from 2 to 3, 3 to 4, and 4 to 5 feet in height. Prices on application. Now is the best time to plant Hollies.
The "Upton" Nurseries, Chester.

Cheap Evergreen Trees.
H. LANE AND SON have a very large stock of the above, from 1 foot to 15 feet high, in great variety; also ROSES, FRUIT TREES, &c.
CATALOGUE on application.
The Nurseries, Berkhamsted, Herts.

HOLLYHOCKS—HOLLYHOCKS.—Strong blooming plants. LISTS with prices from
LEWIS WOODTHORPE, Glazenwood Nursery, Braintree, Essex.

SUPERB NAMED HOLLYHOCKS.
The finest collection extant.
Descriptive Priced LIST free on application.
JOHN THOMPSON AND SON, Nurserymen, Seedsmen, and Florists, 21, Pilgrim Street, Newcastle-on-Tyne.

HURST AND SON have received a parcel of fine RAFFIA. Can quote low. Price on application.
6, Leadenhall Street, London, E.C.

Raffia Fibre.
J. BLACKBURN AND SONS have a large Consignment, and are selling at very low prices. Sample and full particulars on application at
4 and 5, Wormwood Street, City, E.C.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

Floral Commission Agent.
W. CALE is open to receive communications from the Trade and others, for a regular supply of choice CUT FLOWERS; best quality only.
13, James Street, Covent Garden, W.C.

WANTED, CUT MAIDENHAIR FERN.
Cash by return of post.
W. F. BOFF, 203, Upper Street, Islington, N.

WANTED, CHEAP, Two healthy CAMELLIA PLANTS, trained for growing against wall. Address, GARDENER, Ashley Moor, Ludlow.

WANTED, STEPHANOTIS, ROSES, VIOLETS, and CARNATIONS. Letters and Consignments to
WM. CALE, Floral Commission Agent, 13, James Street, Covent Garden, W.C.

WANTED, large CALADIUM ROOTS.
W. F. BOFF, 203, Upper Street, Islington, N.

WANTED, Six or Seven Dozen good named HOLLYHOCKS, to flower this year. Apply with price,
HEATH AND SON, Nurserymen, Cheltenham.

WANTED, Standard Double Flowering CHERRIES; stems 5½ to 6 feet. State quantity and price to
DOWNIE AND LAIRD, Royal Winter Garden, Edinburgh.

WANTED, strong Planting SEAKALE.—Please state price per 1000 to
H. APPLEBY, Box Hill Nurseries, Dorking.

WANTED, SEAKALE, strong Forcing. Also JERUSALEM ARTICHOKES. Price and particulars to
Messrs. AUSTIN AND McASLAN, 16, Buchanan Street Glasgow.

FRANCIS & ARTHUR DICKSON & SONS can offer LARCH, extra strong, clean grown, and twice transplanted, from 3 to 4 and 4 to 5 feet. Prices on application.
The "Upton" Nurseries, Chester.

SPRUCE FIRS.—Many thousands, 2, 3, 4 and 5 feet. Stout, well furnished, and good rooted.
ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

NEW INDIAN AZALEA, "Empress of India" (First-class Certificate). Prices for Spring lowered as under to the Trade:—Nice plants, 4 to 6 branches, 60s. per dozen; strong plants and half specimens, 20s. to 40s. each.
A. VAN GEERT, Continental Nurseries, Ghent, Belgium.

Gold Medal Begonias.
LAING'S CHOICE HYBRIDISED SEED, superior to all others, harvested from their unequalled collection, was again awarded the Royal Horticultural Society's Medal in August. Sealed packets, free by post, 1s. and 2s. 6d. each. The Trade supplied. Now is the time to sow.
JOHN LAING AND CO., Seedsmen, Forest Hill, S.E.

Orchids, Bulbs, &c.
THE NEW PLANT and BULB CO. beg to announce the arrival of their first Consignment of ORCHIDS from New Granada. Special LIST (No. 46), containing full particulars of the above, with LIST of New and Rare Bulbous and other Plants, is now ready. Post-free on application. Lion Walk, Colchester.

To the Trade.
PRIMROSE, Double Lilac, 12s. 6d. per 100, £5 per 1000; Double White, 12s. 6d. per 100, £5 per 1000. Special offer to clear ground.
RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

NEW CATALOGUE for 1880.—All intending purchasers of Greenhouse and Stove Plants, Herbaceous Plants, Florists' Flowers, Indoor and Outdoor Plants generally, should look through our CATALOGUE and compare our Prices before purchasing elsewhere. See also last week's large Advertisement.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

LILIUM AURATUM.—Splendid Bulbs of this fine Lily at Reduced Prices, 6d., 9d., 1s. and 1s. 6d. each. For other new Lilies, rare and cheap Orchids, apply for CATALOGUE to
WM. GORDON, Bulb and Plant Importer, 10, Cullum Street, London, E.C.
Liberal discount to the Trade.

VERBENAS.—Fine, healthy, well rooted Cuttings, entirely free from disease, in twelve distinct and good varieties, 5s. per 100 for cash.
LAWS AND SON, Beccles Nursery.

DOWNIE AND LAIRD, Royal Winter Gardens, Edinburgh, have to offer Show and Fancy PANSIES, also VIOLAS, the finest in cultivation, by the 100 or 1000. LISTS free on application.

RED CURRANTS (Dutch).—500 very fine trees, 2 feet high and through, will produce a crop at once. Price, &c., on application.
H. RUMSBY, Swanley, Kent.

Fifty Thousand
CARTER'S PROLIFIC RASPBERRY.
The best.
H. RUMSBY, Swanley, Kent.

W. VIRGO, Wonersh Nurseries, Guildford, Surrey, can supply, in any quantity, true plants of ROBINSON'S CHAMPION DRUMHEAD CABBAGE PLANTS, good, strong, healthy plants, at 5s. per 1000; also RED PICKLING do., true, at 7s. per 1000.
Cash from unknown correspondents.

For Sale, Drumhead or Cattle Cabbage.
S. BIDE has a limited stock of good DRUMHEAD CABBAGE PLANTS, at 5s per 1000; RED or PICKLING CABBAGE, 7s. per 1000. Free on rail, and package free, but cash must accompany all orders to
S. BIDE, Alma Nursery, Farnham, Surrey.

Important.
RASPBERRY CANES.
MR. R. BATH has now but a few thousand of his highly renowned Fastolf remaining for Disposal, 20s. per 1000; sample 100, 4s. Post-office Order or Cheque with order. No deliveries made in any case without a previous remittance. Crayford, Kent.

POTATOS for SALE.—A few tons of Porter's Excelsior, Snowflake, and Red-skin Flourball. Price on application.
W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee.

CHAMPION POTATOS.—The true variety, grown on Tweedside, from seed direct from Forfar. Price per hundredweight or ton on application.
STUART, MEIN AND ALLAN, Kelso, N.B.

SEED POTATOS.—Myatt's Kidney, Knowefield Red-skinned Kidney, great cropper, disease resisting, excellent quality; Victoria and Regents, Fortyfold and Champions. All good samples, free from disease.
LITTLE AND BALLANTYNE, Carlisle.

SALES BY AUCTION.

Established Orchids, Lilies, and Bulbs.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, March 15, at half-past 11 o'Clock precisely, a consignment of IRIS from Japan, comprising many new and beautiful varieties; an assortment of English-grown LILIES, including giganteum, Brownii, Humboldtii, columbianum, and Washingtonianum; HARDY PLANTS and BULBS, Christmas ROSES, 300 SPIRÆA PALMATA, 200 dry bulbs of CYCLAMEN PERSICUM, 2000 AMERICAN TUBEROSES, 2000 GLOXINIA and BEGONIA BULBS, from Belgium; 600 strong bulbs of PÆONIA CHINENSIS, in collections; and three dozen WREATHS and BOUQUETS of DRIED CAPE FLOWERS, from Germany; together with about 300 lots of ESTABLISHED ORCHIDS, from various private Collections. Amongst them will be found Aerides Lobbii and Fieldingii; Odontoglossum vexillarium, Roezlii, pulchellum, Alexandræ, Rossii majus; Masdevallia tovarense, bella, Harryana, Lindeni, with fifteen bloom-spikes; Cattleya Dowiana, Dayana, Warneri, maxima, Trianæ, Schilleriana, and Mendelii; Oncidium macranthum, prætextum, Philipsianum, and Rogersii; Chysis aurea, Dendrobium Lindleyanum, Cambridgeanum, fimbriatum, oculatum, suavissimum; Lælia purpurata, elegans, anceps, and Dayana; Angræcum sesquipedale, citratum, pertusum; Bollea cœlestis, Cœlogyne cristata, Phalænopsis grandiflora, Schilleriana; Cymbidium eburneum, Cypripedium Boxallii, concolor, Stonei, Lowii, and Sedeni; and numerous others.

On view morning of Sale. Catalogues at the Mart and Auctioneers' Offices, 98, Gracechurch Street, E.C.

Auction Mart, Tokenhouse Yard, E.C.

IMPORTANT SALE of ORCHIDS, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, on MONDAY, March 22, 300 lots of ESTABLISHED ORCHIDS, mostly from various private collections, for unreserved Sale, amongst which will be found many plants of great merit; together with an assortment of English-grown LILIES, HARDY PLANTS and BULBS, AMERICAN TUBEROSES, named GLADIOLUS, HELLEBORUS; also a consignment from St. Michael's of a quantity of CAMELLIA STOCKS, and sixty small plants of ARAUCARIA COOKII and EXCELSA.

Catalogues may be had at the Mart, and 98, Gracechurch Street, E.C.

Cheltenham.

HIGHLY IMPORTANT SALE of probably the grandest Collection of STOVE and GREENHOUSE SPECIMEN EXHIBITION PLANTS ever submitted to public competition.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without the slightest reserve, in the large Pittville Pump Room, Cheltenham, Gloucestershire, on WEDNESDAY, March 31, and THURSDAY, April 1, at 11 for 12 o'Clock precisely each day, by order of Ed. Pilgrim, Esq., who is giving up exhibiting, the whole of the unrivalled Collection of SPECIMEN EXHIBITION PLANTS, which have been exhibited with unprecedented success at the leading shows throughout the country. Amongst the Stove and Greenhouse specimens may be mentioned twelve remarkably fine Anthurium Scherzerianum, large-spathed varieties, a matchless plant of Cordyline indivisa with thirty-six leaves, several magnificent Crotons, unsurpassed for rich colouring and perfect training; fifteen grand Ixoras, including a noble plant of Pilgrimii and nine smaller plants (being the entire stock of this splendid novelty). Also an extensive assortment of Specimen Cape Heaths and Indian Azaleas, containing a great number of matchless plants, and consisting of the choicest Exhibition varieties; also fine examples of Lapageria alba and rosea, Allamandas, Dipladenias, Bougainvilleas, &c.; also a large assemblage of remarkably handsome Palms and Cycads, many of which are the grandest examples in Europe; several large Exotic Ferns, embracing twenty unapproachable Specimen Gleichenias, also several fine Todeas, Cyatheas, Alsophilas, together with a few Established Orchids; likewise Two newly-built GREENHOUSES, HOT-WATER PIPING, STOCK BRICKWORK, and Two well-made Exhibition VANS, with all modern improvements, made to travel by road or rail.

The stock may be viewed any day prior to the Sale. Catalogues may be had (price 6d. each, returnable to purchasers) of Mr. HAMLET, Head Gardener, Fern Lawn, Pittville, Cheltenham; and of the Auctioneers, Estate Agents, and Valuers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

Odontoglossum Alexandræ.

Ex ss. "Medway."

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Company of Colchester, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 15, at half-past 12 o'Clock precisely, a magnificent consignment of ODONTOGLOSSUM ALEXANDRÆ, from the best locality, near Bogota. The plants of this consignment are large in size, varying from five to twenty-five bulbs in each mass; the bulbs are of enormous size. This consignment is believed to be the finest ever received. Also upwards of 1000 CATTLEYA MENDELII, ODONTOGLOSSUM PESCATOREI, O. BLANDUM, O. TRIUMPHANS, &c. Also the rare CATTLEYA AUREA.

May be viewed the morning of Sale, and Catalogues had.

Hardy Trees and Bulbs.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C. on WEDNESDAY, March 17, at half-past 12 o'Clock precisely, First class Standard ROSES, Dwarf-trained FRUIT TREES, CARNATIONS, PICOTEES, and PINKS, HERBACEOUS PLANTS, GLADIOLI, LILIUMS, LILY of the VALLEY, SPIRÆAS, RUSTIC GARDEN-WORK, &c.

May be viewed the morning of Sale, and Catalogues had.

Important Collection of Orchids.

MR. J. C. STEVENS has received instructions from Captain Edwards to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, THURSDAY, and FRIDAY, March 17, 18, and 19, at half-past 12 o'Clock precisely each day, the entire COLLECTION of ESTABLISHED ORCHIDS formed by the late Mr. Serjeant Cox, at Moat Mount, Mill Hill, near Hendon, and comprising good plants of nearly all the known varieties.

On view the mornings of Sale, and Catalogues had.

Importations of Bulbs from Japan, New Jersey, SWITZERLAND, and HOLLAND.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 18, at half-past 12 o'Clock precisely, an importation in fine condition of 8000 Bulbs of LILIUM AURATUM, just arrived from Japan; 2500 LILIUM KRAMERI, and various other Lilies, from Japan; 5000 splendid Roots of TIGRIDIA GRANDIFLORA, from New Jersey, consignment of Hardy BULBS and ROOTS from Switzerland, Holland, and other parts; LILIES of the VALLEY, SPIRÆAS, HERBACEOUS PLANTS, &c.

May be viewed the morning of Sale, and Catalogues had.

Odontoglossum vexillarium.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 25, at half-past 12 o'Clock precisely, a fine importation of ODONTOGLOSSUM VEXILLARIUM, the dark variety which Wallis first sent to the Continent as coccinea. At the same time will be sold an immense importation of ODONTOGLOSSUM ALEXANDRÆ, in largest masses, collected in Pacho, and other valuable importations.

May be viewed the morning of Sale, and Catalogues had.

FOR DISPOSAL, a high-class NURSERY and SEED BUSINESS, good Dwelling-house, Shop, and 32 acres of Land. Market Town in Yorkshire. Established eighty years. The whole or part may be taken, or the Seed Business alone would be disposed of. Details of

PROTHEROE AND MORRIS, 98, Gracechurch Street, London, E.C. (4832).

Florists.

TO BE SOLD, the Lease, Goodwill, Book Debts, Stock, and Fixtures, of a good going BUSINESS in the best part of Knightsbridge.

Apply to Mrs. LURCOCK, 48, Sloane Street, Chelsea, S.W.; or Mr. LAMMIN, 18, Buckingham Street, Adelphi, W.C.

To Nurserymen and Florists.

TO BE LET, a 7-roomed HOUSE, with about 2 Acres Garden Ground and Sheds.

Apply to R. PAYNE AND SONS, Leytonstone, E.

TO BE LET, for 99 years, 6-roomed COTTAGE, and about 10,000 feet of Glass, well stocked with Plants for growing Cut Flowers; the Plants and Houses to be taken at valuation. Rent £50.

Apply to WM. SMITH, Beaumont Road Nursery, Leyton, Essex.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

Garden Seeds.

CHARLES TURNER'S Descriptive CATALOGUE of the above is now ready, containing selections of the best kinds only, as well as several interesting and valuable novelties.

The Royal Nurseries, Slough.

Vines—Vines—Vines.

J. COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a large and splendid stock of strong, short-jointed, and thoroughly ripened GRAPE VINES, suitable for fruiting in pots and planting Vineries. Catalogues free. The Trade supplied.

GRAPE VINES.—Fruiting and Planting Canes of leading sorts.

FRANCIS R. KINGHORN, Sheen Nurseries, Richmond, Surrey.

To the Trade.

ASPARAGUS, GIANT, 1, 2, and 3-yr. Price on application.

JAMES BIRD, Nurseryman, Downham.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1880. Extra strong SEAKALE, 2s. per dozen.

RICHARD SMITH AND CO., Nurserymen, Worcester.

SUTTON'S HUNDREDFOLD FLUKE.—A few tons of the above splendid variety for sale. Apply to

J. H. BATH, 1 and 3, York Street, Borough Market, S.E.

Potatos.

J. H. BATH has just received a fine importation of GERMAN FORTYFOLDS, of which he has several tons for sale. Apply to

JOSIAH H. BATH, 1 and 3, York Street, Borough Market, London, S.E.

WM. FLETCHER has to offer a very fine lot of MUSSEL and PEAR STOCKS — Mussel, 35s. per 1000; Pear, 40s per 1000

Ottershaw Nursery, Chertsey, Surrey.

LARCH, clean, well-rooted, stiff plants, 1-yr. seedling, and 2-yr. transplanted, from 15 to 24 inches, will be offered cheap. Apply to

Mr. ROBERTS, Nurseryman, Denbigh, North Wales.

Retail Seed Catalogue.

F. AND A. SMITH'S CATALOGUE of the above is now ready, including a List of Choice Specialities, and will be forwarded post-free on application.

The Nurseries, West Dulwich, S.E.

PINUS STROBUS (Lord Weymouth's Pine), transplanted, 6 to 9 inches, 17s. 6d; 12 to 18 inches, 25s. per 1000. Sample 100 of each size on receipt of 5s.

W. P. LAIRD & SINCLAIR, Nurserymen, Dundee, N.B.

Pine-apple Plants.

WM. MILLER, Combe Abbey Gardens, near Coventry, has to offer a few dozen well-rooted SMOOTH CAYENNES, also a similar lot of QUEENS. Clean and well grown.

TO THE TRADE.

SPRUCE FIR, 50,000, from 2 to 4 feet, 20s.
AUSTRIAN PINE, 50,000, from 2 to 4 feet, 20s.
HOLLIES, 5000, 1 to 2 feet, all fine rooted bushy plants.
Delivered free on truck. Apply for samples to

CHAS. MACARTHUR, The Nurseries, Llandilo, South Wales.

CYCLAMEN PERSICUM, showing large quantities of bloom, 30s per 100; sample dozen, 5s.
WHITE VESUVIUS, 20s. per 100; 3s. per dozen
GLOXINIA BULBS (finest) 6s. per dozen. All package free.

GEORGE GUMMOW, 114, Loughborough Road, Brixton, S.W.

Notice.

WOOD AND INGRAM have a few thousands fine grown, extra transplanted, stout HAZEL, which must be cleared at once. Price, 4 to 6 feet, at 40s

The Nurseries, Huntingdon, and St. Neots

CAULIFLOWER PLANTS.—Fine extra strong plants of Walcheren and Early Emperor, at 5s. per 100. Price to the Trade on application

JOHN CATTELL, Nursery and Seed Establishment, Westerham, Kent.

LARCH.—45,000 to 50,000, twice transplanted, 1½ to 2 feet. Special offer.

JAS. YOUNG, Brechin, N.B.

CYCLAMEN.—Pot now for winter flowering. Strong healthy seedlings, 1s. 6d. per dozen, 10s. per 100. GIGANTEUM and GIGANTEUM RUBRUM, 2s. per dozen, all post-free. VEGETABLE MARROW, twenty seeds, 6d.

J. CORNHILL, Byfleet, Weybridge Station, Surrey.

W. VIRGO, Wonersh Nurseries, near Guildford, Surrey, has to offer:—
50,000 ALDER, good strong, 4 to 5 feet.
10,000 MANETTI STOCKS, 2-yr. old, good stuff.
5,000 CRAB STOCKS, good strong.
Prices and samples on application.

SEED POTATOS.
80 tons Scotch Champions, at £10 per ton.
20 tons Early Rose, at £9 per ton.
Free on rail. Nett cash. Special quotations for 5 tons and upwards.

J. J. CLARK, Goldstone Farm, West Brighton, Sussex.

New Crimson-Scarlet Fringed Primula Seed.

F. AND A. SMITH can supply the above (the same colour as exhibited by the Royal Horticultural Society, at South Kensington), in 2s. 6d. and 5s. packets. Also their well-known strains of other sorts of PRIMULAS, CINERARIAS, CALCEOLARIA, &c. LIST on application.

The Nurseries, West Dulwich, S.E.

SPANISH CHESTNUT, 3 to 4, 4 to 5, 5 to 6 feet
ALDER, 4 to 5, 5 to 6, 6 to 7 feet. | HAZEL, 2 to 3 feet.
ASH, 3 to 4, 4 to 5 feet. | BIRCH, 3 to 4 feet.
The above are all well-rooted, transplanted Plants. A large quantity at reasonable prices. The Trade liberally dealt with.

GEORGE CHORLEY, Costers Nursery, Midhurst, Sussex.

RHODODENDRONS, for Covert Planting, &c., fine tree, 1½ to 4 feet high, £9 per 1000. A few Hybrid Seedlings, same size, £12 per 1000.

W. JACKSON, Blakedown, near Kidderminster.

THORNS or QUICKS, 1-yr. Seedling.—Sample and price of above, and special Trade offer of other Nursery Stock, may be had on application to

W. P. LAIRD AND SINCLAIR, Nurserymen, Dundee, N.B.

VIOLAS, 20,000 fine strong plants:—
" cornuta, white, } 5s. per 100, 45s. per 1000.
" " Queen of Blues, }
LETTUCE, strong autumn sown:—
" Stoerian Cos, } 7s. 6d. per 1000.
" Giant Brown, }
Cash only. Carriage and package free to London.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

SEED POTATOS.

Plant the Great Disease Resisting "CHAMPION."

MR. R. BATH has 60 Tons for disposal, 12s per cwt, 7s. per bushel, 3s. per peck; well sorted ware at the same prices, bags included. Also FASTOLF RASPBERRY CANES, 75s. per 1000, 4s. per 100. Cheque or Post-office Order in each instance with order. No deliveries are made without prior remittance.

Crayford, Kent.

Scotch Firs, &c.

J. CARTER, NURSERYMAN, Keighley, has the following surplus stock, the quality all that can be desired:—

ALDER, 2 to 3 feet, and 3 to 4 feet; ELM, narrow-leaved and Wych, 2 to 6 feet; SCOTCH FIR, 1½ to 2 feet; SPRUCE FIR, 1 to 1½ foot; POPLAR, sorts, 4 to 8 feet; SYCAMORE, 2 to 7 feet; WILLOW, 4 to 5 feet. Purple and Fern-leaved BEECH, 3 to 6 feet. DECIDUOUS SHRUBS in variety.

CATALOGUE of General Nursery Stock on application.

Illustrated Hardy Perennials.

THE present year's issue of this CATALOGUE is now ready, and contains a fine selection of New, Rare and Hardy Perennials, also collections of Orchids and Carnivorous Plants; Bulbs, including Anemones and Ranunculus; Hardy Ferns, Aquatics, Bamboos, and Ornamental Grasses, &c. Also an abbreviated List of Hardy Florists' Flowers, consisting of such only as should be planted at this early season. Post-free on application.

THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

LOBELIAS, Brighton and pumila magnifica, stout, bushy tufts, well hardened, that will furnish cuttings, 4s 6d. per 100, post-free.
CENTAUREA RAGUSINA COMPACTA, 9s. per 100; C. GYMNOCARPA, 10s 6d. per 100; all summer-sown plants.
PANSIES, Show and Fancy (separate), from seed saved from an unsurpassed collection of named varieties, transplanted, 1s. 3d per dozen, 7s. per 100.
" " choice varieties, to name, 3s. per dozen.
WALLFLOWERS, Saunders' fine dark variety, transplanted, 1s per dozen 5s. per 100.

J. J. MARRIOTT, Highfield Nurseries, Matlock Bridge.

TREE SEEDS.—
ABIES DOUGLASII, post-free, 2s. 6d. per ounce.
,, MENZIESII, post-free, 4s. per ounce.
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CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
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LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
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A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
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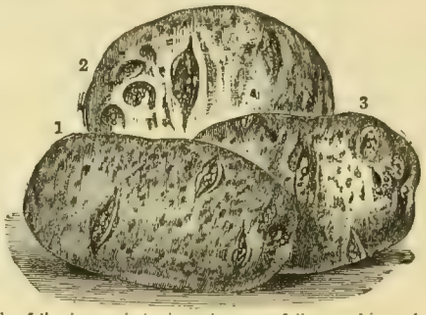

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FIFTY ACRES of FRUIT TREES.—Apples, Pears, Plums, Cherries, Peaches, Nectarines, Apricots, and other Fruit Trees, as Standards, Dwarfs, Pyramids, Bushes, Cordon and Trained Trees, in great variety, all full of vigour and warranted true to name. Descriptive Price List, containing a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass ; also their Synonyms, Quality, Size, Form, Skin, Colour, Flesh, Flavour, Use, Growth, Duration, Season, Price, &c., for a penny stamp.

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GRAPE VINES and ORCHARD HOUSE TREES in POTS.—Grape Vines, extra strong, and warranted free from Phylloxera, Oidium, and all disease ; Planting Canes, 3*s.* 6*d.* to 5*s.* each ; extra strong Fruiting Canes, 7*s.* 6*d.* to 10*s.* 6*d.* each. Orchard-house Trees, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs. Descriptive Price List for a penny stamp.

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WALNUT TREES.—For Sale, some unusually fine trees, from 6 to 10 feet; will shift well. Apply, Mr. COOPER, Calcot Gardens, Reading.

Webb's Prize Cob Nut Trees.

CALCOT GARDENS, NEAR READING, BERKS.

MR. COOPER, having succeeded to these Gardens, and being about to make considerable alterations, is desirous of reducing the valuable stock of PRIZE COB FILBERT TREES, for the cultivation of which the late Mr. Webb was so justly celebrated.

Mr. COOPER desires to inform the public that his Trees are the

GENUINE WEBB'S PRIZE COB FILBERT TREES,

and all Orders should be addressed

Mr. COOPER, Calcot Gardens, near Reading, Berks.

CHRYSANTHEMUMS, FUCHSIAS, PHLOXES, &c., all in the best and most distinct kinds, including the finest novelties:—

10,000 CHRYSANTHEMUMS, in all classes, our selection of large-flowered, Japanese, Pompons, &c., 3s. per dozen, 10s. per 50, 15s. per 100.

5,000 FUCHSIAS, the finest sorts included, 3s. per dozen, 10s. per 50, 15s. per 100.

7,500 PHLOXES, the finest sorts included, 3s. per dozen, 11s. per 50; 20s. per 100.

Cuttings of any of the above half-price.

All other Indoor and Outdoor Plants, Trees or Shrubs for Garden or Conservatory, the best of varieties, most moderate prices, good quality, true to name. See large Advertisement, and apply for CATALOGUE to

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SELECT INDEX OF PLANTS

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SELECT INDEX of PLANTS from 1841 to THE END of 1878,

TO SECURE THEM AT ONCE.

The following is a List of those already published:—

1879.—Oct. 11	1879.—Nov. 15	1880.—Jan. 10
,, 25	,, 29	,, 24
Nov. 8	Dec. 13	Feb. 7
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Price 5d. each, post-free 5½d.

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THOMAS METHVEN & SONS

ARE NOW SENDING OUT THE VERY DESIRABLE

NEW APPLE, "NORTHERN DUMPLING."

This large Culinary Apple, for which a Cultural Certificate was awarded by the Royal Horticultural Society of London in 1874, was raised from seed some years ago by Mr. J. Webster, Gordon Castle Gardens, as far north in latitude as 57° 38′. It is a cross between "White Moor" and "Stirling Castle," being much larger than either sort, and of a very different form; stalk, much sunk, short and fleshy; eye, hollow and slightly ribbed round the apex; shape, roundish oblong; colour, yellowish-green, with a rosy tint next the sun.

The "Northern Dumpling" has proved to be both hardy and prolific—much desired qualities in a British climate—combining the excellencies of the well-known old favourites with a constitution admirably adapting it for cultivation in cold and exposed districts.

☞ *A Coloured Lithograph of the Apple will be sent to every Purchaser of Six Trees.*

Price, 7s. 6d. each. The usual Discount to the Trade.

LEITH WALK NURSERIES, EDINBURGH.

ODONTOGLOSSUM ALEXANDRÆ,

EX SS. "MEDWAY."

MR. J. C. STEVENS has received instructions from The New Plant and Bulb Company of Colchester to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 15, at half-past 12 o'Clock precisely, a magnificent consignment of ODONTOGLOSSUM ALEXANDRÆ, from the BEST LOCALITY near Bogota. The plants of this consignment are large in size, varying from five to twenty-five bulbs in each mass. The bulbs are of enormous size. This consignment is believed to be the finest ever received. Also upwards of 1000 CATTLEYA MENDELII, ODONTOGLOSSUM PESCATOREI, O. BLANDUM, O. TRIUMPHANS, &c. Also the rare CATTLEYA AUREA.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

ODONTOGLOSSUM VEXILLARIUM.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 25, at half-past 12 o'Clock precisely, a fine importation of ODONTOGLOSSUM VEXILLARIUM, the dark variety which Wallis first sent to the Continent as COCCINEA. At the same time will be sold an immense importation of ODONTOGLOSSUM ALEXANDRÆ, in largest masses, collected in Pacho, and other valuable importations.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

DAHLIAS, 400 vars.—Catalogue and Price on application to

KELWAY AND SON, Langport, Somerset.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, have to offer the following, at per 1000:—

ALDER, 2 to 3 feet, 20s.; 3 to 4 feet, 25s.
ASH, Mountain, 3 to 4 feet, 18s.; 4 to 5 feet, 25s.
DOGWOOD, Red, 1 to 1½ foot, 30s.; 1½ to 2 feet, 40s.; 3 to 4 feet, 70s.
FIR, Spruce, bushy, 1½ to 2 feet, 20s.
POPLAR, Black Italian, 3 to 4 feet, 20s.; 4 to 5 feet, 25s.
WILLOW, Huntingdon, 5 to 6 feet, 30s.
PERNETTYA MUCRONATA, transplanted last spring, 25s.
RHODODENDRON, hybrids, 6 to 9 inches, 65s.; £17 per [10,000.
,, ,, 9 to 12 inches, 75s.; £32 per 10,000.
,, Stocks, for grafting, 80s.; £17 10s. per 5000.
WHINS, double, 1 foot, transplanted last spring, 80s.
YEWS, 1 to 1½ foot, 100s.; 2 to 3 feet, 200s.
LARCH, 2 to 3 feet, 25s.
BROOM, 1-yr., 2s. 6d., 40s. per 25,000; 2-yr., 3s. 6d., 60s. per 25,000; transplanted, 2 to 2½ feet, 15s.
GORSE, 1-yr., 2s. 6d., 40s. per 25,000; 2-yr., 4s. 6d., 80s. per 25,000.

Special List of Cheap Ferns.

THE ABOVE SPECIAL LIST of a large number of varieties of FERNS and SELAGINELLAS, offered at very low prices, will be forwarded on application. Ferns being our Speciality, and having an immense stock, we are able to supply them at the most reasonable prices.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

BENJAMIN REID AND CO., NURSERYMEN, Aberdeen, N.B., beg to offer at reduced rates the following extra stocks of transplanted TREES and SHRUBS, all clean and well rooted. Early orders solicited:—

ALDER, 4 to 5 feet.
ASH, Mountain, 3 to 4 feet, and 8 to 10 feet.
CHESTNUT, Horse, 5 to 6 feet, and 7 to 9 feet.
LIME, 4 to 5 feet, and 6 to 8 feet.
MAPLE, Norway, 8 to 10 feet.
POPLAR, Black Italian, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
SERVICE, 5 to 6 feet.
SLOE THORN, 1½ to 2 feet, and 2 to 3 feet.
THORN, 1½ to 2 feet, and 2 to 2½ feet.
ABIES DOUGLASII, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
,, ORIENTALIS, 1 to 1½ foot.
CEDRUS ATLANTICA, 1 to 1½ foot, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.
,, DEODARA, 1½ to 2 feet, and 2 to 3 feet.
CUPRESSUS LAWSONIANA, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
,, NUTKAENSIS, 2 to 3 feet.
THUJA GIGANTEA, 2 to 3 feet.
AZALEA PONTICA, 1½ to 2 feet, and 2 to 3 feet.
LAUREL, Bay, 1½ to 2 feet, and 2 to 2½ feet.
,, Portugal, 1 to 1½ foot.
BERBERIS DARWINII, 2 to 3 feet.
,, VULGARIS, 1½ to 2 feet, and 2 to 3 feet.

Prices on application.

Important Notice.

To NURSERYMEN, BUILDERS, and OTHERS.

MESSRS. R. AND G. NEAL having to Clear a large portion of their Grounds (15 Acres), the Land being required for Building Purposes, at once, beg to offer the whole of the stock at a very low price, to effect a clearance. The stock consists of hundreds of thousands of FOREST and ORNAMENTAL TREES, such as Limes, Planes, Poplars of all kinds, Elms, Willows, Almonds, Laburnums, &c.; also thousands of large FRUIT TREES, SHRUBS, CLIMBING PLANTS, &c., and millions of SMALL PLANTS suitable for Nurserymen.

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JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, post-free for 30 stamps.

"The points in which Cucumber Sir Garnet Wolseley surpasses all other long-fruited varieties are the symmetry of its fruit, and the abundance with which they are produced; there being no shank or handle to Sir Garnet."—*Gardeners' Chronicle*, September 27, 1879.

To the Trade.

"PRIDE OF ONTARIO" POTATO.

H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.

Seed Growing Establishment, Wisbech.

Planting for Immediate Effect.

THE EXECUTORS of the late T. STANSFIELD have to offer a large stock of clean, well-grown, and well-rooted FOREST and ORNAMENTAL TREES, at exceptionally low prices. The following may be specially mentioned:—

LABURNUMS, 8 to 14 feet, strong, clean, and shapely, 3s. to 24s. per dozen.
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POPLARS, Ontario, 15 feet, 10s. per 100.
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HORSE CHESTNUTS, 5 to 12 feet, 6s. to 30s. per 100.
LIMES, 6 to 15 feet, 15s. to £5 per 100.
ALDER, 16 feet, a few large } 1s. each.
BIRCH, 16 feet, ,, ,, }
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YEWS, English, 3 feet, 20s. per 100.
LONICERA LEDEBOURII, 6s. per 100.
CUPRESSUS LAWSONIANA, perfectly shaped, well-furnished, healthy plants, 5 to 8 feet, 9s. to 15s. per dozen.

The Limes, Laburnums, and Sycamores are particularly recommended for avenues and for planting as specimens in conspicuous situations. LIST on application.

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To the Trade.

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Guaranteed stock at low price.
SANDER AND CO., St. Albans.

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PARIS, 1878. PARIS, 1878.

CHOICE HAND PICKED.

PRIZE MEDAL. PRIZE MEDAL.

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CARRIAGE FREE.

A very heavy cropper.

A splendid cooker.

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From Mr. C. Osman, *South Metropolitan District Schools.*
"Sutton's Improved Red-skin Flourball Potato is unequalled for field culture. I am now using from a clamp of 300 bushels, and one-third of them average 1 lb. in weight."

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Prices and Full Particulars Gratis and Post-free on application.

SUTTON & SONS,
THE QUEEN'S SEEDSMEN,
And by Special Warrant to
H.R.H. THE PRINCE OF WALES,
READING.

H. CANNELL has much pleasure in offering the following PRIMULA SEEDS, which are all hybridised with his own hands, selected and saved from his unrivalled collection, and therefore cannot fail to give the utmost satisfaction to the growers.

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Half-size packets of any of the above at half-price. Packet, mixed, containing a portion of each of the above, 5s.

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Frost-proof Ornamental Trees and Shrubs.

W. JACKSON AND CO., Bedale, Yorks., offer the Nobility, Gentry, Builders, &c., the following beautiful Plants, quite hardy in any part of England, each being a handsome specimen:—

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Half quantities supplied. No charge for packing. Delivered free into truck.

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ON SEEDLING BRIER.

FINE SPECIMEN PLANTS,
in 8-inch pots, trained for immediate flowering,
3s. 6d. each, 36s. per dozen.

Established in 4½-inch pots,
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Invite the attention of the Trade to their Special PRICED LIST of SEED POTATOS, issued last November,

Which comprises, amongst many others, the following excellent varieties, viz.:—

PRIDE OF ONTARIO (New),
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The above have been Grown from the Finest Selected Stocks, are of Splendid Quality, and Free from Disease.

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THE SCOTTISH CHAMPION POTATO.

The unprecedented demand for this favourite kind has now reduced stocks in Scotland to a very small compass. We recommend, however, fine sound seed of EARLY DALMAHOY SCOTCH REGENT, or IRISH KEMP, RED BOG, VICTORIA, and MAGNUM BONUM; prices of which, as well as of the remaining CHAMPIONS on hand, will be forwarded upon application.

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ENORMOUS STOCK.
The largest in Europe.

MR. WILLIAM BULL has thousands of these beautiful plants to select from, at 7*s.* 6*d.* and 10*s.* 6*d.* each, and upwards.
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Post-free. **Post-free.**

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	Per packet.—*s*	*d.*
PANSY, Show and Fancy, very fine .. .. 1*s.* and	2	6
,, Large Blotched, magnificent strain of handsome varieties .. .. 2*s.* 6*d.* and	5	0
,, Improved Striped, beautiful	2	6
,, Emperor William, rich ultramarine-blue	1	0
,, King of the Blacks	1	0
,, Pure White	1	0
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,, Rich Purple, very fine	1	0
One Packet each, nine vars., as above	9	6

From W. MARSHALL, Esq., F.R.S., *Dublin.*
"My Pansies, from your seed, are and have been the admiration of all my friends and neighbours."

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NINE CHOICE DECORATIVE COLEUS—Lord Falmouth, Geo. Bunyard, Exquisite, Fascination, Kentish Fire, Royalty, Garnet, Pictus and Multicolor. The set of nine plants, price 2*s.* 6*d.* post free, or 16*s.* per 100.—WILLIAM ABRAHAM, Nurseryman, Limerick.

TO BE DISPOSED OF, on account of being too large for the place, a number of SPECIMEN CAMELLIAS, in very good condition. They consist of some of the best kinds in cultivation, such as the following varieties, all true to name :—La Reine, Valtevareda, Rose la Reine, Asmode, Countess of Orkney, Targioni, Lady Hume's Blush, Cup of Beauty, Queen Victoria, Duc de Bretagne, Albo-pleno, Reine des Fleurs and Henri Favre. Varying from 7 feet to about 15 feet high, and some of as much as 15 feet through.
Apply to THE GARDENER, Woodhouse Hall, Huddersfield, Yorkshire.

Choice Coniferæ, Evergreen Shrubs, &c.

March and April are the best months for transplanting all Evergreen and Coniferous Trees for Ornamental Planting, Coverts, or Fencing.

HAVING A VERY LARGE STOCK of well transplanted Trees, we are induced to offer the following, for present delivery, at considerably reduced prices, viz.:—

ABIES DOUGLASII, 2 to 3 feet, 9*s.* per dozen, 50*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100.
,, ,, specimens, 18*s.* to 24*s.* per dozen.
CEDRUS ATLANTICA, 2 to 3 feet, 9*s.* per dozen, 50*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100; 4 to 5 feet, 18*s.* to 24*s.* per dozen.
CEDRUS DEODARA, very fine, 2 to 3 feet, 24*s.* per dozen, 150*s.* per 100; 3 to 4 feet, 36*s.* per dozen.
CRYPTOMERIA ELEGANS, perfectly hardy, 1 to 2 feet, 6*s.* per dozen, 40*s.* per 100; 2 to 3 feet, 9*s.* per dozen, 60*s.* per 100.
CUPRESSUS LAWSONIANA, 2 to 3 feet, 9*s.* per dozen, 60*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100; 4 to 5 feet 18*s.* per dozen.
PICEA LASIOCARPA, splendid plants, 1 to 2 feet, 24*s.* per dozen; 2 to 2½ feet, 36*s.* per dozen; 2½ to 3 feet, 48*s.* per dozen.
PICEA NORDMANNIANA, 2 to 3 feet, 24*s.* per dozen; 3 to 4 feet, 30*s.* per dozen; 4 to 5 feet, 42*s.* per dozen.
PINUS AUSTRIACA, 2 to 3 feet, 20*s.* per 100; 3 to 4 feet, 40*s.* per 100; 4 to 5 feet, 60*s.* per 100.
PINUS LARICIO, 1½ to 2 feet, 20*s.* per 100; 2 to 3 feet, 25*s.* per 100.
PINUS EXCELSA, 2 to 3 feet, 9*s.* per dozen, 60*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100; 4 to 5 feet, 18*s.* per dozen.
THUJA LOBBII, 2 to 3 feet, 8*s.* per dozen, 50*s.* per 100; 3 to 4 feet, 10*s.* per dozen, 75*s* per 100; 4 to 5 feet, 12*s.* per dozen; 5 to 6 feet, 18*s.* per dozen.
,, SIBIRICA, 2 to 3 feet, 8*s.* per dozen, 50*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100.
THUJOPSIS BOREALIS, 2 to 3 feet, 12*s.* per dozen, 75*s.* per 100; 3 to 4 feet, 18*s.* per dozen, 120*s.* per 100.
WELLINGTONIA GIGANTEA, 1 to 2 feet, 18*s.* per dozen; 2 to 3 feet, 24*s.* per dozen; 3 to 4 feet, 30*s.* per dozen.
YEW, English, 1 to 2 feet, 25*s.* per 100; 2 to 2½ feet, 35*s.* per 100; 2½ to 3 feet, 50*s.* per 100; 3 to 4 feet, 9*s.* per dozen, 60*s.* per 100.
LAUREL, Common, perfectly green and untouched by frost, 1½ to 2 feet, 16*s.* per 100; 2 to 2½ feet, 20*s.* per 100; 2½ to 3 feet, 25*s.* per 100.
,, colchica, 1 to 1½ foot, 20*s.* per 100; 1½ to 2 feet, 25*s.* per 100; 2 to 1½ feet, 30*s.* per 100.
,, Portugal, 1 to 1½ foot, 20*s.* per 100; 1½ to 2 feet, 30*s.* per 100.
RHODODENDRON PONTICUM, 1 to 1½ foot, 30*s.* per 100; 1½ to 2 feet, 40*s.* per 100.
BOX, broad-leaved, 1 to 1½ foot, 10*s.* 6*d.* per 100; 1½ to 2 feet, 20*s.* per 100; 2 to 2½ feet, 30*s.* per 100.
FIR, Spruce, 1½ to 2 feet, 40*s.* per 1000; 2 to 2½ feet, 50*s.* per 1000.
LIMES, fine straight stems, 9 to 10 feet, 18*s.* per dozen; 10 to 12 feet, 24*s.* per dozen.
,, Weeping, new broad leaf, 8 to 10 feet, 2*s.* 6*d.* to 5*s.* each.
ASH, Weeping; ELMS, POPLARS; Double-flowering Scarlet, Pink and White THORNS; CHERRIES, PRUNUS, &c.
PAMPAS GRASS, strong roots, 75*s.* per 100.
CLIMBING and WALL PLANTS in great variety.
Descriptive LISTS free on application to
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ON
Laying Down and Improving Lawns, &c.,
Gratis and post-free on application.

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To the Trade.

NEW ROSES for 1880.—Best thirty varieties, including Bennett's Pedigree and a choice selection of Tea Roses. Strong plants, in 4½-inch pots, now ready.
Descriptive Price LISTS post free on application.
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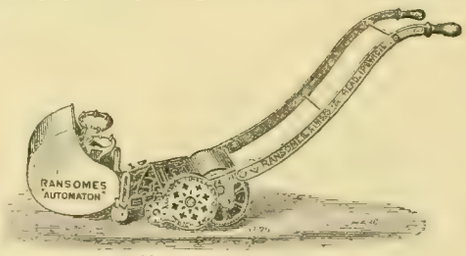

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THE

Gardeners' Chronicle.

SATURDAY, MARCH 13, 1880.

ART IN THE CONSERVATORY.

(*Concluded from p.* 298.)

NOT a few conservatories are decidedly unsightly for lack of a due proportion between their different parts. In not a few, for example, the base is too heavy for the top. Others stand like the baseless fabric of a vision, which the first wind might sweep over with a crash into one wreck of ruin. A visibly solid, obviously safe base should be a leading characteristic of all glasshouses designed for the safe shelter and sure growth of plants, and the enjoyment and use of men. Houses apparently all base with a glass lantern on the top are equally opposed to good taste, and are as unsightly as they are unserviceable. The solidity and weight of the foundation, the size of the ribs, the width of the rafters, should all be nicely adjusted to the character and size of the house. The proper proportions should also be preserved between size and form. This to some extent is a necessity, but it is often departed from as widely as possible in practice. It seems a mere truism to affirm that the shorter a conservatory the narrower and the lower it should be; but it is no uncommon thing to meet with small conservatories as broad as they are long, and with domes or spires shooting up into the clouds, as if destined to form resting-places for wearied skylarks, rather than glasshouses for the successful cultivation of plants. No doubt the width of houses and their angle of inclination determines their height in ordinary cases; but neither of those in general use are so assuredly the best, either for convenience or cultural purposes, as to relieve architects and builders from the necessity of reconsidering the artistic relation of width to length of house, and of height to both. It seems almost certain that were the law of due proportion of each part of glasshouses to the whole better understood, conservatories would not only be more beautiful but far more useful. Science has also far outrun Art in the matter of ventilation. Science has insisted on a change of air—gradual, constant, genial. Ventilation whips the inside air out, and lets the outside in, in the rudest and most rapid manner possible. And the machinery for effecting such changes is in perfect keeping with the work done. Roof sashes are slid down or lifted up, and front lights pushed out, slid down or pushed past each other, and if these processes can be done rapidly by a few turns of a crank or a brief grinding of cog-wheels, all parties concerned seem satisfied. Not only, however, do the ventilators and their gearing mar the artistic beauty of most conservatories, but the mode of changing the air of conservatories and other glasshouses is most wasteful of heat and of moisture, and consequently is as injurious as it is extravagant. It is high time that architects and builders turned their attention afresh to this matter, and their combined talent ought to

provide the means of removing the atmosphere in glasshouses without waste, danger, or disfigurement. The air should be warmed and moistened before admission, and admitted in sufficient quantity without turning the house itself, as well as its atmosphere, inside out. Formulas of ventilating area for conservatories of different dimensions would also prove as useful as the number of feet of hot-water pipe needed to heat any given number of cubic feet of air.

Shading may be considered as a branch of ventilation, and likewise as an aid to heating as well as cultivation. In neither of these threefold aspects does it seem to have excited the attention of architects. Notwithstanding all that has been written about "Summer Cloud," and other materials and modes of shading, the whole matter, alike in the materials employed and the modes of using them, is in almost as rude and primitive a state as it was when a lighter style of architecture and improved glass proved shading necessary. And yet it is no uncommon thing to find elegant conservatories adjoining magnificent mansions shaded with what looks like a dirty sheet or a dilapidated rick-cloth, the incessant flappings of which destroy all sense of repose and even endanger the safety of the conservatory in windy weather. A change of place, of material, and also of modes of gearing and moving blinds, seem imperatively called for alike by taste and convenience. Were blinds placed inside instead of out, the external disfigurement incident to their use would be got rid of. Inside blinds could also be used in winter in aid of conserving the heat of the internal atmosphere from being worse than wasted by radiation into space. It is found in practice that the covering of the roof in clear frosty weather saves 50 per cent. of fuel. The rapid waste of heat by intense radiation, and the efforts thus rendered necessary to keep up the temperature, place the plants as it were between the two extremes of frost and fire, and prove most injurious to them. Surely it might also be possible in this age of mechanical invention, when indestructible hand-basins are manufactured out of shoddy, to find some better material for conservatory blinds than any of the textile and other fabrics that have yet been used. In France thin splints of wood are employed, but these are fixtures on the outside, and would be far too opaque for our sunless climate. What is needed is some semi-imperishable material, such as thin splints of wood, metal, paper, or other substance, at once durable and light, and quickly removed, adjusted, and applied by some such means as are employed for Venetian window-blinds.

In treating of Art in the Conservatory, the stowage and distribution of water demands more than a passing notice. As a rule nothing could well be more prosy, inartistic, and inconvenient than its treatment. Not seldom the whole rain-watershed of the conservatory is hurried off into the nearest drain or sewer. Where more thought has been given to the matter it is collected at the lowest point and conveyed into a tank underground, from which it has either to be pumped or dipped up when wanted. How seldom it seems to have occurred to architects or builders to store the water at higher levels, under shelves, or in the centre of the house where the water-tanks might be connected with the sides and ends of plant stages, or with an open tank for the culture of greenhouse aquatics. Occasionally it is stored under the paths, and covered over with iron gratings. It would also save much labour to store it sufficiently high so as to find its own level in the watering-pots when wanted for use. By having the water supply thus elevated the charm of running or dripping water—one of the softest, sweetest in Nature—might also be enjoyed gratis. In cases where the water supply can be commanded from a higher source, still bolder effects may easily be obtained by introducing the supply at the highest part of the house, and allowing it to trickle, run, or fall over rockwork clothed with Ferns, mosses, &c., till it reaches a lower tank, from which it may be drawn for use. No power nor force in Nature is so prodigal of artistic effects as water, and no one who has not tried the experiment could credit how much the tiny supply of water needful for the use of a conservatory can effect within the domain of Art before it sank to rest in the still tank of mere utility.

As to the internal arrangement of conservatories generally it would be a libel upon Art to affirm that these in any degree embodied or illustrated its principles. Art is easy, graceful, flowing, bold; these are stiff, stilted, hard, narrow. Art is here fettered and foundered among a weary monotonous repetition of paths, shelves, stages; these are mostly, too, of one regulation height, breadth, and capacity. Straight paths on either side or one down the middle are made as matters of course. Roofs and their furniture, or want of it, are almost as stereotyped as the floors, stages, shelves, and paths of the house. We hear a good deal in these changeful times of fixity of tenure, but that, if granted to the full, could never match the fixity of style, or the want of it rather, that sits like a nightmare on the internal arrangements of conservatories. Oh! that Art itself could have a week in our glasshouses, and clear most of the shelves, stages, and straight walks out of them. It is these mechanical impediments that stifle Art, and render taste in the internal arragements of conservatories impossible. Doubtless there are exceptions up and down the country. One of the best was the noble fernery of Mr. Sam Mendel, late of Manchester.

The arrangement of the first great International Exhibition at South Kensington also showed what taste could accomplish with, in the main, rather stiff and unyielding material to work upon, viz., formal exhibition plants. But, doubtless, it will be said, we have no room for the artistic arrangement of our plants, we are so crowded up. *Cui bono?* This crowding is itself fatal to Art. It may be justified in houses for growing for sale, and perhaps the stage and shelf arrangements can hardly be bettered for market purposes; but the conservatory is the house for exhibiting all the floral treasures the place or garden commands. The house crowded from floor to roof with shelves and stages overflowing with plants is like the studio of the artist—it is full to confusion of undeveloped work. We do not expect the order and beauty of the picture-gallery or drawing-room in the artist's workshop. The conservatory is, or ought to be, the picture-gallery, where every plant should be a more or less finished masterpiece, and in which also it should be set in the best position in regard to others, to brighten or intensify its beauty. The internal mechanical arrangements of many conservatories, however, render this impossible, and hence our present appeal to architects and builders to clear the floor of useless encumbrances and to provide as far as possible undulating surfaces as the sure and certain foundation on which to arrange effective groups of plants.

The substitution of raised for sunken water-tanks, and coils or stacks of pipes for the orthodox ones running all round the house underground would greatly facilitate this inequality of ground surface. The abolition of straight paths at the back and front or down the middle of the house, and the introduction of one or more winding paths, as might be needed, would deal a deathblow to the straightness which strangles Art. The centre of the house might also be cleared or filled in at pleasure, and by the aid of raised mounds of soil and rock or rockwork the walls at the front or back, or both, be at once clothed with Ferns or other plants. Cosy nooks and corners and commanding positions would be reserved for choice specimens, climbers, &c., either in pots or planted out. In a word, houses thus arranged afford endless scope for the display of taste—each varied and undulating bare line becomes as it were a separate school for teaching or illustrating some new phase of the art of beauty, and the rendering of its practice more simple and easy. In cases where it seems impossible at once to remove all shelves and stages a good deal may be done to hide their deformity, soften their hardness, and clothe them with refreshing verdure by using stage fronts with cork troughs for the culture of Ferns and mosses, such as those designed and used by the Messrs. J. Weeks & Co.

If, as seems probable from various signs of the times, architects are to be more consulted in regard to the conservatories of the future, it is to be hoped that they will see to it that the houses they design shall be worthy expressions of cultural taste and structural art, and also that their heating, lighting, ventilating, water-storing and distributing capacities are convenient and sufficient. Their internal arrangements should also be so skilfully managed that each plant may look its best, last its longest in beauty, and improve in health while it remains in the conservatory. *D. T. Fish.*

AT BIARRITZ.

Those who promised flowers *partout* were looking a month into futurity. Along the roads at Biarritz I see only the yellow disc of Dandelions, but Ruscus aculeatus throws its prickly pointed leaves into many a hedge, and indeed, in some cases, seems to form one. I never saw this shrub berry before. What a grand fruit it has—so large, so scarlet, and so glossy! If the plant were amenable to pot culture, and in that condition could be made to berry freely, it would make a famous substitute for Solanums. Smilax mauritanica is very common, and seems to love the sea. It covers a rock near the Vieux Port, which from its sheltered position escapes being "decked" each day with "drops full salt," yet must sometimes come in for a good dose of spray when the waves are heavy. But I am wrong in likening the sea at Biarritz unto Prospero's tears, it is so little salt. The tongue touching a pebble from the beach perceives only that it is damp, it would say, with fresh water, did not the eye give contrary evidence. Neither is there any smell of the sea; one might be hundred of miles inland so far as olfactory senses go. I am told this is owing to the absence of seaweed on this coast; and certainly, except some few pieces after the gale on Saturday, I have seen none about.

Driving inland, Primroses and Violets abound—Dog Violets for the most part, though some with a small flower smell sweet. These, however, may be runaways from gardens. And at St. Pée, while my companion sketched the old Basque "Maison du Chirurgien," I gathered a real British bouquet—the little blue Veronica Speedwell, the early fruitless Strawberry, Pulmonaria officinalis, and little red-tipped Daisies.

We went one day to Anglet, and viewed the gardens cultivated by the penitents in the convent there. The little nun who escorted us said the sale of plants and work (they embroider beautifully) made the institution self-paying, but I saw nothing which struck me as being particularly well grown.

The demand abroad is always great for foliage plants. I wish the English would imitate the laudable foreign custom of wiping daily the leaves of such things with a damp cloth; I mean, of course, when they inhabit dwelling-rooms. We have a fine pot of Aspidistra lurida in the *salon* here, and it is delightful to watch how refreshed it looks after the cleansing hand of the *garçon* has passed over it.

Those who wish to see what women—and women entirely unaided by men—can do in the way of gardening, should visit the convent of the Bernadines, close by Anglet. It is in a Pine wood, and the visitor is admonished by a placard at the entrance to "*Parler à voix basse.*" The paths are of sand, so that no footfall breaks the stillness which should reign around the "*sœurs silencieuses.*" Except when ill,

they never speak; but I was glad to hear their voices as we passed the chapel, and to be told that they may read as well as pray aloud. This, and their open-air life, must save their reason. "*Mais non, mais non,*" emphatically said our attendant nun, in answer to our inquiry if many of them went mad. The impression on our minds was that the solitary system in English prisons had been stopped because of its bad mental effect. For certain, however, no occupation could be so calculated to prevent the mind turning inwards, and preying on itself, as that which these nuns follow.

Cut off from all the outer world—done with the hopes and fears, anxieties and satisfactions, troubles and pleasures, which make up the lights and shadows, the "warp and woof" of human life—they can find the chords which answer to these different feelings touched by the flowers they tend. And right well they do tend them. Every pot was clean, every plant healthy. The houses were chiefly given up to Pelargoniums and bedding stuff generally, and the air was scented by the smell of Violets, "not hidden in the grass," but in long very narrow frames.

I watched one silent sister as she watered, and though the expression of—or rather, indeed, her face altogether was hidden by her hood (I enclose a photograph of their appearance at work), it was easy to see by the tender way in which she dispensed refreshment, giving to each thirsty soul the exact amount of water they required, how much her heart was in what she did. There is a walk in the convent grounds bordered with fine Yuccas, but I saw no Camellias in the open air, or that Acacia (dealbata, I think) which grows here now in most gardens, and which seems to me the same as the one so common at Cannes.

I never saw trees so garlanded with Mistleto as those near Cambo. It is a lovely little place, nestled at the foot of the mountains, about fifteen miles from Biarritz, with the beautiful river Nive running through it.

Between Bayonne and Cambo there are many grandiose villas, built by Basque colonists who have made a fortune on the Rio de la Plata and then come home. Their gardens are gay now with Deutzias and Forsythias, and lovely little bushes of Pyrus japonica. I think no one who saw it growing thus would ever fasten it against a wall. Wild flowers make the roadsides very gay, but we have found nothing rare amongst them.

Anemone nemorosa grows in quantity about Cambo, and we found Helleborus viridis and Daphne Laureola in a wood near St. Jean de Luz. *A.*

THE WINTER AND THE PLANTS.

The exceptionally cold winter of 1878-9, so destructive to vegetation in many parts of England, passed over this portion of our island with comparatively little harm. The following list of plants, usually found to be more or less tender under the climate of central and northern England, but which here, with scarcely an exception, suffered little or nothing from the cold, will show how slight was the injury inflicted on vegetation in the south-east of Dorsetshire, and may be of some interest as affording a point of comparison with other cold seasons, as well as in its general bearing on the distribution of temperature and the relations of climate to vegetation in the British Isles.

It must, however, be kept in mind that in questions involving the resistance of plants to cold, there are two factors on both of which the result is dependent. There is (1) climate, and (2) the character of the soil. Here the soil is of a very light and sandy nature, with a natural growth of Heath, and supporting extensive plantations of Scotch Fir and Pinaster, which freely sow their own seeds. In such a soil no water hurtful to the vegetation can accumulate, and there is little doubt that plants growing in it will endure a temperature under which they would succumb in the stiff cold soil to the north of London.

Though some of the plants here enumerated may be fairly regarded as hardy even in the central and northern counties, where they will endure an ordinary winter without injury, it is not the less certain that they are there liable to be destroyed, or greatly injured, by winters to which in more southern counties they might be exposed with impunity.

The observations were made in my own garden at Ardmore, where the lowest temperature during the winter of 1878-9 was registered on the night of January 11, when a minimum of 15° Fahr. was indicated. The list is nearly confined to exogenous plants with stems more or less ligneous. A few endogenous plants (Gramineæ and arborescent Liliaceæ) are also included. The whole embraces seventy-six species, exclusive of varieties, distributed under thirty natural orders.

Exogenous Plants.

Coniferæ.

Pinus insignis	Cupressus Lawsoniana
Abies cephalonica	,, funebris
Cedrus Deodara	Juniperus sinensis
Sequoia gigantea (Wellingtonia)	,, virginica
Retinospora plumosa	Thujopsis dolabrata
Cryptomeria elegans	Thuja occidentalis var. aurea
Cupressus macrocarpa	,, Lobbii
,, sempervirens	Libocedrus decurrens

Magnoliaceæ.

Magnolia grandiflora	Magnolia conspicua var. Lenné

Cistaceæ.

Cistus ladaniferus	Cistus salviæfolius
,, purpureus	,, formosus
,, villosus (var. crispus)	,, albidus

Hypericaceæ.

Hypericum patulum	Hypericum oblongifolium

Tamariscineæ.

Tamarix parviflora.

Malvaceæ.

Hibiscus syriacus.

Celastraceæ.

Euonymus japonicus.

Rhamnaceæ.

Ceanothus azureus (var. Gloire de Versailles).

Leguminosæ.

Robinia hispida	Spartium junceum
Cytisus albus	

Drupaceæ.

Cerasus lauro-Cerasus	Cerasus lusitanica

Rosaceæ.

Rosa rugosa	Rosa bracteata (w)
,, Banksiæ (w)	

Also Maréchal Niel and many other florists' varieties and hybrids (both standards and bushes), which will scarcely live without protection during the winter in countries further north.

Myrtaceæ.

Myrtus communis	Eugenia apiculata

Onagraceæ.

Fuchsia coccinea and varieties.

Passifloraceæ

Passiflora cœrulea.

Escalloniaceæ.

Escallonia macrantha	Escallonia floribunda

Cornaceæ.

Aucuba japonica, ♂ and ♀ and vars.	Griselinia littoralis

Caprifoliaceæ.

Viburnum Awafurki	Viburnum Tinus

Compositæ.

Olearia Haastii.

Ericaceæ.

Arbutus Unedo	Erica codonodes
,, Andrachne (var. photiniæfolia)	,, mediterranea
Pernettya mucronata (and var. speciosa)	,, vagans
	Menziesia polifolia

Scrophulariaceæ.

Veronica Andersoni	Buddleia globosa
,, Traversii	

Verbenaceæ.

Aloysia citriodora (w).

Solanaceæ

Solanum jasminoides (w).

Gentianaceæ.

Desfontainea spinosa.

Jasminaceæ.

Jasminum officinale (w).

Oleaceæ.

Ligustrum japonicum	Osmanthus ilicifolius

Lauraceæ.

Laurus nobilis

Thymelaceæ.

Daphne Cneorum	Daphne Fioniana

Myricaceæ.

Myrica cerifera

Endogenous Plants.

Liliaceæ.

Yucca gloriosa	Yucca filamentosa
,, recurva	Cordyline australis

Gramineæ.

Arundo Donax	Gynerium argenteum
Bambusa Metake	

Among the exogenous plants of the above list a few—indicated by the letter (w) affixed to the name—had the shelter of a wall with a south-west aspect; all the rest were fully exposed in the open border, and received no protection during the severest weather. Four among these last, namely, Hypericum oblongifolium, Ceanothus azureus, Arbutus Andrachne, and Desfontainea spinosa, had been planted as late as the preceding autumn, and had scarcely had time to become thoroughly rooted. These were slightly injured by the frost, but completely recovered during the succeeding spring. One (Viburnum Awafurki) had been planted during the autumn of 1877. Its younger leaves were blackened, but the plant received no permanent injury, and became quite restored during the spring. Aloysia citriodora, though one of the plants protected by a wall, was slightly injured, but subsequently quite recovered. The New Zealand Veronicas (V. Andersoni, with its varieties and hybrids) were in most cases uninjured. In a few instances this plant showed the action of the frost on the more tender shoots, but not to such an extent as to interfere with complete recovery during the ensuing spring. V. Traversii suffered no injury whatever.

Among the few endogenous plants included in the list Cordyline australis is the only species injured. This was a fine plant, about 5 feet high, which had endured many successive winters without protection. It was now killed back to the ground, but during the ensuing summer it threw up new shoots, and became a healthy plant.

The instances of actual destruction which I have to record are those of two Australian species (Eucalyptus globulus and Casuarina tenuifolia), in both cases quite young plants and growing without any protection in the open border. *Geo. J. Allman, Pres. L.S., Ardmore, Parkstone, Dorset.*

THE GENUS LACHENALIA.

Lachenalia is one of those interesting endemic genera which give so much interest to the flora of the Cape, one out of a great many of peculiar habit and well-marked botanical characteristics which are quite confined to the colony, and contain a wide range of specific types and a large number of species. It has two near allies, of which what has just been said also holds good, Drimia and Massonia. Cape Colony is, in fact, the great home of the petaloid Monocotyledons; and of the whole Liliaceæ and Iridaceæ probably not less than fifty per cent. of the species are found within its bounds, nearly all of them being plants which do not occur in any other part of the world. The nearest European allies of the Lachenalias are the Hyacinths and Muscaris of the Mediterranean region. There are three or four Hyacinths at the Cape, one of which, H. candicans, the giant of the whole genus, is now getting widely spread in cultivation, but Muscari does not enter into the Cape flora at all, whilst of Lachenalia, Veltheimia, Massonia, Daubenya, and Drimia, taken together, there are not less than seventy or eighty Cape species.

All the Lachenalias possess a bulb of the ordinary tunicated type, and with several thin brown membranous coats. Usually they have only a couple of leaves, which are contemporary with the flowers, and placed opposite to each other at the base of the flower-stalk. The leaves are usually broad, flat, and of fleshy texture, and often mottled or stained with purple towards the base. In some species there is never more than a single leaf, and in some others there are three or four, in which case they are cylindrical and multifarious, tapering gradually from the base to the tip. The scape is often curiously mottled or stained with red or purple. There is generally a large number of flowers to a stalk. They are arranged sometimes in a spike and sometimes a raceme, the bracts being always small and inconspicuous, and the upper flowers, as in Muscari, minute and sterile. The flowers vary in colour extremely through the genus, and often within the compass of a single species, various shades of red, purple, and yellow with white, being the most prevalent colours, and blue, green, and greenish-yellow less frequent. It is in the shape and arrangement of the parts of the wrapper of the individual flower that the principal distinctive characters of the genus lie. The segments of the perianth are arranged in two distinct rows, both of which are joined into the short cup at its base. The three outer are strap-shaped or oblong, and generally distinctly shorter than the three inner, and remain permanently placed edge to edge, and they have a small hunch at the tip, and are more membranous in texture than the inner row. The three inner ones are more decidedly petaloid in texture, and more or less distinctly spoon-shaped, broad and truncate at the tip, and narrowed downwards. The portion pro-

truded beyond the three outer segments spreads widely when the flower is fully expanded, so that we get on the whole a decided approximation to a distinct calyx and corolla, or, at any rate, an interesting link of transition in the series of forms that lie between a calyx and corolla of the ordinary type and the usual uniform petaloid perianth of the Liliaceæ, as shown in a Hyacinth or Tulip. The six stamens have long filaments and small oblong versatile anthers, and are distinctly exserted in several of the small bell-flowered species. The style is long and slender, with a capitate stigma. The fruit is an oblong membranous capsule, with loculicidal dehiscence, each cell containing several black globose seeds about the size of a pin's head.

The number of species now known is between thirty and forty. About two-thirds of them have been in cultivation in European gardens at one time or another, and figured from living specimens, but I do not think there are more than six or eight in the country now. In my monograph of the gamophyllous Liliaceæ, published in the eleventh volume of the *Journal of the Linnean Society*, I arranged the species under four groups or subgenera, as follows:—1. *Eulachenalia*, with comparatively large flowers, having a symmetrically tubular perianth three or four times as long as thick, with lax racemes and included stamens; 2, *Cœlanthus*, with a long ventricose perianth; 3, *Orchiops*, with a shorter but still tubular perianth two or three times as long as broad; and, 4. *Chloriza*, with small bell-shaped or nearly bell-shaped flowers. The last is much the largest group, but the species now cultivated belong mainly to Eulachenalia and Orchiops.

Of *Eulachenalia* there are only three well-marked species, and these for decorative purposes are the finest plants of the genus. First comes *L. pendula*, marked by its more robust stature, broader leaves and flowers in which the segments of the outer row are nearly as long as those of the inner. Good figures will be found *Bot. Mag.*, t. 599; Andr., *Bot. Rep.*, t. 62; *Red. Lil.*, t. 52, and tab. 400 of Jacquin's *Icones*, which latter work contains by far the most complete series of plates of Lachenalias which we possess. L. pendula has a couple of fleshy leaves above an inch broad, a stout scape about half a foot long, and a lax raceme of from six to fifteen cylindrical flowers above an inch long, in which bright red predominates. The second species of this section, *L. rubida*, is dwarfer in stature and narrower in leaf, with outer segments about a quarter of an inch shorter than the inner three. Good figures of the typical form will be found *Bot. Mag.*, t. 993, and Jacq. *Icones*, tab. 398. It extends its range from Cape Town into Namaqualand, and there are two varieties, both figured by Jacquin, *tigrina* and *punctata*, in which the outer segments have bright red blotches or dots upon a pale ground. The commonest and oldest known of the species of this section is *L. tricolor*, of Thunberg, marked by its dwarfer stature as compared with pendula, and rather smaller flowers and narrower leaves, but especially by the outer segments of the perianth being scarcely more than half as long as the three inner. Of this, in addition to the type as figured *Bot. Mag.*, t. 82, there are three colour varieties—*quadricolor*, figured Jacq. *Ic.*, t. 396, and Andrews, *Bot. Rep.*, t. 148, in which the outer segments are red at the base and yellowish-green upwards, and the inner bright red at the tip, with a yellow claw; *luteola*, figured *Bot. Mag.*, t. 1704, in which both rows are lemon-yellow; and *aurea*, which has been mentioned several times lately in the *Gardeners' Chronicle*, and is figured *Florist*, 1871, p. 265; *Gard. Chron.* 1872, t. 109; and *Bot. Mag.*, t. 5992; a fine variety, with the segments of both rows bright orange or golden-yellow.

Of the second section, *Cœlanthus*, there is only one species. I had living specimens not long ago from Mr. Elwes, but there is no figure, and it is not a plant of any value from a horticultural point of view. Its name is *L. reflexa*, and it has two spreading lanceolate leaves, and a nearly sessile spike of three or four erect yellowish flowers.

The third section, *Orchiops*, contains nine species, only three of which, so far as I am aware, are in the country at the present time. Five out of the nine have the flowers in spikes, the others in racemes. Of the spicate sorts, *orthopetala* is readily marked by its four to five linear-subulate multifarious leaves. It is figured by Jacquin, but I never saw it alive. The three spicate kinds which are in cultivation at present, *orchioides*, *glaucina*, and *pallida*, all have dense spikes of flowers, with the outer segments distinctly shorter than the inner, which are abruptly falcate at the tip when expanded, and they have all three properly a pair of opposite lanceolate or lorate leaves, like those of the Eulachenalias. The flowers of all three are white, or more or less tinted with red, or more rarely with yellow or blue. L. orchioides, the smallest flowered species of the three, will be found figured *Bot. Mag.*, t. 854 and 1269, and at tab. 171 of the *Refugium*: L. pulchella of Kunth, and L. mutabilis, Sweet, *Flower Garden*, series ii., t. 129, and Lodd. *Bot. Cab.*, t. 1076, are forms of this. L. glaucina, Jacq., has oblong tubular flowers about half an inch long, tipped with red or yellow. It is figured by Hooker, *Bot. Mag.*, t. 3552, and by Andrews in the *Bot. Reg.*, tab. 460, under the name of L. sessilifolia. In the spring of 1877 I saw a curious variety at Mr. Barr's, with a much spotted stem, blue-green sepals and blue petals. Of this section the finest species is L. pallida, figured by Lindley in *Bot. Reg.*, t. 1350 and 1945, and in the *Refugium*, t. 170. In this the flowers are often nearly an inch long, pure white, or the petals tinted at the tip with bright or deep red. In this, as in its two neighbours, the lower segment of the inner row is often a little longer, and more decidedly falcate than the two upper, an irregularity which suggested the subgeneric name Orchiops. We had a fine variety of pallida at Kew not long ago with bright yellow flowers, and bright green leaves a foot long. The other spicate species of the section Orchiops is L. trichophylla, Baker, marked by its solitary intensely hairy leaf. The racemose species of this section—unifolia, isopetala, patula, and liliiflora—are none of them now in cultivation.

Of the final section, *Chloriza*, there are about twenty species known, but they are all smaller-flowered plants, dwarfer and less effective for decorative purposes than the foregoing, and I do not think any of them are in the country now. The flowers are mostly racemose, and in several of the species the stamens are much longer than the perianth-segments. In several of them the leaves are cylindrical, and in one kind, pustulata, which I have not seen alive, they are covered all over the face with an eruption of rough dots, as in some of the Massonias. *J. G. Baker.*

CONCERNING FLOWER SHOWS.—III.

We have now arrived at the period when a new set of actors are about to appear on the scene—the men whose awards are sure not to give universal satisfaction, however capable and upright they may be. But first the disagreeable work of clearing the tents of all but officials has to be done. This task is best left in the hands of the police, who as a rule do it effectually, and not unpleasantly. They should be clearly instructed beforehand what is expected of them, and they should be assisted in their work by every one having a right to remain in the tents, being furnished with an official badge, which should be conspicuously displayed. The exhibitors are usually the last to linger, and to evade the order to move on as long as possible. But let the police be positively informed what they have to do, and the tents will soon be ready for the judges to commence their labours.

Before starting on the work of adjudication, the secretary, or some one told off for the purpose, should have pointed out to the judges any special regulation in the prize-list which they must be acquainted with in order to carry out the intentions of the framers. Each judge should be supplied with a list of the entries actually staged in the classes entrusted to him. The lieutenants in charge of the tents will receive the judges on their arrival at the scene of their several labours, and assist them in recognising the exhibits staged in competition for the first set of prizes they have to award. When the prizes have been awarded in this class the exhibits in the next should be similarly identified, and so on to the end, to prevent any exhibit being overlooked. This, of course, is only likely to occur where, for convenience, the exhibits in any one class are staged apart; but as this is constantly done to prevent unevenness in the display, the precaution is a necessary one. Of course, where possible, it is always best for the judges to have all the entries in a class staged in juxtaposition. In small exhibits this is generally done; but in the more important classes, where a number of plants, especially large and effective ones, are in competition, they have to be disposed with a view to general effect, and this very often involves separation.

Here it may not be amiss to consider the subject of judging generally. Unfortunately we have no fixed settled canons for the guidance of judges in the adjudication of prizes, and it is no unfrequent circumstance to have for censors men who are good cultivators, and perfectly honest, but who are unskilled in the exercise of independent and logical judgment. Such men, however capable, are often influenced by prepossessions for or against, which warp their opinions, and cause their decisions to be less accurate than they ought to be—biassed by a liking or disliking, which has an element of unsoundness in it. [We quite agree with our correspondent on this point, although it is rather a favourite theory with some, that good cultivators only can be good judges. It is not so; a well-trained eye and a judicial turn of mind, backed of course by a fair general knowledge of plants and plant-culture, is of more importance than the fact of the individual having grown the finest specimens ever seen. Eds.]

Moreover, another complication is often unwittingly introduced by a defective understanding of the principles underlying the terms of the schedule, and which are set forth somewhat obscurely, it may be, though well enough understood to be there by the framers. Let us consider an often-occurring instance—say the class set apart for decorative plants. We will suppose the phraseology of the prize-list to be "12 stove or greenhouse plants, in or out of bloom" [for decorative purposes], the words in brackets being omitted, but being in the minds of those framing the schedule. Whether present or absent, they would be understood as being implied by most men, I think, unless a statement to the contrary were appended. This being so, it must be obvious that the value of the collection from a decorative point of view ought to be the primary consideration set before the mental vision of the judges in coming to a conclusion how the prizes are to be distributed. It may happen that the most effective collection from this point of view may be made up of plants which are neither new, rare, nor difficult to grow, and yet they may be individually so beautiful and so excellently grown, and so artistically grouped, as to be the most decorative collection staged. Of course the first prize should go to this exhibit. And yet cases have been known where the bias of the judges in favour of novelty, or their appreciation of difficulties overcome in the cultivation of refractory plants, has caused the preference to be given to a collection decidedly less valuable as decorative plants, though as specimens of novelty, rarity, or skill, they have been a long way first. Here it will be seen the mistake has been made from the lack of the judicial faculty [And of explicit direction. Eds.]; the award has been given on a side issue: and this leads me to observe that the leading principle for guidance in judging is fitness—in other words, the awards must go to the collections in the order in which they comply with the requirements of the schedule, expressed or obviously understood. This may be further illustrated in the case of fruit. Prizes are offered for "A collection of fruit, six kinds, dissimilar." Here, although not set forth in words, it is clear to most people's common sense that the prize is intended to go to the collection which is best from the consumer's point of view at dessert time; for fruit is primarily grown to be eaten, and that fruit which has the finest flavour, and in other respects is best for dessert, ought to score the heaviest number of points, unless there be some very serious drawback, resulting from slovenliness or carelessness in staging, such as bruising the fruit, &c., which is not likely to happen with experienced exhibitors. How often, however, the first prize for fruit gets awarded to mere bigness or handsome appearance, without reference to the essential quality which makes it fit for the dessert table. If, however, as often happens when our most skilful cultivators are exhibitors, there is in combination flavour, and size, and beauty of appearance, then we have perfection. But it is much more usual to have fine flavour and medium size; or large size and handsome appearance with second-rate flavour. These are the cases where real judgment is needed to award the prizes properly. According to the rule of fitness, the prizes would be distributed in the order in which the instances supposed are named.

Vegetables, again, being intended for food, and being valueless in proportion as they are unfitted for food, their use for the dining-table is clearly the first thing to be considered. Take the case of Peas. Mere size is nothing to the purpose. Who would give the prize to a great overgrown delusion, like some sorts which could be named, if an equally well grown Pea, smaller and less showy, but of the first degree of excellence as food, be shown in competition? And yet how often the largeness of the pod carries the day! So with other vegetables, and with none more than Potatos, where good looks, without reference to other merits, get all the honours. Of course I am fully aware that without the test of good cooking it is impossible to decide on the merits of novelties. These, however, are usually the exception. The bulk of exhibits will consist of kinds the edible qualities of which are known, and a consideration of those qualities should, I think, always have due weight with the judges in deciding how the prizes are to be awarded.

The vexed question of open or close judging is one which must not remain unnoticed. It is strange to my mind that any doubt should exist on the subject. Given competent judges, and it is a matter of the supremest indifference whether they know, or are ignorant of, the names of the exhibitors. The secresy of the one system entails a lot of trouble, and does good to no one. On the other hand, open judging is simple, and liable to no abuse except in the opinion of those whose experience is very narrow, or of a sinister kind. You certainly put all the onus on the judges if they have it in their power to know whose exhibits they have before them; even if you suppress this information, they, in the more important classes at all events, usually know at a glance whose property this, that, or the other collection is; and if it were possible for our best judges to allow considerations of ownership to influence their awards, the secret system certainly is, of the two modes, that which offers them the security of supposed ignorance.

My own opinion is that the simplest is the best plan, and that the really important point is to secure the services of the most efficient judges obtainable. There is a plentiful supply of "good men and true," from whom a selection can be made. Give them timely notice of being wanted, and pay their expenses, and they may be had when required; you may then trust such men to give their decisions with absolute fairness, whether they judge under the close or open system. In small local shows competent men are invariably forthcoming from the immediate locality; but in shows of any extent, and in all where there are open classes of sufficient importance to attract exhibitors from a distance, the judges should be the most able which the country possesses.

As soon as the awards in a class are made, the messenger in attendance on the judges should convey the official result, on properly prepared slips, to the secretary, and the prize cards should be filled up and sent to the lieutenant in charge of the tent, who should be responsible for placing them properly. By this method the prize cards will be affixed before the exhibition is opened to the public, and the reporters will be spared the waste of time which invariably occurs when this plan is not followed.

And here I must say a word in the interest of reporters. They ought to have every facility afforded for seeing the exhibition before visitors are admitted. If they are competent to criticise the awards, it is all the more important that they should see the exhibits almost as soon as the judges; for if the day be a hot one, the lapse of an hour may produce changes which will cause the awards to seem unjust. If, however, the reporters are not capable of judging the exhibits, then every assistance should be given them in obtaining materials, which they will subsequently work up into a report for the edification of the outside world. It would be well if newspaper proprietors could be induced to secure the services of horticulturists in preparing their reports of flower shows, for in nothing are the ignorance and inefficiency of the ordinary reporter more frequently displayed than in the columns filled with details of such exhibitions; and thus they come to be regarded as beneath contempt by those who know better, while to the general public they are often most misleading. Even in the columns of the "leading journal" the flower show reports are often as defective as in those of country dailies; this, with the mass of horticultural specialists in London and its neighbourhood available for the requirements of journalism, is something strange. It is, however, none the less true; and so it comes to pass that only very rarely, except in the horticultural press, is it possible to read the report of a flower show so as to glean information and instruction.

I shall have a few words to say on the best way for the entries to be registered as they come in to the secretary, how they are to be treated afterwards, form of judges' books, exhibitors' cards, prize cards, &c., and then I shall bring what I had to say concerning flower shows to a close. *G. E. R.*

(*To be continued.*)

MALFORMED SWEDE.

Messrs. Charles Sharpe & Co., of Sleaford, send us photographs (figs. 57, 58) representing a curious state of things in a Swede grown near Nairn, in Scotland. It

Fig. 57.—Turnip-fingers.

is not difficult to imagine the superstitious feeling with which our ancestors, who attributed such powers to the Mandrake, would have regarded such a sign-manual. A surgeon would probably long to plunge

Fig. 58.—A useful hand.

his lancet into the swollen tissues, and let out the matter ere the disease extended to the bones; a farmer would recognise a marked form of "finger-and-toe," and a botanist would see in it a reversion to the branching more or less woody root of the wild Brassica. For the purpose of helping the illusion the photographer has reversed the natural position of the roots, so that its hand-like character is the more perceptible, and its root-origin less conspicuous.

Hyacinths and Amaryllis. — It was announced on Tuesday that at the afternoon meeting of the Royal Horticultural Society, to be held on the 23d inst., Mr. Shirley Hibberd will deliver a lecture on the Hyacinth and Amaryllis.

HARDY PRIMULAS.

The introduction to the schedule of the National Auricula Society of a class for "hardy Primulas" will doubtless lead to the display—with the Auriculas, Polyanthuses, &c., staged next month in the competition — of many allied plants that have not hitherto received the encouragement by prizes that they deserve. With a hearty desire to express the warmest sympathy with the objects of the committee, it is not in a hypercritical spirit that I call attention to the wording of the conditions as affecting this class in the schedule, that is not quite as clear as could be desired. The words, "other than those admitted to preceding classes," are probably intended to shut out all species allied to the Auricula, Polyanthus, or Primrose; and it is therefore no doubt correct to conclude that all species or progeny of P. Auricula, P. elatum, and P. acaulis, are excluded. [Yes. Eds.] Then there is the wording—"Six, at least, to be distinct species." [*i.e.*, to represent distinct species. Eds.] The exception to be taken to this is that it does not clearly specify whether the stipulated plants shall be *bonâ fide* species or any progeny of species. Had the condition been made to read, "Six, at least, to be of distinct species," no room for doubt would have been left. Thus, two plants of any species may be shown; but should the two plants include varieties of the species, and not the *bonâ fide* species, what then will be the ruling? [The conditions would be met. Eds.] As, for instance, Primula intermedia and P. nivalis are very charming early blooming kinds, and both might well be included in such a class of twelve plants; but it is doubtful whether either can lay claim to be regarded as an original species, as it is generally admitted that P. viscosa—or, as it is sometimes called, "ciliata"—is the progenitor of these two pretty kinds. Then again we have the section represented by P. denticulata, which includes P. purpurea, P. pulcherrima, P. capitata, and P. kashmiriana; for all of these are so closely allied to P. denticulata that it is difficult to say which is the true original species and which the varieties. The Japan Primula amœna—or, as it is now perhaps most properly termed, P. Sieboldii — also shows great variety, whilst the identity of the original species remains in doubt. Primula cortusoides has long enjoyed the credit of being the progenitor of all the large-flowered amœna varieties, but that seems to be doubtful, and the kind we call P. amœna may be the original species, but of that we are not assured.

If in relation to these three sections the wording of the schedule is to be read literally, exhibitors may be expected to remain in some doubt as to what they may stage. Large and varied as 'is the Primula genus, it must not, however, be assumed that it will be easy to obtain representatives of six distinct species in bloom at once. Primulas bloom over a lengthened season, and all are not in bloom at once, therefore it is well to know just what kinds are most likely to be in flower on or about April 20 next. At such a time late plants of the denticulata group should be a strong feature, and good plants of denticulata and purpurea would be of great value. Then the viscosa or intermedia section usually blooms with the Auricula, and make very effective masses. Plants of the white and purple kinds would make pleasing features. Marginata, so distinct by reason of its serrated mealy-edged leafage, should make a useful addition, as also should P. involucrata, because of its distinctiveness, although not particularly effective. Then there is the mealy or farinose section, of which good plants of P. farinosa and P. scotica might be expected to be in bloom. The popular P. japonica would, of course, prove a valuable and an effective variety, as also would P. verticillata—or abyssinica, as it is more commonly called—which gives good heads of a yellow hue that should be represented. Primula sikkimensis, as a rule, blooms rather later into the season, but if a good plant of that could be secured in flower, it would also give a very pleasing yellow.

The Primula amœna, or Sieboldii group, give such variety—and these are, as a rule, so full of bloom just at the end of April that no difficulty should be found in making up suitable representatives. Accepting Primula capitata and P. kashmiriana as distinct species, either of these, if in bloom, would give excellent variety; whilst no hue of colour would be more taking than that given by Primula rosea, one of the most beautiful of all recently introduced species.

It will thus be seen that, assuming that the condition in the schedule referred to is not to be taken

literally, there is plenty of material out of which to form a very attractive class on April 20—provided, of course, the various kinds can be induced to bloom simultaneously, a matter that forcing or retarding cannot always ensure. That there may be a good display of hardy Primulas is to be desired. The committee have broken out boldly from the beaten florists' track in forming the present year's schedule of prizes, and good results will encourage them to go yet further in this desirable direction. *A. D.*

Notices of Books.

The Trees and Shrubs of Fife and Kinross. By John Jeffrey and Charles Howie. Printed for private circulation by Reid & Son, Timber Bush, Leith.

This is a splendid volume, which will excite some wonderment among those who are of the opinion of old Sam Johnson as to the existence of trees in Scotland. For our own part, prior to the publication of this volume, we should have owned to a similar feeling with reference to the kingdom of Fife. The work consists of a series of well-executed photographs of various trees, accompanied by letterpress descriptions and records of noteworthy specimens, with dimensions and other useful information. The work has evidently been a labour of love, and the rather numerous errors, typographical and other, do not materially detract from the value of the book. Among the more remarkable trees illustrated are a noble specimen of the Sweet Chestnut, Castanea vesca, growing at Cockairney to a size which we should not have expected it to reach in the east of Scotland. The Pear at Lindore Abbey is, or rather has been, a fine timber tree, reminding us of those grand specimens near Worcester. Sycamores (*scotice* Planes) may be called the glory of Scotland, for nowhere are finer specimens to be found; their dense, massive, richly-coloured foliage makes them specially remarkable. We note also a tree of Abies nobilis at Mugdrum as having attained a height of 40 feet, while A. Douglasii is cited at no less than 83 feet in height at Den Raith.

With reference to the Larch, we are told that the so-called parent Larches at Dunkeld, illustrated in our columns, 1876, vol. v., p. 209, have no right to that appellation, inasmuch as it is stated on the authority of Sir John Murray Nasmyth that the first Larches introduced into Scotland were planted at Dawick Stobo from seed brought by his grandfather from Tyrol in 1725—six years before those at Dunkeld were planted. The authors remark of the Larch that it requires to be planted in sheltered situations on the sides of hills where the land is sandy, although poor. It does not grow well on cold wet land, although "it is worthy of notice that some of the largest and soundest Larches are growing on the banks of streams." In 1875 some of these trees were much broken and a magnificent one is decaying slowly. It seems odd to find mention made of Vinca major and V. minor among the trees and shrubs, and it is perhaps even more strange to learn that Benthamia fragifera produces fruit so far north. It is true the shrub has the protection of a wall.

An interesting note is appended to the account of the common Spruce. "At Blair Adam it was found that where Scotch Firs had failed as nurses in exposed places, Spruce Firs succeeded, and that although they got blasted on the leaves and branches from the force of the south-west wind they did not die but served as nurses to the other trees until they were taken away. They thus left the outer edge of the wood handsome and uninjured."

As it is possible that a reissue may be demanded it may be well to recommend, that in the event of a new edition being called for, the proof-sheets be more carefully supervised, as the typographical errors are unusually numerous. A heading like the following grates upon the reader's sense of the fitness of things:—"Coniferæ Trees.—This well known genus is very ornamental and beautiful." Then follows:—"The Spruce Fir family," "the Hemlock Spruce family," "the Silver Fir family," and so forth. Æsculus Hippocastanum, with a notice of which the work begins, is now known to be a native, not of Asia Minor, as here stated, but of Greece. The account of Cytisus purpurascens (not purpurescens, as here printed) requires rewriting, as it conveys an altogether wrong impression as to the history of this remarkable tree.

Forestry.

Value of Scotch Fir Plantations During Fifty Years' Growth.—As Mr. Michie still thinks right to set aside altogether the reports I have submitted to him from experienced foresters, and on which my estimate of the profits from Scotch Fir plantations were based, there is no use in supplying him with any additional testimony to be treated in the same way. I must remind him that these reports are still before him, and until he or some one else proves them to be untrustworthy I shall hold them to be authentic examples of Scotch Fir plantations which have realised from £75 to £100 and upwards per acre during fifty years' growth.

As the case stands, it is not enough for Mr. Michie to say that the evidence is unreliable merely because it does not happen to coincide with his local practice and experience.

At present I shall not continue a discussion into which a good deal of somewhat irrelevant matter is being introduced; but it would be well to note Mr. Michie's evidence so far as it supplies facts which may be found useful for future observation. Mr. Michie has given us several examples of the results of the plantations under his charge; and I gather from his reports that in no case have any of his woods yielded half the returns obtained from Fir-wood plantations elsewhere, nor can he see any prospect of any improvement in this respect after a careful inspection of all the plantations on the immense Seafield estates.

Will Mr. Michie kindly enlighten us further by informing us if he does not think that the slow growth of the trees, and their inferior value when young, when compared with other more successful plantations, may be accounted for by some exceptional conditions of soil and exposure, and consequent management, peculiar to the district? It is certain that in Morayshire, a neighbouring county, far more favourable results have been obtained from Fir plantations.

This discussion has been confined to Scotch Fir plantations, but many remarkable examples of Larch and hard wood could be given where the returns per acre have been far above plantations of Scotch Fir alone. *Wm. Baxter Smith*, 4, *Salcombe Villas, Merton.*

Garden Operations.

KITCHEN GARDEN.

Asparagus.—Our Continental neighbours are eminently successful in the cultivation of this subject, and, through the medium of the gardening papers and periodicals, we have now become pretty familiar with the mode of cultivation which they practise to produce those extraordinary examples which we are accustomed to behold during the season in Covent Garden Market and at other places, which, as regards appearance, makes that which we produce in the old and antiquated way comparatively insignificant. In this climate it may not be possible, even though the same course of treatment be carried out in a precisely similar manner, to attain such a marked degree of success as they do in France. This, however, is as yet a problem that will be solved before long by English cultivators, as at the present time this process of cultivation, to a limited extent, is being pursued at many places. It has, moreover, been further encouraged by means of the liberal prizes which are to be given in 1881 and subsequent years for the best productions, to be grown in this particular way, and we look forward with much interest and concern to these forthcoming competitions for a practical proof of what can be accomplished by energy and perseverance combined, in the cultivation of this wholesome and valuable vegetable. The distinctive characteristics of this special process comprises the planting of individual plants, and giving them an ample area in which to develope themselves properly with the aid of careful and generous treatment in detail as required. This system, or a modified form of it, is unquestionably the proper way to get fine large "grass." In making choice of ground for this object, preference should be given to an open quarter in the kitchen garden, where by the process of cultivation it has become well pulverised, enriched, and friable in character, with an average depth of from 2 to 3 feet. After preparatory operations, as trenching, manuring, or mixing are completed, and when the soil is settled down, the surface should be made level, when it will be ready for planting. We proceed with this operation immediately we see the growth of the seedling plants coming out of the soil, and we prefer plants two or three years old for the purpose, out of which we make a selection of the best and strongest. For individual roots we make the lines 4 feet apart, and put the plants in these 3 feet asunder, for which we make circular holes about 3 inches deep and 18 inches in diameter. In planting, the crowns are slightly elevated, the roots evenly distributed over the surface, and carefully covered over with fine rich soil, which is pressed down firmly about them by the hand; after which a small stake is placed in close proximity to each plant to indicate its whereabouts and to secure the growth from damage when it becomes indispensable; after this 2 or 3 inches of rich well decomposed manure is spread over the surface of the soil which is occupied by the roots, as a means of protection against aridity and to give nourishment to the plants.

In forming beds we deviate from the old method, inasmuch as in each bed we only have two rows of plants, which are placed so as to be 2 feet asunder every way, virtually representing the French plan in a minor form. At the time of planting the ground should be made even, each bed should be marked out 4 feet wide, with 2 feet for alleys between them; take 2 inches of soil off the bed, make two longitudinal lines a foot on either side of the centre of it, and dot out the places for the plants in these 2 feet apart, carefully spread out the roots on the surface, replace the soil again and press it firmly about the roots, and stake and mulch the surface as in the case of individual plants. It is not our intention to abandon this method altogether, as we find these plants well adapted for forcing requirements, as well as providing good samples of Asparagus in its season. The requisite attention should now be given to forking over the beds, and at a seasonable time the surface should be raked over to rid the bed of any material which is calculated to interrupt the free growth of the young shoots, which ere long will be starting into life. Seed should also be sown now either broadcast on beds or in drills about 18 inches apart.

A period of tolerably fair weather has enabled us to complete the sowing of Onions, Carrots, Parsnips, and the various kinds of the Brassica tribe for the general crop. We have also planted breadths of early kinds of Potatos, including Veitch's Ashleaf Kidney and other sturdy kindred kinds. These are planted in rows 3 feet apart and the sets 1 foot asunder. We allow this width between them in order to admit of the early planted Brussels Sprouts and Cottager's Kale coming in between them as soon as the plants are ready. The main crop of Cauliflower plants which have been wintered in frames should be put out without much further delay. Give them a place where the soil is rich and moist, and plant about 2 feet 6 inches apart every way. Jerusalem Artichokes, Onions for seed, Shallots, Garlic, &c., should be planted now. To accelerate growth in spring crops of vegetables it will be necessary occasionally to hoe or stir the surface-soil about these plants in order to counteract the effects which naturally result from the weather of March, and if this operation is carried out over the entire surface of the garden at suitable times during the present month it will do much towards exterminating an early crop of weeds. The early sown plants of Brussels Sprouts, &c., as soon as they are fit to be handled, should be pricked out under the protection of a light. Such places as those where Cauliflower plants have been wintered will be most suitable for the purpose.

Forcing Department.

Osborn's French Bean is doing admirably with us, and is in our opinion the best of all for forcing requirements. This fact should be noted, and arrangements made for securing a due supply of seed accordingly. Carefully lay aside in soil the exhausted roots of Sea-kale, and Rhubarb roots also if they be required for planting; proceed to thin out Carrots immediately they are ready for the operation, and after the present time, if the convenience will allow, grow French Beans in pots or frames. Mushrooms are much required during the London season; for the later part of it, make up and spawn beds about the present time: these should occupy a place which is cool and moist. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

Pines.—According to our usual plan, we at the beginning of the current month started enough suckers to meet our prospective requirements; 5 and 7-inch pots, according to the size and variety, were used for them, and the suckers were potted firmly into good fibrous loam in excellent condition for the operation, and without being watered were at once plunged into a fermenting bed which had previously been prepared for them, having a temperature of about 95° at 9 inches beneath its surface. After ten or fourteen days have elapsed some of these will be turned out for inspection, by which time roots should be making an appearance against the sides of the pots, and water will, if necessary, be administered and applied as often as occasion requires afterwards. Owing to the natural moisture that abounds in the pit selected for this purpose but little syringing has been required as yet; this operation will, however, with an in-

creasing amount of light, heat, sunshine, and growth combined, have accordingly to be indulged in more liberally. The temperature about these plants is maintained at about 60° at night and 70° in the daytime, and a slight shading applied for an hour or two at mid-day when sunshine is powerful, and the place is closed up before its force becomes inoperative. It is also our custom to attend to the wants of those plants which we winter in 7 and 8-inch pots during this month; these plants are now removed into others of from 10 to 12 inches in diameter, in which they produce fruit during next autumn and winter months. The rough part only of fibrous loam, broken into lumps suitable in size for the shift, is prepared beforehand, and the operation of potting is not proceeded with until such time as the material is in perfect order for it. The preparation of the pots comprises perfect drainage, over which is thrown a handful of wood-ashes to prevent the inroad of worms, and we sometimes use a few half-inch bones also and scatter a few of these over the heap of potting material. In the process of repotting care is necessary in order to avoid having vacuous places in the fresh material; it should therefore be gradually placed round the old ball of the plant, and rammed down carefully in like manner. After such plants are shifted a brisk heat about the pots of 90° or 95° will be of material advantage, and now that we are more favoured with that support which Nature gives, growth should be allowed to develope itself freely: 65° to 70° at night and 75° to 80° during the daytime will be adequate for this end, of course allowing an additional 5° or 10° from solar influences. If we are favoured with sunny weather take advantage thereof in every department to close up the places under its invigorating power, and be more liberal in lightly sprinkling overhead all the plants, avoiding only such as may be in flower at the time. *G. T. Miles, Wycombe Abbey.*

Figs.

The fruit on the earliest pot-trees having completed their first swelling, will continue apparently stationary for a considerable time, and as this is the most critical period in their culture they will well repay careful attention to detailed management, as any check that may be caused by excessive heat or want of moisture will in all probability cause them to drop when the time arrives for them to commence their last swelling. Should the weather continue mild, a slight rise in the night temperature will do no harm, 60° to 65° will be quite sufficient for the present, but in the event of a return to cold weather 5° lower will be found safer than following the hard and fast line at this changeable season of the year. To compensate for the apparent loss of time considerable license may be allowed at closing time by shutting up with plenty of heat and moisture, when a rise of 10° to 15° may be indulged in without producing weak or elongated growths. Copious syringing on all favourable occasions will be absolutely necessary, as red-spider, one of the most troublesome insects with which we have to contend, is almost sure to attack the leaves in near proximity to the pipes. Another important point is a steady supply of tepid liquid to the roots, as Figs when in full growth require generous nourishment, providing it does not remain stagnant—an event which is scarcely likely to happen where the pots are elevated on dry brick piers well above the floor of the pit. Pay attention to thinning and disbudding in the succession-house if there is any probability of the growths becoming crowded, and stop at the fourth or fifth leaf should it be thought desirable to form spurs from which the second crop of fruit will be obtained. Syringe the trees twice a day, and keep the mulching constantly moistened with diluted manure-water. Pot on young trees intended for forcing next year, and place them in or over bottom-heat; shade slightly from bright sunshine for a few days, until they show signs of having taken to the new soil, when they may be fully exposed to sun and light. *W. Coleman, Eastnor.*

Orchard-house.

If the instructions given in previous weeks have been followed the trees will all have been pruned, and the buds will now be showing their beautiful pink colour. If the trees have not been pruned it should be done at once; there is no difficulty now to see which are flower-buds and which leaf-buds, only many persons will not prune their trees until the buds are quite prominent. Perhaps it is safer for beginners not to do so until the end of February or early in March. We may have cold frosty weather yet, but as far as one can judge from the state of the weather during the two first months in the year, we may hope that March and April will be comparatively free from sharp frosts. It may be as well not to maintain a high atmosphere at present, it is better to let the buds expand slowly, for two reasons—first, the later they open the more likely is the weather to be favourable to the proper development and setting of the blossoms; and in the second place the blossoms themselves are of greater substance and the reproductive organs are more perfect, consequently they will set better. I advise plenty of ventilation by day at present, and the ventilators may also be left open a little at night. On a calm night fill the house full of tobacco-smoke; I like to do this before the blossoms open, even if there is not any greenfly, for it is undesirable to fumigate after the blossoms open, as it may probably prevent a good set. In the early house the blossoms are now set, and the fruit swelling well. When the fruit is as large as Marrow Peas a portion of it may be thinned out; perhaps half of it has set well, if it has not done so it is better to thin cautiously. The trees ought to be syringed at least once a day, in dull close weather in the morning, and on bright sunny days in the afternoon, as well as when the house is shut up between 3 and 4 o'clock. I must again urge the importance of supplying the trees with sufficient water at the roots: an inexperienced cultivator may easily err in this, especially if the trees were top-dressed instead of being repotted; the surface-dressing may be wet enough, and the portion of the soil underneath, in which the roots are closely pressed together, may be quite dry: to prevent this give a thorough watering to saturate every part of the ball. Strawberries on the shelves are now either throwing up their trusses of flower or the blossoms are open. Allow sufficient space between each plant, and also give plentiful supplies of water, but it is not desirable (as some advise) to place saucers underneath the pots, which are kept full of water. *J. Douglas, Loxford.*

Orange-house.

In the case of trees where the fruit is set, and has increased in size, it is essential that all such should be kept in a house where there is a high temperature; 65° or even 70° is not too much, but this must be accompanied by sufficient atmospheric moisture. Shut up early in the afternoon to retain the sun-heat. If the temperature runs up to 85° after the house has been shut up in the afternoon with sun-heat it will do the trees good. Give them a thorough syringing at the same time. Syringe the trees, walls, and paths of the house early in the morning. Surface-dress with rich compost, or apply manure-water as the trees seem to require it. Those that have no fruit upon them may be placed in the orchard-house for a time. I must again urge the importance of cleanliness in the house when the trees are fruiting. Allow no insect pests to gain a footing upon the trees. If they can be made perfectly clean at this season they may not be any trouble afterwards. *J. Douglas, Loxford.*

PLANT HOUSES.

Orchids.—The period through which it is most advisable to allow the majority of these plants to make their growth has now commenced, and the great object of the grower will be to give them every assistance while doing so. In every department the atmosphere for twenty out of the twenty-four hours should be as regards moisture near to the saturation point. The exceptional four hours should be in the middle of each day, when it is good practice to allow the atmosphere in each division to become several degrees drier, thus allowing the plants the opportunity of discharging from their systems all superfluous moisture which otherwise would prevent sound, lasting growth. In such moist, mild, dull weather as we are now getting, two light dampings down each day will be sufficient in either house, but with more sun and dry high winds three thorough dampings down each day will be required.

The great fear which was experienced during the winter of over-watering has now passed away, and in all probability more plants will suffer from dryness at the roots from now till October, than from wetness. The cool-house Masdevallias and Odontoglossums will, if they are properly potted, need a thorough soaking at the roots every four or five days. The Disas should be watered every morning, but not syringed overhead till we get bright summer weather. Such Oncidiums as macranthum and serratum must be kept wet, and the aërial roots of the rambling zebrinum will take a thorough moistening at least once a day. The majority of the Lælias and Cattleyas grown in pots will be content with one watering about every six or eight days, those in baskets and on blocks more. In the East Indian-house such plants as Aerides, Vandas, and Saccolabiums must be watered often enough to keep the sphagnum surrounding their roots green as compared with the white look it carries during the resting season. Plants on bare blocks in either division must be watered at least once a day.

It is now time to return the resting plants of Vanda teres, Renanthera coccinea, and Dendrobium Falconeri, to the East Indian-house, in which a light position and abundance of water should be given them, as no gain is likely to accrue from prolonging the resting season. The gigantic form of D. Falconeri, sent out by the Messrs. Veitch, and which was described in this journal by Prof. Reichenbach, is now flowering, and proves to be a splendid Orchid. In habit it is far more robust than the type, and flowers down its strong unbranched pseudobulbs in the same manner and as freely as D. Wardianum. The question has often arisen in my mind, Is this plant a wild hybrid, having D. Falconeri and D. Wardianum for its parents? Another very beautiful and rare Dendrobium in flower is macrophyllum Huttoni: it is in reality a slender growing macrophyllum with pure white sepals and petals. The powerful Rhubarb scent given off by the flowers of the type is scarcely perceptible in the variety. Both plants during the growing season should be suspended in baskets in the hottest division; a thin layer of sphagnum and fibry peat will suit them to root in; their resting temperature should not be lower than 55°. Plants of D. Cambridgeanum that have been wintered in the cool-house will now be showing flower along with the young growth, and will be all the better for more heat and moisture. The winter flowering Angræcum sesquipedale, virens, and eburneum should, if they require more roots room, be at once seen to, as growth will soon commence. Crocks, charcoal, and sphagnum is sufficient for them: when even the best peat is used it speedily gets too much decayed for the roots of these plants. The small growing A. citratum, now flowering, is certainly one of the most elegant and charming Orchids under cultivation: those who have been accustomed to see this plant with two or three weak spikes would be surprised at the effect of strong imported plants carrying eight or more. Pot or basket this plant in crocks and sphagnum, and keep it the whole year round hot, close, and moist. Plants of Odontoglossum citrosmum will now be fast pushing their spikes, and will take a thorough soaking of water about once a week; the resting season with these is now over, and no amount of dryness at the root will now cause plants to flower that have not been properly rested. The present is the proper time to basket or pot plants of Lælia autumnalis and L. albida. Neither of these plants hold their roots in any close material, such as compressed sphagnum or peat; give them crocks and charcoal, and a thin top layer of peat fibre. They prefer to be kept rather dry at the root, in a moist, airy, warm atmosphere. Any overgrown specimens of Cœlogyne cristata should now be carefully broken up and potted in well-drained peat and sphagnum: eight-inch pots are quite small enough for this purpose, as every leading growth should be well backed up with older bulbs, which are, indeed, the backbones of the plants. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

Spring flower gardening in town is anything but encouraging, for in not more than one season out of half a dozen do we get sufficiently genial weather for the generality of spring flowers to come to perfection before the beds are required for the summer occupants; and therefore to try to do the two well on the same beds is, in my opinion, a mistake. It is only in places where the greater part of the spring flowering plants can be kept in cold houses or frames through the winter that it can be carried out to any extent in town. There are several plants, however, that will stand out, and amongst these may be mentioned Alyssum saxatile, Arabis alpina, Armeria alpina, Iberis sempervirens, &c. These planted in groups of threes on the side of the mounds bordering the shrubberies have a very pleasing effect, especially when Crocuses or Tulips stand at irregular distances grouped in the same manner. I have tried several seasons to get Primroses and Violets to bloom, but with unsatisfactory results, and Snowdrops do but very little better. Herbaceous Phloxes, Antirrhinums, Pentstemons, Pansies, Silenes, Myosotis, and all other spring flowers wintered in houses or frames should now be planted out. Do not sow half-hardy annuals on borders too early, there is nothing gained by early sowing. Prick off all subtropical seeds when ready, and place them in a heat of 70° to 80°, to get them as strong as possible preparatory to hardening off.

Roses do not give satisfaction in town, and try all you may, either indoors or out, there is no creditable result. Many of the strong-growing and robust sorts will make wood, but flowers, the principal object aimed at, are either deficient or deformed. Nevertheless Roses are so much sought after that one is wont to try, even if one only gets half a Rose. I find those that do best here are the old stumpy plants of the strongest growing kinds of Hybrid Perpetuals, which may be bought at any of the Rose growing nurseries—I mean those of four or five years' standing in the nursery; they seem to have a constitution which stands the smoke better than the younger plants of the annual sales. The only Tea Rose which with me gives any satisfaction is Gloire de Dijon, and that is planted against a south wall. Roses should be pruned now; they are getting rather forward, and delay might prove injurious to them. They should not be pruned too close in town; it is better to thin the shoots out, and top the ends of those that are left. It is also a good plan to lift the strong growers in the autumn every two years, prune the roots, and replant them in good stiff yellow loam, with a very little manure. Manure, without the roots of Roses are confined, only increases the development of shoots in the strong growers and lessens the production of flowers. *Wm. Gibson, Royal Hospital Gardens, Chelsea, S.W.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	Mar. 15	Sale of Importations of Rare Orchids, at Stevens' Rooms Sale of Established Orchids, Lilies, &c., at the Mart, by Protheroe & Morris.
Tuesday,	Mar. 16	Manchester Botanical and Horticultural Society's Show (two days)
Wednesday,	Mar. 17	Spring Flower Show at Chiton (two days) Sale of the late Mr Serjeant Cox's Collection of Orchids, at Stevens' Rooms (and two following days) Sale of Roses, Fruit Trees, Herbaceous Plants, &c., at Stevens' Rooms.
Thursday,	Mar. 18	Meeting of the Linnean Society, at 8 P M Sale of 8000 Lilium auratum, from Japan, at Stevens' Rooms
Saturday,	Mar. 20	Sale of Hardy Plants and Bulbs, at Stevens' Rooms.

On more than one occasion during the last few years we have taken the opportunity of alluding to the practical application of the Electric Light for forcing purposes. Those who were present at the evening *fête* of the Royal Horticultural Society on May 27 last must have felt that the electric light was capable of being put to more important use than the mere lighting up of a flower show. Some practical gardeners, not unnaturally, were at first loath to believe in the possibility of any useful application of the light to their purposes, while others, more far-seeing, looked at the matter only from the pounds, shillings, and pence view, and decided, rightly so, at present, that it was not likely to be of immediate practical benefit. Oddly enough, most of the gardeners to whom the subject was mentioned said, "Oh, yes! but what about the heat?"—as if, quite apart from any heat that might be diffused from the incandescent carbon of the electric lamp, heat was not as much under their control already as is the supply of water. We are happy to say the matter has advanced a stage. What was chiefly a matter of hypothesis is now an ascertained fact. The growth of plants is now proved to take place under the influence of the electric light, and although matters are still in their infancy, enough has been definitely gained to show that, in the future at least, the gardener may be able to avail himself with advantage of the electric light, and ultimately set the dark, foggy days of winter at defiance as he does already their low temperature. Heavy coal bills and persistent obscurity—evils our gardeners have had to contend with lately with more anxiety than ever before—stand now a good chance of being very materially abated.

It was already known in a vague sort of way that the action of the electric light on vegetation was similar to that of the solar ray; but practical proof, such as would carry conviction to the unscientific mind, was wanting. This has now been afforded, and to Dr. Siemens, to whom we owe so much already in the matter of the application of the electric light to lighthouses, such as that of the South Foreland, is due the credit of being the first to place the matter on a practical basis.

At the meeting of the Royal Society on the 4th inst. Dr. Siemens gave orally an account of his preliminary experiments, and exhibited illustrations of the power of this new agent in promoting vegetable growth.

The method pursued was to plant quick-growing seeds and plants, such as Mustard, Carrots, Beans, Cucumbers, and Melons, in pots, and these pots were divided into four series, one of which was kept entirely in the dark, one was exposed to the influence of the electric light only, one to the influence of daylight only, and one to daylight and electric light in succession. The electric light was applied for six hours each evening—from five to eleven—and the plants were then left in darkness during the remainder of the night. The general result was that the plants kept entirely in the dark soon died; those exposed to the electric light only or to sunlight only throve about equally; and those exposed to solar light first, and then to electric light after sunset, throve far better than either, the specimens of Mustard and of Carrots exhibited to the Society showing this difference in a very remarkable way.

Dr. Siemens thinks the experiments already made are sufficient to justify the following conclusions:—1. That electric light is efficacious in producing the green colouring matter in the leaves of plants, and in promoting growth. 2. That an electric centre of light equal to 1400 candles placed at a distance of 2 metres from growing plants appeared to be equal in effect to average daylight at this season of the year; but that more economical effects can be obtained by more powerful light centres. 3. That the carbonic acid and nitrogenous compounds generated in diminutive quantities in the electric arc produce no sensible deleterious effects upon plants enclosed in the same space. 4. That the plants do not appear to require a period of rest during the twenty-four hours of the day, but make increased and vigorous progress if subjected during daytime to sunlight and during the night to electric light. 5. That the radiation of heat from powerful electric arcs can be made available to counteract the effect of night frost, and is likely to promote the setting and ripening of fruit in the open air. 6. That while under the influence of electric light plants can sustain increased stove heat without withering—a circumstance favourable to forcing by electric light. 7. That the expense of electro-horticulture depends mainly upon the cost of mechanical energy, and is very moderate where natural sources of such energy, such as waterfalls, can be made available.

The specimens shown proved very clearly that plants grown under continuous light—that of the sun by day and that of the electric light by night—surpassed in vigour and rapidity of growth those submitted to solar light only. Plants grown under the continuous agency of light in this manner grow, in point of fact, under pretty much the same conditions as those which grow under the continuous daylight of the arctic regions in summer. It was only the other day that we were commenting on the effect of the prolonged light in developing the colour and aroma of plants grown in Norway or on high mountains—effects obvious to the least observant traveller, and now there is good reason to believe that similar results will accrue from the continuous use of the electric light. Objections have already been raised on the score of the ill-effects of this continued strain and want of rest to which plants so treated must be subjected, but this is of little consequence in the case of annual plants, and in those of longer duration the matter will not be of very great consequence, as a continuous supply of new plants can readily be obtained if such be found to be needed.

Dr. Siemens' experiments were but the rough beginnings of other more precise ones, which we may hope will be forthcoming in due time. We want accurate information as to the quality and amount of the work done by plants subjected to the electric light, the quantity of colouring matter, of starch, of sugar, of gluten, of alkaloids, of oils, and what not, which are produced under given conditions. Specially is it desirable to eliminate those effects known to be produced by heat, and to discriminate them from those the product and outcome of light. It was unfortunate, in this respect, that a point should have been made as to the unfolding of Tulip flowers when exposed to the lamp, the unfolding being rather due to heat than to light. In the case of a forced Lily of the Valley it is the heat which causes the development of the flowers, while the want of light is shown in the tardy growth, flimsy texture, and light colour of the leaves—all points which the electric light might be expected to remedy. In the the solar beam the light-giving rays are known to have very different effects from the heat-rays, but we greatly stand in need of clear definite notions as to the work done in the plant itself under the influence of these varying conditions. It is certain that Dr. Siemens' experiments will be repeated and extended. It is most desirable for the sake of future solid progress that they be carried out at first almost entirely from a scientific point of view, because in no other way will a sure basis be obtained, and certain as distinguished from fortuitous progress be made. But in the meantime, as purely scientific experiments are little likely to find sympathy among practical gardeners, experiments should forthwith be started, with a view to show how rapidly and how efficiently what are known as forcing operations may be promoted by this new agency. Every one who, having seen the results obtained by Dr. Siemens, and who knows the difference between a well-coloured bunch of Grapes and one less perfectly finished, and who can appreciate the different Covent Garden value put upon the two, will be able to appreciate the potentialities of the electric light, and will look forward with interest to the experiments that are sure to be made. Already we hear that it is possible experiments may be made at Kew, under the auspices of the Scientific Committee of the Royal Horticultural Society, and we earnestly wish them success.

To come back to the coal bill, we may mention that in some of Dr. Siemens' experiments the heat evolved from the lamp was so great as to singe the leaves, and to necessitate the removal of the plants to a greater distance, while in other cases the hot-water pipes had to be covered with non-conducting material, in order to bring the temperature down. These things being so, it is clear that the objection, now perfectly valid, as to the cost of the electric light, will be compensated for in the future by the lessened cost for fuel and labour.

—— Pinus Massoniana.—The woodcut at p. 337 (fig. 59) serves to illustrate the veneration with which the Japanese regard certain of their Coniferous trees. The Pine in question, as Siebold tells us, is indispensable to the true Japanese, and is found in his garden in groves surrounding the temples of his saints and gods. Its branches adorn the great portal and the place of honour in the reception hall, and find a place on the sepulchral monument. On the highways avenues of this Pine serve as landmarks, and in the gardens of the wealthy this Pine is grown as a dwarf in a flower-pot, or allowed to tower aloft as a giant in the open garden. The trees in the present case are planted in a cemetery, and overshadow the image of one of their divinities, seen on the right of the reader. Respecting this Buddha, Mr. Moseley, one of the naturalists in the *Challenger* Expedition, whose delightful and most suggestive book we had occasion to mention some time since, calls attention to the singular circumstance that the divinity of a straight-haired race should be represented with curly hair. The bronze circle around the back of the saint's head recalls the nimbus so often represented in the case of Christian saints. This nimbus, then, there are grounds for believing to be a survival or adaptation from Buddhism. Our illustration was taken from one of Mr. Maries' characteristic photographs of Japanese scenery and vegetation.

—— The Rockwork at Chiswick Gardens.—Mr. Barron seems determined that Chiswick shall be as full of interest as with limited resources he can make it. Several features of more than ordinary interest will be afforded to visitors during the spring and summer months. On the rockwork there are some very pretty subjects, the little bays of Crocus Imperati blooming with re-

markable freedom, the soft rich mauve coloured petals being in marked contrast to the golden-buff sepals. The true Crocus aureus, said to be very scarce, is remarkable for its clear golden flowers, quite unlike the strain ordinarily grown under this name. Some pots of it in a cold frame are in fine form. The large clumps of Hepaticas that have been suffered to grow into size are now full of blossom; the large mauve blue H. triloba Barlowi is particularly noticeable, and so is the pretty single white, Saxifraga Burseriana is being succeeded by S. oppositifolia; S. pyrenaica rubra, a darker coloured form much larger in the flowers; S. oppositifolia alba and S. retusa hypnoides, smaller in size and deeper in colour, the flowers forming little heads curiously divided. In one of the cold frames may be seen Dondia Epipactis, a singular and pleasing little plant with greenish-yellow flowers in the form of a simple umbel, and having a golden centre. A pretty little white flowered Iberis, obtained by Mr. Maw from the mountains of Greece, is noticeable because so very dwarf and early, pots of it in a cold frame being full of flower. The herbaceous border having been re-arranged, some of the flower-beds planted with fresh subjects, while other beds are in preparation for the reception of subjects, there is full promise that Chiswick will become a real school of instruction during the summer and autumn months.

— Perfection in the Cineraria.—The tribunals existing thirty years or so ago to which florists' flowers were submitted made a great point of the presence of the dark disc in the Cineraria. If any one will look through the published records of the National Floricultural Society they will find that the dark disc—the presence of which does so much to produce a harmonious contrast, especially in the case of white-ground flowers—was characteristic of almost all the varieties certificated by that body. Of late years we appear to have become less exacting in this matter, and not a few of the varieties certificated in recent times have possessed grey or white discs. No one could call in question for a moment the massive proportions and finely rounded form of Cineraria Master Harold, from Mr. James' collection, which was awarded a Certificate of Merit by the Floral Committee on Tuesday last; but there was a want of artistic finish in the flower, consequent upon the disc being greyish-white, and the thin ring of white round this was rugged in appearance and indefinite in outline. A perfect tricolored Cineraria should have all its parts in striking contrast, but in this particular case the grey disc confused the white ground, and spoilt both. A single bloom of similar character, in a box of cut flowers close by Master Harold, had a well defined band of pure white encircling a dark disc, with a brilliant magenta margin. In this case was presented to view a Cineraria as near perfection as could well be imagined.

— Dendrobium linguæforme, a native of Queensland and New South Wales, is a very peculiar and interesting species; it merits mention not only on account of the singularity of its stem and leaves, but also for the elegance of its spikes of pretty delicate flowers. The thin stems—which root at the nodes—

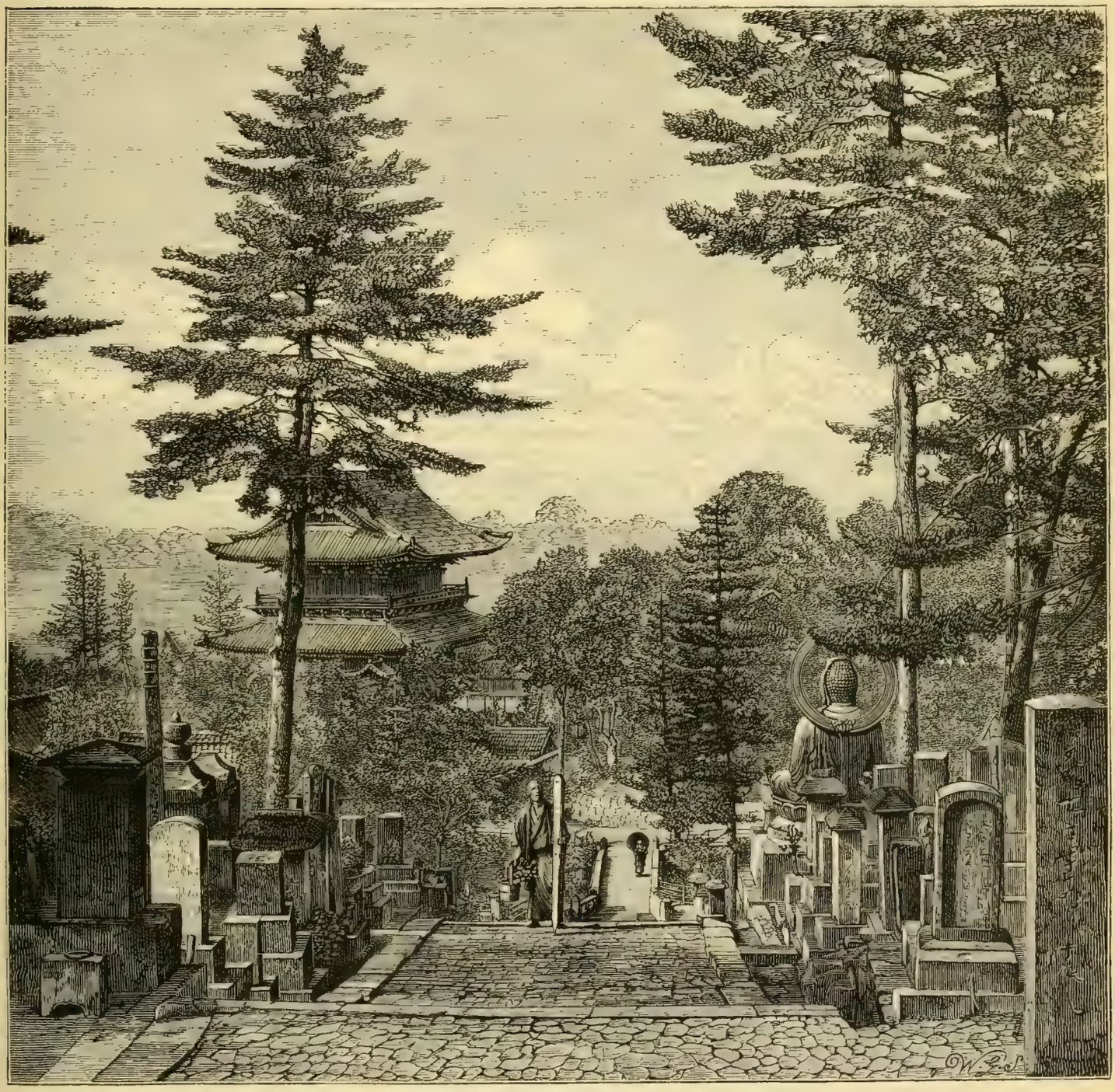

Fig. 59.—Pinus Massoniana in a Japanese Cemetery. (see p. 336.)

bear rather closely set, short, fleshy, tongue-shaped leaves. The slender spikes bear about a score of white flowers, the sepals and petals being linear-acute, and the short lip strongly recurved.

—— Neapolitan Violets.—The success that attends Mr. Denning's frame cultivation of the Potato is manifest also in the production in large quantities of that most delicious of all sweet-smelling spring flowers—the Neapolitan Violet. In looking along the line of frames filled with these plants, strong, robust, and healthy, and as full of fine blooms as could well be wished for, we are compelled to ask, Why this success here, and failures abundant elsewhere? It is true the frames in which the Violets are growing are placed on the most elevated ground in the Coombe gardens, and the place is also naturally high, but there must be other reasons than this, for though failures are perhaps most abundant in low-lying or foggy localities, yet some are found also where a dry atmosphere exists. Mr. Denning, without doubt, rightly ascribes the good results he gets to the adoption of a simple principle in ventilation and aërating that is by no means so commonly understood as is desirable. Giving air to frames in all gardens means tilting the lights behind to allow the damp air to escape; at Coombe Gardens it means, in the Violet frames at least, tilting the lights both in front and behind, and keeping them so a little at all times, except during severe frosts or high winds, so that a free current of air is always passing through the frames and playing about the plants. We commend this simple plan to all who are unsuccessful in frame Violet culture; its adoption may mean to them future success, just as in the past some cause or other has brought them failure.

—— The Year's Weather so Far.—The most inveterate grumblers at the weather can hardly find reason to complain of what so far has been allotted to us this year. January, usually regarded as the coldest month of the year, well maintained its reputation, for during a long portion of it the temperature was at the lowest and the cold intense, but whilst little rain fell the cold was greatly intensified by the excessive humidity of the air. February had its ancient reputation for ditch filling to maintain, and it did so to the satisfaction of all, in some cases perhaps overdoing it, but only in low-lying districts. Dry in its earlier days, it gave a good and needed rainfall in its later ones, and was in all respects a seasonable month. March, as far as it has gone, has kept up the old traditions; it came in raging with a fierce hurricane, and blew till old Boreas' cheeks must have nearly burst. With so much wind there has been no lack of dust, and kings who are imprisoned in a circle of terrible suspicion, or colonels in the hands of brigands with an eye to the handling of glittering gold, may yet hope to find abundant ransoms. To all working on the land the season has so far proved most propitious; though dried by March gusts, the soil is moist enough for all purposes, and never worked better than just now. If March keeps dry to the end we shall have such an early planting time as has not gratified us for years.

—— Double Cinerarias.—These are not of such modern origin as some have supposed. As far back as 1851 Mr. Miller, of Mayfield, Perth, sent to one of the meetings of the National Floricultural Society a double Cineraria, which was regarded as "quite a novelty, being so thoroughly double as to thoroughly resemble the purple Groundsel (Senecio elegans)." Mr. R. Greenfield's splendid variety, Mrs. Thomas Lloyd, with its very large and bright magenta flowers, which was so deservedly awarded a First-class Certificate of Merit on Tuesday, surpasses in size, symmetry, and fulness all we have hitherto seen, and it is said he has something even finer to follow. We had seen so little of double Cinerarias of late that there seemed reason to fear they had again fallen away from notice; but the new variety above referred to will impart a quickened interest in these flowers. It appears difficult to over-estimate their usefulness for cutting purposes.

—— Pansies in Pots for Exhibition.—Capt. C. Halford Thompson, Colleton Crescent, Exeter, writes:—"It may be of interest to those of your readers who grow Pansies to learn that some valuable prizes will be offered at the Devon and Exeter Horticultural Society's Exhibiton at Exeter, on April 16 next, for 'Pansies in pots.' The prizes are open to all amateurs, and I shall be happy to give particulars to any one requiring them. I last year endeavoured to organise a Pansy Society for the West of England, and the prizes referred to above are given from the funds then collected: but I fear that it will be useless to attempt to continue the Society, as the support received is not sufficient for a separate organisation. Pansies seem to become more popular in Scotland every year, for two new societies have been formed there recently. Some day perhaps Pansy growing will be equally popular in England, for the idea that Pansies cannot be grown south of the Tweed is an entire delusion, and if English growers would only unite I believe we could soon form a prosperous society."

—— The Manchester Royal Botanical and Horticultural Society holds its great show this year, as usual, commencing on the Friday before Whitweek and closing on the following Friday. The prizes are on the same liberal scale as heretofore, and the schedule is equally comprehensive. Within the seventy-three classes of which it is composed it may be said that there is a place for every kind of plant cultivated in pots, besides classes for hardy herbaceous and alpine plants, as well as several for hardy evergreen trees and shrubs. Good prizes are also offered for fruit.

—— Institution of Surveyors.—The next meeting will be held on Monday evening, March 15, when the adjourned discussion on the paper by Mr. W. L. Huskinson, entitled "The Present Depression in English Agriculture; its Real and Assumed Causes," will be resumed. The chair to be taken at 8 o'clock.

—— Angræcum citratum has been noticed as being a most distinct, interesting, and very pretty winter flowering species of this singular genus of Orchids. It has now proved itself to be one of the most free flowering. At present there are a large number of plants in flower in Messrs. Veitch's nursery, Chelsea. Some of the very smallest plants are producing flowering spikes; on very moderate-sized examples there are three and four—on one thirteen beautiful spikes, all of them with expanded flowers, forming a most conspicuous object in the Orchid-houses. Being a native of Madagascar, this species requires to be grown in a warm house; indeed, one specimen suspended from the roof amongst Phalænopsids had the longest spikes, and was in splendid health. There are scores of spikes of what may be termed the Prince of Dendrobes, D. Wardianum. The plants are growing in the small Orchid-pans suspended from the roof, which shows off the pendulous spikes to the best advantage. D. crassinode is also very fine, the strong growths, so much admired last year, are now well studded with open and opening flowers. The different species of Phalænopsis are now producing flowers freely; this they could not do earlier owing to the destructive nature of the fogs this season—nearly a quart of withered flower-buds was picked off one morning from P. Schilleriana alone.

—— Royal Horticultural Society. — The unsettled state of affairs at South Kensington would seem to have no terrors for would-be Fellows of the Royal Horticultural Society, if we may judge from the number, seventeen in all, who sought election, and indeed were elected as Fellows on Tuesday last. One encouraging feature, however, of this particular election is to be found in the circumstance, that at least a dozen of the ladies and gentlemen elected came from Chiswick, or the immediate neighbourhood of that horticulturally famous parish. This is as it should be, and shows clearly and unmistakably that the use and enjoyment of the South Kensington Garden is not the sole object of all who seek election, and that there are some who appreciate Mr. Barron's labours at Chiswick.

—— Arisæma speciosum.—Some fine specimens of this extremely handsome Aroid, of which a full-page illustration was given in the *Gardeners' Chronicle* for 1879, p. 585, are now in bloom in the T range at Kew. The long flexuous prolongation of the spadix, which forms such a striking feature in this species, has attained in one of the Kew plants the enormous length of 29 inches. In the specimen figured in the *Botanical Magazine* the length was 20 inches. Sir J. D. Hooker in his description says:—"The wonderful flexuous tail to the spadix, which I have usually found lying on the ground, is the most striking feature of this and some closely allied species. Of its use only a guess has been hazarded—that it may lead wingless insects into the spathe, and so to the stamens in one case and to the ovaries in another, and thus effect the fertilisation of the latter." The mottled petiole, the dark green leaflets conspicuously edged with blood-red, and the graceful form and fine colouring—deep glossy purple, greenish and white—of the spadix, combine to render this Sikkim Aroid a most desirable greenhouse plant.

—— The Gardeners' Royal Benevolent Institution. — We are pleased to be able to announce that H.R.H. the Duke of Connaught has consented to take the chair at the ensuing annual festival in aid of the funds of this Institution. The day is not yet fixed, but it will probably be early in July.

—— Prizes for Asparagus.—We are informed that Sir Henry Thompson has offered to add five guineas to the prizes offered by Mr. W. Robinson, some time ago, for improved Asparagus culture. The first competition will take place next spring at the Bath and West of England show at Tunbridge Wells, and the exhibitions will be continued during seven years, every year in a different locality. Mr. S. Spalding has also promised five guineas, to be given as an extra prize the year the exhibition is held in Kent. It will be remembered that the Hon. and Rev. J. T. Boscawen has given an extra prize of five guineas, to be competed for at the first competition. M. Godefroy-Lebeuf, of Argenteuil, near Paris, offers the sum of £10 to be distributed in prizes. Apart from these sums, over 100 guineas will be given in prizes for the improved culture of this vegetable.

—— Amorphophallus Rivieri, another Aroid of great beauty, is also in flower in one of the cooler compartments of the T range at Kew. Figures, with details of structure, &c., were given in our pages for 1873, pp. 610, 611. Whether in flower or leaf—for, unlike the Arisæma, flowers and leaves are not produced at the same time—the plant is a most striking one. The flower-stalk is olive-green, spotted with pale puce, and the inner surface of the spathe is dark, shining, reddish-purple. The spadix is dull purple, about twice as long as the spathe. In a fair specimen the umbrella-like leaf is supported by a stout petiole, 4 feet or more in height. The peculiar coloration of the leaf-stalk—a greenish-black ground bearing paler spots—affords a somewhat striking resemblance to a serpent's skin.

—— Orchids in Flower at Forest Farm, Windsor Forest.—The whole of those named in our number for February 7, excepting Cœlia bella, Epidendrum equitans, Leptotes bicolor, Phaius maculatus, and in addition:—

Ada aurantiaca	Galeandra Devoniana
Cymbidium eburneum	Isochilus linearis
Cypripedium barbatum biflorum	Mesospinidium sanguineum
,, Boxalli	Octomeria species
,, Pearcei	Odontoglossum Lindleyanum
Dendrobium Jamesianum	,, odoratum
,, lituiflorum	Oncidium Cavendishianum
Lycaste lanipes: fifty-four flower-scapes on two pseudo-bulbs, and several of these with two flowers on a scape	,, Papilio
	,, Wentworthianum
	Phalænopsis Schilleriana
	Sarcanthus species
	Spiranthes species

—— Cypella cœrulea.—This fine Irid, which was figured in a recent volume of the *Botanical Magazine*, fully deserves all that Sir Joseph Hooker writes of it. In the letterpress accompanying the figure he says, "A magnificent plant, a native of the Brazils, long known in our gardens, though displaced of late by newer but far less attractive favourites. Whether for the boldness of its distichous sword-like foliage, or the magnificence of its fine Iris-like flowers, it is well worthy of a permanent place in our stoves.' The bright green leaves are 3 feet or more long by an inch broad, and the full-sized blossoms measured 4 inches in diameter. The outer perianth leaves are broadly oblong, the blade being blue and the claw

yellowish with transverse brown bands; the inner segments are only half the length of the outer ones, the limb being a much deeper blue, and the claw marked with orange radiating bands. It is a plant of easy cultivation, merely requiring ordinary stove treatment.

—— ORCHIDS IN FLOWER. — The following Orchids are now in flower at the Victoria and Paradise Nurseries, Upper Holloway :—

Angræcum citratum
,, sesquipedale
Calanthe rivalis
,, Turneri
Cattleya amethystoglossa, several plants
,, Thompsoni
,, Trianæ
,, ,, pulchertima
,, Warscewiczii delicata
,, ,, rosea
Cœlogyne cristata, about thirty plants of this charming Orchid
,, ocellata maxima, twenty-four spikes, 105 flowers
Cymbidium eburneum
,, ensifolium
Cypripedium barbatum
,, Boxalli
,, Crossii
,, Dayanum
,, Dominianum
,, Roezlii
,, villosum, magnificent specimens
,, Warneri
,, insigne
Dendrochilum glumaceum, fine plant, fifteen flower-spikes
,, Ainsworthii
Dendrobium Dayanum
,, Findleyanum
,, Johannis
,, crassinode
,, ,, Barberianum
,, crystallinum
,, macrophyllum giganteum
,, moniliforme
,, nobile
,, Pierardi
Dendrobium primulinum
,, tortile roseum
,, Wardianum, several fine plants
Epidendrum bicornutum
Lælia anceps grandiflora, splendid plant
,, albida
,, flava
,, harpophylla
Leptotes bicolor
Lycaste Skinneri
,, ,, delicatissma
,, ,, purpurata
,, ,, gloriosa, and many other varieties
Masdevallia polysticta
Odontoglossum Alexandræ, some splendid varieties
,, cirrosum
,, cristatum
,, gloriosum
,, Hallii
,, Lindleyanum
,, nebulosum
,, Pescatorei
,, triumphans
Oncidium aureum
,, aurosum
,, cucullatum
,, macranthum, magnificent plant
,, sarcodes
Phajus Wallichii
,, grandifolius, several fine plants
Phalænopsis Mannii
,, Schilleriana
Pilumna fragrans
Restrepia antennifera
Saccolabium giganteum
Trichopilia suavis
Vanda tricolor superba

—— HARDINESS OF MINORCAN PLANTS. — The Rev. H. HARPUR-CREWE writes :—"I fear many of the interesting plants of this island will not be able to stand the rigours of our English winters when they come upon us with the severity which has characterised the one through which we have just passed. The following species, which I brought home with me last spring, appear to be quite dead :—

Digitalis dubia completely killed, both in a cold frame and the open border. I have, however, a few seedlings coming up in the greenhouse.

Ononis crispa.—I fortunately succeeded in striking two cuttings in the autumn, and have kept them alive in the greenhouse.

Clematis balearica. [With us this plant is only slightly injured.]

Pastinaca lucida.—I brought home several seedlings of this handsome foliaged plant, and before the frost came they had grown into large strong plants, but they appear to be killed to the very tips of the roots.

Cneorum tricoccum.

Scrophularia canina."

—— ORCHIDS IN FLOWER AT BRENTHAM PARK, STIRLING.—The following Orchids are now in flower in Mr. SMITH's collection at Brentham Park, Stirling :—

Ada aurantiaca
Calanthe vestita nivalis
Cattleya Trianæ
,, Warscewiczii alba
Cœlogyne ocellata maxima
Cymbidium eburneum
Dendrobium Ainsworthii
,, cœrulescens
,, crassinode
,, ,, Barberianum
,, Devonianum
,, Farmerii
,, Findleyanum
,, Jamesianum
,, nobile, several
,, Pierardi
,, ,, latifolium
,, primulinum
,, speciosum
,, Wallichii
,, Wardianum, several
Dendrochilum glumaceum
Lælia anceps
Lycaste Skinneri, several
Masdevallia bella
,, ignea rubescens
,, polysticta
Odontoglossum Alexandræ
,, Andersonianum
,, cirrosum
,, cordatum, several
,, cristatum
,, Pescatorei
,, Rossii majus
Oncidium ampliatum
,, Cavendishianum
,, cucullatum
,, Forbesii
,, macranthum
Phalænopsis grandiflora
,, Schilleriana
Saccolabium violaceum
Sophronitis coccinea
,, grandiflora
,, violaceo

—— THE METEOROLOGICAL SOCIETY.—At the ordinary meeting of the Society, to be held at 25, Great George Street, Westminster, on Wednesday, the 17th instant, at 7 P.M., the following papers will be read :—"Thermometric Observations on board the Cunard R.M.S.S. *Algeria.*" By Captain WILLIAM WATSON, F.M.S. "On the Greenwich Sunshine Records 1876-80." By WILLIAM ELLIS, F.R.A.S., F.M.S. "On the Rate at which Barometric Changes Traverse the British Isles." By G. M. WHIPPLE, B.Sc., F.R.A.S., F.M.S. At 8 P.M. the discussion on the papers will be suspended, in order to afford the Fellows and their friends an opportunity of inspecting such instruments as have been sent in for exhibition.

—— LEEDS HORTICULTURAL SOCIETY.—This society, which holds its exhibition on June 23 and two following days, has again issued a liberal schedule, the most noticeable feature in which is three classes for plants effectively grouped, the principal one (open) confined to a space of 300 square feet, with prizes of £15, £10, £5 ; the other two restricted to amateurs resident in Yorkshire, the Mayor giving a timepiece value £10 as 1st prize in the largest of these amateur classes. The local authorities in Leeds have always supported the Society in a way worthy of imitation, but too often wanting in other places.

—— WAKEFIELD HORTICULTURAL SOCIETY.—The eleventh annual exhibition of this Society will be held in the Grammar School Ground, on Friday and Saturday, August 13 and 14.

—— RICHMOND HORTICULTURAL SOCIETY.—The sixth annual summer exhibition of plants, flowers, fruit, &c., of the above Society will be held in the Old Deer Park, Richmond, on Thursday, July 1.

—— CROYDON HORTICULTURAL SOCIETY.—The thirteenth annual exhibition of this Society will be held in the grounds of Wellesley House, on Wednesday, June 30.

—— RAMSGATE AND ST. LAWRENCE HORTICULTURAL SOCIETY.—August 11 is the date selected for holding this Society's annual show.

—— TIVERTON HORTICULTURAL SOCIETY. — The annual exhibition will take place on Thursday, July 1 ; and the Devon and Exeter Bee-keepers' Association will hold an exhibition of bees and necessary appliances in connection with it.

—— COVENTRY AND WARWICKSHIRE FLORAL AND HORTICULTURAL SOCIETY. — The annual exhibition of this Society is fixed for Monday, July 12, in the grounds of Stoneleigh Abbey.

—— THE WEATHER.—General remarks on the weather during the week ending March 8, issued by the Meteorological Office, London : — The weather was dull, rainy, and unsettled at first, but subsequently improving, the sky clearing at intervals in most places ; on the 8th the weather was fine and bright in nearly all parts of the kingdom. Snow and hail showers were experienced over the north of England and in Ireland at the commencement of the period ; lightning was seen in several parts of the country on the first few days, and a thunderstorm occurred at Mullaghmore during the night of the 2d. The temperature was above the mean for the time of year in all districts, as much as 5° or 6° in excess over the greater part of England, and 3° or 4° elsewhere. At many stations in Central, Eastern, and Southern England the maxima was 60°, or a little above, on the 5th, and again in some places on the 7th, while the lowest readings were registered on the 2d or 8th. The wind was between S. and W. during the first five days, and generally strong to a gale ; but by the 7th it had veered to N.N.W., except in the S.E., and moderated. On the 8th it had shifted temporarily to N.E. over England, to S.E. or S. in Ireland, and to S. in Scotland, but was light to moderate in force. The rainfall was more than the mean in all districts except "Scotland, E.," where it was slightly less. The bulk of the fall took place during the first few days.

—— GARDENING APPOINTMENTS. — After six years service as Gardener to G. A. EVERITT, Esq., Knowle Hall, Warwickshire, Mr. J. W. SILVER has been appointed Gardener to AYSCOUGH FAWKES, Esq., Farnley Hall, Otley, Yorkshire ; and has been succeeded at Knowle Hall by Mr. COMFORT, the late Gardener at Farnley Hall.—Mr. JAMES DAY, late Foreman to Mr. NORMAN, at Hatfield, is appointed Gardener to the Earl of GALLOWAY, Galloway House, Garlieston, Wigtonshire.

EFFECTS OF THE FROST IN FRANCE.

THE effects of this frost may without exaggeration be considered as most disastrous both to amateurs and nurserymen, many of whom have lost their whole stock. The degrees of temperature observed here during the month of December were the following : they are put in Fahrenheit so as to be more easily understood by readers in general, and are the lowest night temperatures registered in a rather sheltered spot :—

December, 1879 : Fahrenheit.

1st, 11° above 0°	12th, 26° above 0°	22d, 10° above 0
2d, 13° ,,	13th, 5° ,,	23d, 11° ,,
3d, 5° ,,	14th, 5° ,,	24th, 3° ,,
4th, 15° ,,	15th, 0° ,,	25th, 13° ,,
5th, 10°* ,,	16th, 6° ,,	26th, 3° ,,
6th, 5° ,,	17th, 2° under 0°	27th, 6° ,,
7th, 2° under 0°	18th, 15° above 0°	28th, 36° ,,
8th, 5° ,,	19th, 8° ,,	29th, 26° ,,
9th, 16° ,,	20th, 8° ,,	30th, 32° ,,
10th, 16 above 0°	21st, 8° ,,	31st, 34 ,,
11th, 16° ,,		

In the tall Conifers the part that has suffered the most is the centre of the tree ; the top seems not to have been injured at all, but unfortunately the stems are frozen. Up to the present time we may consider as lost—and, in fact, in most parts they are already cut down—the following :—Laurels, all sorts ; Privets, Aucubas, Magnolias, Rhododendrons, some sorts ; Hollies, Ivy, Glycine, Ampelopsis Veitchii, standard Roses, of course—the Briers themselves are frozen ; dwarf Roses were to a certain extent protected by the heavy fall of snow lying on them at the time. Some of the most remarkable trees we know of as being lost are Cedrus Deodara, 2.80 metres round the stem, 20 m. high ; Chêne Vert (Quercus Ilex), 80 centimetres round stem, 15 m. high ; Magnolias of 60 cm. round stems and 6 m. high ; bushes of the Caucasian Laurel 3 m. high and 4 m. diameter ; Cedrus Libani, several of 3 m. round stem, and 25 m. high ; Araucaria imbricata, 75 cm. of stem, and 12 to 15 m. high ; Wellingtonia gigantea, 4 m. round stem, and 16 to 18 m. high. The fine old Cedrus Libani, planted in the Jardin des Plantes some 150 years ago, has also fallen a prey to the severe winter. We can, therefore, safely assert that such a heavy frost has not occurred in France for at least 150 years. Great are the complaints received from nurserymen, even from Angers, Lyons, and other parts. The common Taxus baccata has suffered much, and we are afraid many more trees will have to be cut which we have not yet noticed. The Box tree has resisted pretty well, though in some parts the tips are frozen. Mahonias have also suffered. Horse Chestnut trees have cracked from the branches downwards ; it remains to be seen whether this will kill them or not. Thuja gigantea, Cryptomeria elegans, and Taxodium sempervirens are lost. Taxodium distichum has suffered much, and also Cupressus Lawsoniana, Pinus excelsa, Abies Pinsapo, and Abies Nordmanniana. The Bamboos of all sorts are frozen. A very curious thing was noticed by us the other day amongst standard Roses. Persian Yellow grafted on Briers are not frozen, while the Briers themselves on which they are grafted are lost. It shows that Persian Yellow is a very robust Rose ; we noticed the same fact with some Moss Roses. The well known Vines of Thomery, near Fontainebleau, are lost, and of course all the outside Vines. In the houses where no fire was kept the Vines seem to have suffered a little. Most of the fruit trees are lost, especially Apple trees, Pear trees, Walnut trees, &c. : the old wood looks more frozen than the young. In the woods Quercus rubra and the common Oak have suffered heavily, as well as the Chestnuts (Castanea). It now remains to be seen what will be the effect of the sun on many other trees and shrubs that for the present seem right enough. Trees which after the heavy frost were thought uninjured are now found to be so, and we are afraid we shall have still more to note down than those above-mentioned. We hear of many nurserymen and amateurs going to England to buy, on purpose to replant their nurseries or their pleasure-grounds ; so that if the frost has done a great deal of harm in France it will to a certain extent improve the horticultural trade in England, and allow English nurserymen to sell their stock at a good profit. It seems curious, though, to hear of French rosarians going to London to buy Rose trees, so therefore we are safe again in quoting the old French proverb—*A quelque chose malheur est bon.*—*E. B.*

* Heavy snowstorm in the night, half a yard of snow on the ground.

Home Correspondence.

Begonia Comte de Limminghe.—Allow me to say a word in favour of the above evergreen Begonia, which I think would be more frequently grown for winter and spring decoration if better known. Cuttings put in now, singly, in small pots, and plunged in a little bottom-heat, will soon be fit for potting on into 5 or 6-inch pots—a size in which they will make nice plants about 2 feet high and 15 inches through by the end of summer. A few stakes are required to train them round, the plant being of a pendulous habit. Keep in a cool light house through the autumn, and introduce to the stove or intermediate-house in December, and in five or six weeks a nicely bloomed plant will be the result. The flowers are also very useful in a cut state, keeping fresh quite a fortnight in water. *Chas. Herrin, Chalfont Park.* [The profuse cymes of waxy salmon-coloured pale-edged blossoms are very attractive when grown like those you have sent. Eds.]

Eremurus turkestanicus.—In last week's *Gardeners' Chronicle* I see this plant alluded to; and, as there seems to be a doubt of its hardiness in this country, I write to say that it has stood without injury the last two winters and summer in my garden, while E. robustus, which I believed equally hardy, has not yet appeared above-ground, and I am afraid is dead. I do not attribute this to the cold, but to the wet of last summer, and think that if I had taken the plant up, and kept it dry till November, it would have lived. It is hardly correct to describe the roots of Eremuri as bulbs. They consist of a stout fleshy crown, surrounded by thick perennial roots, radiating like the spokes of a wheel. As soon as the plant has died down, and the fibres produced by these thick roots have dried up, the plants may be safely lifted and kept dry for three or four months, as being natives of Central Asia they do not like moisture in summer. *H. J. Elwes.*

Tropæolums as Bedding Plants.—The utility of having a sprinkling of showy flowering plants propagated for bedding purposes was strongly exemplified last year when the continuous rainfall was so great that flowers of tender fabric were no sooner open than they were partially drowned out by a sudden downpour of wet. Amongst some of the flowering plants that I noticed to be weather-proof were scarlet Tropæolums. The variety was evidently raised from seed, and was named Tom Thumb. The leaves were of a glossy dark colour, and the flowers, which were thrown up well above the leaves, were of a bright warm scarlet. The habit of the plant is everything that could be desired, being a stiff, erect little bush, which seemed to revel in wet. The plants were relegated to an obscure position, but their attractive appearance after each succeeding deluge of wet so called my attention to their usefulness that I resolved to raise a stock from cuttings, which shall have a prominent place in the flower garden this year. When we remember what a brilliant bed can be made of these lovely flowers, that are so simple to cultivate, with an edging of Koniga maritima variegata, still one of the showiest of dwarf edging plants, perhaps the reminder may be of service to some of your readers. I think the prettiest and most chaste effect I ever remember to have seen produced was in a chain border planted with scarlet Tropæolums, Koniga variegata, and blue Violas. *W. Hinds.*

Lawn Tennis in Gardens.—As lawn tennis is undoubtedly to be the garden game of 1880, and probably of succeeding years, it will perhaps be interesting to readers of the *Gardeners' Chronicle* to see suggestions respecting its use in ornamental grounds. A few years ago many of us added materially to the beauty of our grounds by getting our lawns as level as possible for croquet. At the present time the cry of the many is "we don't care about the lawn being so very perfect so long as it is good enough to play lawn tennis upon." Seeing then that lawn tennis is to be played on the croquet grounds, it seems to me expedient that those of us who have a tender regard for our turf should endeavour to preserve its beauty as far as the boisterous tendency of the present state of civilisation will allow. Having a splendidly level croquet ground of my own which it has been a labour of love for some years past to get nearly perfect, I did not like the idea of having it torn up by tent-pegs and guy-ropes, neither did I like refusing to allow my friends the pleasure of playing lawn tennis upon it. After some thought and several experiments my object of reducing the harm done to a minimum was attained. My invention, originally made only for my own use, having been much liked by my friends, is now patented. I have found the irons that I employ for the support of the lawn tennis poles useful for several other purposes as well. I have a flagstaff about 14 feet high standing in my garden at the present time, which is only inserted in the ground about 8 or 9 inches, and which has stood firmly for more than six months, held by one pair of these irons. The irons make no more mark on a lawn than two croquet-hoops would, and occupy about 6 inches square of space. I believe this simple and effective plan of supporting poles is applicable to various horticultural purposes, such as enclosing fruit trees temporarily with garden netting, protecting wall trees, &c. Last summer, having erected one of Benjamin Edgington's hexagon tents, I found only one fault in this admirable little garden parlour. A gusty wind caused the tent to rock a little, as the pole in the centre, to which a table is attached, merely rests on the ground. There was sufficient oscillation to spill the contents of teacups or glasses, but by supporting the pole with a pair of the lawn tennis irons, which exactly fitted the pole, the structure stood firmly in a stiff breeze. The advantages of the lawn-tennis standards are as follows:—1. They do not injure the most perfect croquet

Fig. 60.—Standard for lawn-tennis net.

lawn. 2. They can be easily and quickly set up. 3. The net can be removed in two minutes at the end of the play, thus leaving nothing out that can be injured by weather. It can be as quickly replaced. 4. There are no guy-ropes to fall over or occupy space. 5. The poles can be set within a very few inches of a flower-bed or gravel path. 6. The ground can be rolled without removing poles or irons. 7. Grounds too small for lawn tennis where guy-ropes are used can be turned to good account for the game by using the standards. For setting up the poles, make a hole in the ground 8 inches deep with an ordinary piece of pointed wood the size of the pole. In this hole place one of the poles, pressing it firmly and perpendicularly into its place. See that the brass buttons on the pole are towards the end of the court. There are

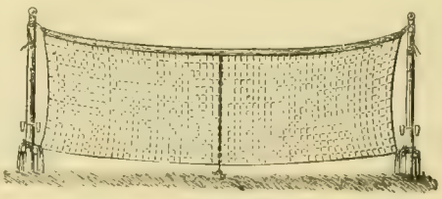

Fig 61.—Lawn-tennis net.

two irons with a flat top, and two with a bent shoulder: one of each constitutes a pair. Take one of the level-topped irons, and drive it with a wooden mallet about 6 inches into the ground, slightly slanting in the direction of the pole, so as to support the latter on one side. The corresponding iron (one of those with the bent shoulder) may then be similarly driven into the ground so as to support the pole on the other side. The object of the upper iron having the bent shoulder is to form a level top for the reception of the wedges. The irons thus placed will form a double loop or cage round the poles. Now take a pair of chained wedges, and having brought them over the top of the pole, slide them down to the shoulders of the irons. Drive the wedges in between the shoulders of the irons evenly. The wedges tighten the grip on the pole and each other. The intention is that one shoulder of each separate iron should be towards the net. To illustrate my meaning imagine a straight line drawn in continuation of the net at each end—the supposed line would pass through the tops of all the four wedges (not between them), and would be parallel with the brass chains that connect the wedges. The other pole having been similarly placed, the net has simply to be hooked on to the brasses and adjusted by means of the knotted cord to the required height. The lower corners of the net are merely tied to one leg of the irons. The nets, supplied by Benjamin Edgington, London Bridge, with the irons, are not intended to touch the ground, as most players like to be able to pass the balls under the net to save trouble at the end of the service. The wheel action which I am about to describe, although not essential, is admitted by all who have seen it to be a great improvement, as it keeps the net exactly at the required height without allowing it to get slack. By looking at the woodcut representing the single pole (fig. 60), two revolving grooved wheels will be noticed. These are screwed on to the pole, and about 6 inches below each of the wheels is a small brass knob or button. The use of these wheels and knobs will be perhaps better seen in the diagram of the net set up ready for use (fig. 61). A round indiarubber door-spring, fastened to one of the top corners of the net, is strained over one of the wheels and looped on to the brass knob below, by means of a double knotted cord. A strong string attached to the top cord of the net, and pegged to the ground in the centre of the court with a staple, keeps the top of the net from rising to more than 3 feet high in the middle. The net is then drawn up tight by looping the knotted cord (at the end of the net where there is no indiarubber) tightly to the brass knobs on the pole. The indiarubber thus being brought into action keeps the net exactly up to the height of the check string, which is, of course, 3 feet. The only object of having two wheels on one of the poles is that the height of the net at the ends may be altered, if required, for single or double-handed play. In both of the diagrams the position of the wedges is shown before they are driven into their places between the shoulders of the irons. *Fredk. Rayment Matthews, Ovesham Tye.*

Mentha Pulegium gibraltarica. — A more expeditious plan of increasing the stock of this plant than Mr. Wildsmith's (p. 311), is to place the plants in a temperature of 70° and propagate it the same as Verbenas, by which means it strikes very freely. When you have enough, plant it out in nursery beds previous to putting it into its summer quarters. I once raised several hundred from a small plant that was not more than an inch in diameter in January, and by the end of May they were quite large enough to plant out. *A. Waterman, The Gardens, Preston Hall, Aylesford.*

Fritillaria oranensis (fig 62).—This handsome Fritillary was shown by Mr. Wm. Bull at the last meeting of the Floral Committee, but, for some reason or other, it received no award. It is, as we learn from Mr. Baker, the same species as that named by him F. Munbyi in our columns, 1877, vii., p. 45. The earlier name of oranensis must, however, be adopted for it. The cylindric bell-shaped flower is about 1½ inch in length, the segments purplish-brown with a broad central stripe of pale yellowish-green and a narrower edge of the same colour. For a full description of this striking novelty we refer to Mr. Baker's description above quoted.

Pointing Old Walls.—I can sympathise with Mr. J. Horsefield in the mischief he has had to contend with and the carelessness of the men in pointing the joints of the walls he has charge of, having suffered in the same way myself when first having ours done, but since then I am particular in having the work done by one I can trust to do it well without injuring the trees. This can be done very easily if the branches are laid together in bundles and tied up close in that way, and then looped or supported to stout stakes, so that they can be moved when necessary a little out of the way. Where wiring of walls has to be done, it would be a great mistake not to thoroughly point the walls first, as it is not so much a question of getting rid of insects as the keeping of wet out and the preservation of the bricks, which decay at a great rate and become mossy if damp; and not only this, but a dry wall is considerably warmer than a wet one, the latter of which attracts the frost, and is therefore bad for the blossoms. The way we manage here is to stop neatly and thoroughly by first mixing soot and mortar, and adding a little Portland cement to it after, measuring the latter each time, so as to have all dry the same shade of colour. Autumn is the proper time for the work, as then there is not so much danger of hurting the trees or the buds as there is when these latter are swelling fast, as they are in the spring. *J. S.*

The Culture of Lachenalias.—I have grown L. quadricolor in various temperatures, ranging from 40° to 70°, and have always found them succeed best at 40° to 50° in a moderately damp atmosphere close to the glass, such as a pit with a bed of coal-ashes to stand them on. I have known them survive a mild winter outside in a sheltered position, but the flowers

generally proved very few and of inferior quality. The finest I ever saw were grown in pans 4 inches deep, in a cold pit from which the frost was barely excluded, and were potted in good loam with a liberal supply of sand and charcoal, and a little leaf soil, and were well fed with liquid manure, of which they will take a liberal supply before the flowers open, A well-grown pan of Lachenalias, containing from twenty to thirty bulbs, well repays a little extra care in their culture. As regards the other varieties, my experience with them has not been extensive enough to warrant me in giving any details of culture. *W. H. Divers, Burghley.*

—— I find the best way to manage Lachenalias is to grow them in baskets. I have some at the present time quite 3 feet through, and one mass of bloom. I make these baskets up about October, placing the bulbs in layers round the outside, using a little sphagnum to keep in the soil. I hang them in a Fern-house for the winter, where they make foliage 2 feet long. The flower-spikes begin to show early in the year, and with the long spotted foliage hanging down, and the flowers pointing upwards, they look very graceful. As soon as the flowering is over they are placed under the greenhouse stage, watered for a few weeks, and then allowed to become quite dry, when they are shaken out. I get from four to six good bulbs from one, and a quantity of small ones. The sort I grow is L. tricolor. *J. C.*

Fig. 62.—Fritillaria oranensis. (see p. 340.)

Propagating Alternantheras.—These, the most lovely plants that we possess for carpet-bedding, although easily propagated by division or from cuttings, succeed best when propagating is not taken in hand too early in the season. They also enjoy heat and moisture, and a rich open soil to grow in. I noticed last year that plants that were raised by division did not grow so freely as those that were raised from cuttings. I think we are often in too great haste in propagating plants for the flower garden—no doubt from anxiety to get through the work in good time. The most successful way of treating Alternantheras at this season is to trim the old plants back a little, and then put them on a warm hotbed, where there is a gentle steam from fermenting dung and leaves. Under these conditions they soon break away and produce fine young cuttings, which root freely in a few days in a mixture of leaf-mould and sand. They should then be boxed off into a rich open soil, and returned to the hotbed until fresh root-action is established. By the time this is accomplished there will be another batch of young cuttings ready to be cut from these plants, and in this way the whole stock may be raised from healthy young cuttings. The little root-space that we can afford to allow many bedding plants that are propagated early is nothing short of starvation long before they are planted out, by which time growth is temporarily "pumped out," and a considerable time elapses before healthy growth takes place afresh, unless the weather is very favourable at planting time. I think later propagation for many plants, and a more generous system of cultivation, would be a great benefit, and would give an earlier display. What say some of our experienced flower gardeners? *W. Hinds.*

Coprosma Baueriana variegata as a Bedding Plant.—This is one of the most beautiful bedding plants that we possess, and is sometimes employed in carpet-bedding with exceedingly good effect. It is, however, more frequently seen as a dwarf greenhouse shrub (and a pretty one it is, too) than as a bedding plant. The first place I ever saw it used in carpet-beds was in Prince's Park, near Liverpool (and I think a description of it will be found in the columns of the *Gardeners' Chronicle*, in a report of mine which appeared two or three years ago), where Mr. Mason displays marked ability every year in the variety of arrangement, and the originality of character, which is exemplified in his designs for carpet-beds. The plant is of a semi-hardy character, and should be put into heat for some time before cuttings are taken, in order to render the young shoots more susceptible to the influence of warmth. The cuttings root freely in shallow pots or pans, in a mixture of about equal proportions of leaf-soil and sand, and should then be potted off into small pots. The leaves of the Coprosma are very compactly arranged, with a broad zone of bright yellow round the outside of the leaf. It should be planted in a situation where it will be exposed to the sun, and in a soil that is rather light and porous, in order to bring out the true markings of the leaf. *W. Hinds.*

Couve Tronchuda.—Now that the season has again come round for sowing most of the Brassica tribe, I wish to call attention to the merits of Couve Tronchuda, as unquestionably it is one of the most delicious vegetables grown, in flavour and delicacy far exceeding any spring Cabbage, however succulent and tender it may be. Couve Tronchuda, too, comes in at a time when common Cabbages are comparatively worthless, that is, during the autumn, when they are most valuable for filling a gap, as it were, in the supply, and affording variety after the flush of Peas and other summer crops is over. To have it in first-class condition at that season seed should be got in at once, and if under the protection of glass all the better, as the great thing in the successful cultivation of Couve Tronchuda is to raise and start the plants early, that they may have a long period before them to complete their growth and enable them to turn in with fine hearts. Instead of getting into this desirable condition when sown late they run a good deal to leaf and remain loose, and are therefore not half so tender and serviceable for cooking, although the midribs are even then prized by many, and are considered an excellent substitute for Sea-kale. To use these and lose the other part, however, is great waste, and like throwing away the meat for the sake of picking the bone, the stems being of a coarser nature on account of the fibre they contain and the length of time they are in reaching their full size. Like all of the same family the Couve Tronchuda is a very gross feeder, and should be afforded a rich piece of ground well prepared by being deeply dug or trenched, and at the same time heavily manured, keeping the latter low down that the plants may have something to lay hold of and attract the roots below to save them from suffering from drought during dry weather. In planting I find it is a good plan to draw deep drills like those made for sowing Peas, especially in all cases where the soil is light, as should they require water or sewage during their early stages it can then be easily given, and any hoeing the ground may receive after for the purpose of destroying weeds gradually fills in the small furrows, and thus lands up the stems and keeps the plants steady. The distance at which these should be placed apart is about 2 feet each way, and in transferring them from the seed-bed it is important that they be lifted with large balls and got out to their permanent quarters before they become drawn, to prevent which it is advisable to prick out or sow very thinly, as plants with etiolated stems never do anything like so well as those that are stocky and dwarf. *J. S.*

Rapid Rise of the Sap.—I do not know if any of your readers may have witnessed what I have these last few days. I have a number of Vines which made an inch of growth without showing any trace of bleeding, but since the mild weather has set in I find the greater part have commenced to bleed. I do not suppose this will do them any material harm, but is it not unusual? *J. C.*

Amaryllis Ackermanni pulcherrima. — This beautiful bulb has stood the late severe winter in the open border without the slightest injury. I saw a long conservatory border in Derbyshire, the other day, completely filled with it. The bulbs were simply covered with a little dry Fern. They were coming up when I saw them a fortnight since as strong as Daffodils. *H. Harpur-Crewe, Drayton-Beauchamp Rectory, Tring.*

Pentstemons.—Whilst nearly all the Pentstemons of the gentianoides race in the open ground have died from the effects of the frost I notice that a number of plants of a species that has long broad lanceolate leaves that remain fresh and unhurt all through the winter are all alive and already throwing up flowering shoots. As a leaf perennial alone this species is most valuable for the garden border, but its flowers are not effective when contrasted with the florists' kinds. Having regard to the fine hardy features it displays as compared with the tendency to perish by frost shown in the gentianoides group, it is worth the attention of hybridists to try how far they can engraft the fine flowers of the one on to the hardy habit of the other. *A. D.*

Sea Sand.—I have found that all soft-wooded plants strike freely in sea-sand, and when mixed with soil for potting the plants have done well in it. We used to get it from the sand-hills close by the sea-shore, so that all the salt would be washed from the sand before it is used: it is very fine, and must be used freely. It is good for gardens where the soil is stiff and bad to work, and seeds germinate freely in it. *H. Little, The Gardens, Rusland Hall.*

Violet odoratissima, with Hints on its Culture.—This is a splendid Violet—I think the best of the single blue kinds. The plant is of dwarf robust growth; the flowers, which are very sweet-scented, and produced in great profusion, have broad petals, and are of fine form. All who love Violets (and who does not?) should grow it. It is a very hardy sort. In illustration of this, I have a quantity of strong plants of it and Victoria Regina growing together without any protection all the winter on a cold north border. The last-named sort

lost nearly all its leaves, while odoratissima had scarcely a leaf injured, and began to flower earlier. I find that for late winter and spring blooming in frames, decidedly the best results are obtained by striking a quantity of runners (selecting those with a tendency to form a crown or plump bud at the end) in cold frames, the cuttings to be inserted 2, 3, or 4 inches apart, and 6 or 8 inches from the glass. I put in two or three successive batches from July onwards. The earlier and stronger cuttings of course require more room than the later or smaller ones. They should be freely exposed when rooted, and should not be disturbed till after the blooming season is over, unless a bed of leaves or leaves and dung is available, when they may be replanted closely together, and close to the glass towards the end of October. With the gentle bottom-heat so produced, they as a natural result bloom earlier, and in severe weather more freely. I have cold frames of cuttings treated as first advised, which are, and have been, a sheet of bloom. The same space filled with large clumps grown in the ordinary way would not throw off more than two-thirds the quantity of flowers. For autumn and early winter flowering, divisions of old plants, or, better still, cuttings of the previous autumn, planted 15 or 18 inches apart in free rich soil, in a north border at the end of March, or early in April, and well attended to with water in dry weather, are better than younger plants, as the bloom-buds form earlier and are ripened sooner. All runners, except those required for cuttings, should be pinched closely off as they grow. These remarks apply to such sorts as odoratissima, Victoria Regina, and the Czar. The latter sort I discarded some years ago in favour of Victoria Regina, as being far superior, and it again will, to a great extent, have to give way to odoratissima. *Viola.*

Early Flowers.—As I see you are noticing the appearance of wild flowers, the following may interest you. In my children's garden on a bank with western exposure the first Primrose was pulled on February 2, the first Violet on the 16th. I pulled a Cowslip on February 27; to-day I have several Cowslips in bud on my lawn. Lilac and white Crocus appeared in flower yesterday. I heard the first blackbird on February 5, and the first thrush on February 10. *J. A. Crawford, Northfield, Annan.*

The Functions of Roots.—Can any of your readers inform me if the roots of a plant are of two kinds—one to supply nourishment to the leaves, and another to the flowers? It seems quite possible that there should be roots of different characteristics, in the same manner as there are male and female blossoms on the same plant. I have been led to make this observation by watching a Hyacinth bulb grown in a glass with water. It was shut up at first in a dark cupboard, but the severe cold affected the plant very much. It was a long time before it grew, and then it threw out a single root, which developed speedily and well, but no other roots were developed, and the bulb was fed by this root alone; eventually a blossom appeared, white and perfect, but the plant has never had any development of leaves. I shall be glad if any of your readers more versed in botany than myself can throw any light upon this subject. *Cyril.* [The root in question may have supplied water to the bulb, but the flowers were nourished almost entirely from the food stored up in the bulb itself. This store was large enough to supply the wants of the flower, whose germ was laid last summer in the bulb, but not sufficient to supply the requirements of leaves principally formed this spring. Eds.]

Florists' Flowers.

The Quilled Aster as an Exhibition Flower.—The Aster long since vindicated its right to be classed with the florists' flowers. It was grown for show purposes fifty years or more ago. Not that a particular flower can be said to be introduced to the enjoyment of any special advantages because it is put into this category, for that does not operate in any degree. "Florists' flowers" can and should be taken as comprehending any subject, whether it may be grown and shown in pots, as in the case of the Auricula or Cineraria, or cultivated for its cut blooms as exhibition subjects, as in the case of the Tulip, Chrysanthemum, or Gladiolus. In course of time some may fall away from general cultivation as exhibition subjects, as in the case of the Pansy and the Anemone and the Ranunculus; or fresh subjects may come to the fore, as in the case of the Gladiolus in recent years. The term "Florists' flowers" must needs be a comprehensive and elastic one, especially as at one time certain subjects receive greater or less attention than at another.

The Aster has of late years at least become a leading exhibition flower. There is scarcely an exhibition held during August and September whose schedule of prizes does not include Asters. They are so well grown and exhibited in some districts as to possess in a remarkable degree the particular characteristics which exemplify comparative perfection in florists' flowers—size, symmetry, purity, colour, beauty, and attractiveness. We have seen Truffaut's Pæony-flowered, the splendid Victoria type, and the delicate quilled Asters shown in such fine condition as to leave but little to be desired, though they have not yet reached forward to the possession of that unknown quality of perfection laid up ahead in the pathway of the floral progression. It is profoundly true of the florist that he walks more by faith than by sight, but what he is privileged to see whets the appetite for that which, though he may perceive it by the inward eye of faith, is not as yet revealed to him in its material form. Tennyson sings that "knowledge is of things we see," but the inspirations of trust are as a beam in the darkness that shall grow more and more till it ripens into knowledge, fact, and reverence.

Of all the Asters suited for the exhibition table, the quilled varieties are the most beautiful when presented in becoming form. When displayed of high class quality they are so delicate in tone, pure in expression, and faultless in outline, as to charm every one who has an eye to perceive the beautiful. Their grace forbids any aspect of lumpishness; their refinement any expression of coarseness.

There is this peculiarity about the quilled Aster, that those who have set themselves to the task of improving it have created a list of varieties of so much value, that they have been named, and in not a few instances received First-class Certificates of Merit. Should it be required of any flower that ere it can rank among the special subjects for which the florist has a particular *penchant*, it must have produced recognised named varieties, the quilled Aster is there, well deserving of initiation into this honourable order. Among others, Mr. James Betteridge, of Chipping Norton, the representative of a family whose name has for many years been honourably and successfully associated with the improvement of the Aster, has raised some beautiful forms, that it is said come very true from seeds. As this is the only way by which a particular variety of the Aster can be cultivated, it is well that it is so. These named varieties are divided into two groups, viz., the self-coloured and the parti-coloured or fancy flowers; the last being a convenient term without any particularly definite meaning, but useful as comprehending types incapable of special and present classification. Of the self-coloured flowers we can mention Snowball, Purple Prince, Princess Alice, and Duke of Connaught; and of the parti-coloured flowers, Princess Alexandra, Princess Royal, Oxonian, Unique, Blushing Bride, Bridegroom, and Prince Alfred Victor—most, if not all of them, of Mr. Betteridge's raising.

Mr. James M. Gilkes, of Wickham, Newbury, a very successful amateur cultivator of the quilled Aster informs us that he sows his seed about the middle of April in pans, using a rich soil largely composed of leaf-mould and silver-sand. The seeds are sown as thinly as possible, in order to give room for them to develope into plants, and to prevent unnecessary crowding. The pans of seed are placed in a cold frame, and the lights are kept close till the seedlings appear. When the young plants are through the soil great care is necessary in watering, and an abundance of air on all favourable occasions is necessary, or the plants are liable to damp off. When they show their rough leaves, which will be within a fortnight or so of the time of sowing, the plants need to be pricked off into other pans or shallow boxes in good soil, planting them about 2 inches apart. At this stage the plants are well exposed by day, but covered at night, as spring frosts are apt to do them injury. In the absence of a frame in which to place the plants the boxes may be stood out in the open air, but raised a little from the ground, and at night covered securely by placing boards at the sides, and throwing a mat over the plants. Care is necessary to keep the plants from becoming drawn, and if necessary to be covered by night they should be freely exposed by day in order that a short-jointed and robust growth be encouraged.

It is obvious that fine blooms of Asters can be obtained only from thoroughly good soil. Many cultivators of Asters for ordinary garden purposes appear to think that any soil will do for the plants, and starved flowers result, and blame is laid at the door of the strain. Mr. Gilkes puts his plants out in the richest soil he has, which, when it is obtainable, he manures with pig-dung, the best of all raw manure for Asters. It imparts size and finish to the blooms beyond all other fertilisers. The bed being prepared, the plants are put out into it as soon as they show signs of throwing up a stem, and there planted in lines 20 inches apart, the plants 12 inches apart in the lines. Being carefully planted with balls of soil attached to the roots they soon make growth, and then a stake is placed against each plant to make it secure. The quilled Asters that are grown for show purposes are all of tall growth, and this is increased when planted in rich ground. Mr. Gilkes uses stakes sufficiently long to be 3 feet out of the ground when thrust into the soil, and to these the plants are carefully secured, and tied as they attain size to keep them from injury. When staking is completed the soil about the plants is carefully pricked over and a tablespoonful of Amies' chemical manure given to each plant, which is gently stirred into the soil by means of a small-pronged hand-fork or trowel, care being taken that the roots, which lie very near the surface, be not disturbed. By-and-by, when the buds swell and show colour, shading is necessary to preserve them pure; a covering of light canvas stretched across the bed, but so placed as that light and air can be freely admitted at the sides, is the best shading that can be employed. One main object in doing this is that the blooms should develope gradually, taking on the qualities that constitute perfection as they age. Some persons place an inverted flower-pot or a wooden cover over the blooms, but this kind of shading is too heavy, and is apt to impart a dull and washed-out appearance to the flowers.

Any one desirous of having a bed of high-class quilled Asters should preserve seed of some of the fine varieties named, or a packet of good mixed seed will be certain to yield some flowers of a very pleasing character. Those who grow for exhibition save their own seed from the best flowers, and by doing this secure fine show subjects, and at the same time acquire new varieties. They are obtained somewhat slowly, but the chance of originating one or two at least is open to all who are engaged in the work of improvement by raising seedlings. Mr. Gilkes states that he finds no difficulty in having an abundance of flowers from the first week in August till the middle of November—that is, nearly four months. As a matter of course the flowers had in October and November depend much on the state of the weather. *R. D.*

The Gladiolus.—The history of many of our florists' flowers is involved in considerable obscurity, even those that have been most recently improved by cultivation probably cannot be traced to the first break from the specific form. The most beautiful forms of the Gladiolus are stated to be hybrids of gandavensis. The question arises, Are they hybrids, or merely improved varieties of this species? If they are hybrids, which is the pollen-bearer, and which the seed-bearing parent? If, as is probable, they are merely improved varieties, why use the word hybrid at all? The Gladiolus is one of the easiest of plants to hybridise, but I much question whether any good results can be obtained by crossing any of the improved forms of G. gandavensis with other hardy species. To do this would throw the strains back for many generations; and the only justification of any attempts of this kind would be the probability of obtaining hardier varieties, which might be again improved through successive generations.

Dean Herbert was a very ardent admirer of the Gladiolus, and grew many different varieties and species in his garden at Spofforth. The soil of his garden was light yellowish loam, and it is in such soil as this that the Gladiolus flourishes best. He also cultivated it in made beds of sandy peat, where it also did well, but of course required larger supplies of water. Here is a hint that the Gladiolus may be planted in Rhododendron beds, with Lilies, Cypripedium spectabile, &c. It may be interesting to quote the Dean's own words from his book on the Amaryllids. The "crosses are between G. cardinalis, blandus, inflatus, angustis, and tristis; and they vary with every shade of colour, from white to scarlet, rose, coppery, and blackish purple; and some are exquisitely speckled in consequence of the cross with tristis. They succeed best when grown into a thick tuft, in which state the profusion of bloom is admirable, the cluster of bulbs, and the old skins of decayed bulbs, permitting the wet to drain

away, and preventing the earth from lying too close and heavy on the bulbs in autumn and winter. Clusters have stood undisturbed at Spofforth above ten years, with the precaution of covering them with leaves from November to March or April."

The same earnest cultivator raised beautiful crosses from G. hirsutus, recurvus, and versicolor; but these were delicate plants, and did not succeed in the open borders. The early flowering varieties ought to be taken up and improved by those who have time and opportunity to attend to them. Some of the varieties of Colvillii are very pretty. The pure white variety, named The Bride, is exquisite for cutting, and many varieties of ramosus may be further improved.

The culture of these hardy varieties is very simple; they require good deep light loam, moderately rich, to start with, and it is evident that they would also thrive in peat beds. A slight protection might be afforded them in winter, and they would give but little trouble in return for a wealth of their beautiful spikes for years in succession.

It may be as well just to give a hint to would-be cultivators as to the best method of propagating them. It may be necessary to dig up the clumps for purposes of propagation, but it is best to do this in April; if it is done in the autumn, and the bulbs are planted at once, many will die during the winter. A good plan is to lift them in the autumn, and pot the bulbs, placing them under glass to be planted out about the end of April. Although these remarks have been made with special reference to the early flowering Gladiolus, there is no intention whatever to disparage the later flowering species and varieties, such as G. Bowiensis, brenchleyensis, floribundus, and the very beautiful varieties of G. gandavensis. Rather would I like to see the early flowering sections improved by cross breeding and selection until it became equal in quality to the others. We could then have our gardens gay with Gladioli from early in June until late in October, and few flowers give such good results for the trouble required to grow them. *J. Douglas, Loxford.*

Pansies in Pots.—It is in April, in May, and on well-grown plants in pots that one gets flowers in all their perfection of beauty; clear in the ground, dense and regular in the blotch, with a firm, even, and richly developed belting, and with symmetry of form in combination with approved size. There is a rare gorgeousness about a fine yellow ground flower displaying these high qualities, which can be had later in the season also, but when the appetite is, as it were, blunted by feeding on other floral forms of beauty that form the wealth of summer hues. It was at the beginning of February that those who formerly made a practice of exhibiting Pansies in pots potted their plants into those which held the plants at flowering time. They would be previously shifted in October, using a good light rich soil, and a similar compost would be brought into requisition, because the old growers held the opinion that a change of soil at such a time would act prejudicially on the plants. The larger plants were put into 8-inch, the smaller into 6-inch pots, and between the time of potting and that of blooming the great aim of the grower was to insure short-jointed and vigorous stems. We should like to see a resort to the almost forgotten practice of cultivating Pansies in pots. The plants, after the final potting, need to be kept free from suckers or young growths coming up from the base of the main branches, so as to have as much strength as possible infused into those bearing blooms. These need also to be tied out, so as to give a good shape to the plants, with one or more of the strongest stems to form a centre. As the buds form the plants are assisted by applications of liquid manure, and the first flowers should be pinched off till the whole of the stems can be had in flower altogether. For pot culture plants struck from cuttings the previous summer should be selected. It is a mistake to have the plants more than one year old. *R. D.*

Ensilage.—The following very curious system of storing green fodder is of Hungarian origin, and was introduced to the notice of British farmers by Professor Wrightson, in an article contributed to the *Journal* of the Royal Agricultural Society in the year 1874. The system consists in cramming the green food, of whatever description, tightly down into deep and wide trenches that have been dug in the ground, and the wetter the fodder is the better its packing and preservation; when cut out in winter it is found to be a rich brown colour, very palatable to stock, and it is known under the unattractive name of "sour hay." In this way various kinds of green forage may be preserved for winter use. *Dairy Farming.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, March 10, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100	Wind: Average Direction.	Rainfall.
Mar.	In.	In.	°	°	°	°	°	°	°		In.
4	29.72	−0.16	56.3	43.1	13.2	48.6	+ 8.1	39.0	69	WNW	0.00
5	29.91	0.00	61.2	47.9	13.3	53.6	+13.1	48.5	82	N.W.: WSW	0.00
6	29.96	+ 0.03	53.5	45.5	8.0	49.3	+ 8.8	39.6	69	S.W.: WSW	0.00
7	30.01	+0.08	52.0	44.0	8.0	48.0	+ 7.5	45.9	93	WSW: E	0.08
8	30.28	+0.34	49.1	38.1	11.0	42.7	+ 2.2	39.0	86	E.N.E.: E.S.E.	0.00
9	30.07	+0.13	60.2	37.6	22.6	48.0	+ 7.5	43.8	86	S.E.: S.S.E.	0.00
10	30.00	+0.10	59.0	40.4	18.6	48.3	+ 7.7	41.4	77	S.W.: S.S.W.	0.00
Mean	30.00	+0.07	55.9	42.4	13.5	48.4	+ 7.8	42.5	80	variable	sum 0.08

March 4.—A fine bright day. Partially cloudy. Windy, mild.
— 5.—A fine day, dull and cloudy at times. Windy. Cloudless at night. Quite warm.
— 6.—Dull morning, fine and bright afterwards. Cloudless at night.
— 7.—Very fine till 10 A.M., dull afterwards. Very dark between noon and 2 P.M. Frequent rain.
— 8.—Dull till 11 A.M., then fine till evening; overcast at night. Cool.
— 9.—Dull early part of morning, very fine afterwards. A beautiful day. Cold in morning, warm in afternoon.
— 10.—Overcast till 10 A.M., very fine and bright afterwards. Warm in afternoon. Clear at night.

London: *Barometer.*—During the week ending Saturday, March 6, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.66 inches at the beginning of the week to 29.69 inches by the morning of February 29, decreased to 29.35 inches by the morning of March 3, increased to 30.20 inches by the morning of the 6th, and decreased to 30.08 inches by the end of the week. The mean reading for the week at sea level was 29.72 inches, being 0.26 inch below that of the preceding week, and 0.34 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 61¼° on March 5 to 50½° on February 29; the mean value for the week was 54°. The lowest temperatures of the air observed by night varied from 34¾° on March 2 to 48° on the 5th; the mean value for the week was 42½°. The mean daily range of temperature in the week was 11½°, the greatest range in the day being 17°, on March 2, and the least 7½°, on the 3d.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—Feb. 29, 46°.6, + 6°.4; March 1, 45°.6, + 5°.3; 2d, 44°.3, + 3°.9; 3d, 49°, + 8°.5; 4th, 48°.6, +8°.1; 5th, 53°.6, + 13°.1; 6th, 49°.3 + 8°.8. The mean temperature of the air for the week was 48°.1, being 7°.7 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 110¾° on the 5th, 102½° on the 4th, and 100½° both on March 1 and 6; on the 3d the reading did not rise above 72°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 33° on March 2, and 33½° on the 1st; the mean of the seven lowest readings was 39¼°.

Wind.—The direction of the wind was S.W., and its strength strong. The weather during the week was fine, and very mild, but windy; a violent gale prevailing on March 2.

Rain fell on three days, the amount measured was 0.30 inch.

England: *Temperature.*—During the week ending Saturday, March 6, the highest temperatures of the air observed by day were above 59° at Blackheath (London), Cambridge, and Norwich, and below 55° at Brighton and Bradford; the mean value for the week from all stations was 57°. The lowest temperatures of the air observed by night were below 34° at Wolverhampton, Nottingham, Sheffield, Liverpool, and Bradford, and above 37° at Truro, Plymouth, Brighton, and Norwich; the general mean from all places was 35°. The extreme range of temperature in the week was above 26° at Blackheath and Cambridge, and below 19° at Plymouth, Bristol, and Brighton; the mean range from all stations was 22°.

The mean of the seven high day temperatures was above 54° at Truro, Blackheath, and Cambridge, and below 51° at Bristol, Bradford, and Leeds; the mean value from all places was 52½°. The mean of the seven low night temperatures was below 42° at Brighton, Wolverhampton, Nottingham, Sheffield, Hull, Bradford, Leeds, and Sunderland; and above 45½° at Truro and Plymouth; the mean from all stations was 42¼°.

The mean daily range of temperature in the week was above 12° at Cambridge, Nottingham, Sheffield, and Hull, and below 7½° at Plymouth and Bristol; the mean daily range from all places was 10½°.

The mean temperature of the air for the week from all stations was 46¾°, being 5° higher than the value for the corresponding week in 1879. The mean temperature was above 48° at Truro, Plymouth, Blackheath, and Cambridge, and below 45° at Hull and Bradford.

Rain fell on every day in the week at Bradford, and on five or six days at several other places. The heaviest falls were in Yorkshire, and the amounts varied from 1.87 inch at Bradford, 1.68 inch at Sheffield, 1.64 inch at Hull, 1.62 inch at Bristol, and 1.40 inch at Leeds, to 0.30 inch at Blackheath, 0.33 inch at Norwich, and 0.35 inch at Brighton; the average fall over the country was 0.92 inch.

The weather during the week was generally fine, but stormy.

Snow fell at Liverpool on the 2d, but was general in Yorkshire on the 1st and 2d. On the 2d, at Blackstone Edge, the depth of snow was from 5 to 6 inches; and on the hills near Sheffield from 3 to 4 inches.

Lightning was seen at Cambridge on the 4th and 5th.

Scotland: *Temperature.*—During the week ending Saturday, March 6, the highest temperatures of the air observed by day varied from 55° at Dundee to 51¼° at Greenock; the mean value from all places was 53¼°. The lowest temperatures of the air observed by night varied from 31¼° at Greenock to 35½° at Glasgow; the mean from all stations was 33°. The mean range of temperature in the week from all places was 20¼°.

The mean temperature of the air for the week from all stations was 42¾°, being ¼° below the value for the corresponding week in 1879. The mean temperature was the highest at Leith, 44¼°, and the lowest at Greenock, 40¾°.

Rain.—The heaviest falls of rain measured during the week were 2.50 inches at Greenock, and 1.89 inch at Paisley, and the least fall was 0.11 inch at Aberdeen; the average fall over the country was 1¼ inch.

Dublin.—The highest temperature of the air was 56¾°, the lowest 32°, the range 24¾°, the mean 46¾°; and the fall of rain 1.67 inch.

JAMES GLAISHER, F.R.S.

Reports of Societies.

Royal Horticultural: *March* 9.—Contrary to general expectation there was a very fair display of spring flowering plants in the large conservatory, but the attendance of visitors was very small. Messrs. William Paul & Son, Waltham Cross, were awarded a Silver Banksian Medal for a splendid display of cut Camellia blooms, consisting in all of nine boxes full. Medals of similar value were also accorded to Messrs. Osborn & Son, for a large and attractive group of forced flowering plants; to Mr. Aldous, for a smaller group of decorative flowering and fine-foliaged plants; to H. Little, Esq., for a group of well-grown Primulas, Cinerarias, and Amaryllis, including a large and very handsome specimen of Cyclamen White Model. To Mr. William Bull, a Silver Banksian Medal was voted for a charming group of Orchids and other flowering plants; and Messrs. Barr & Sugden received a similar award for an exceedingly effective group of well-grown Cyclamens. Mr. B. S. Williams received a Bronze Banksian Medal for a fine group of Cyclamens, and Messrs. Carter & Co. one of the same class for a group of Cyclamens. An attractive group of decorative plants also came from Chiswick, including a number of specimens of Imantophyllum miniatum, three forced plants of Wistaria sinensis, &c.

Scientific Committee.—Sir J. D. Hooker, K.C.S.I., in the chair.

Galvanised Wire and Peach Shoots.—The Rev. G. Henslow gave an account of the microscopical appearances in the shoot referred to him at the last meeting. The younger tissues were quite dead, but whether death resulted from mechanical pressure, or from some destructive chemical action set up by the galvanised wire, there was no evidence to show. Dr. Masters showed another specimen received from Mr. Hudson, gr., Gunnersbury House, and which had been so tied that no injurious constriction could have taken place, though possibly some amount of friction might have occurred occasionally. The appearances

presented were consistent with the notion that the effects were due to frost.

Plants Exhibited.—From Mr. Bull, Fritillaria oranensis; from Mr. G. F. Wilson, Begonia sp., referred to Kew for name; from Rev. H. Harpur-Crewe, Galanthus Redoutei, a remarkably distinct species, with almost globose flowers, and leaves like those of Scilla amœna; and Corydalis Kolpakowskyana, with flowers of pale flesh-colour.

Effects of the Winter of 1879-80.—On the suggestion of Mr. Elwes, a sub-committee was appointed to collect evidence as to the effect of the severe frost on vegetation.

Electric Light.—Mr. W. T. Thiselton-Dyer proposed the appointment of a sub-committee to investigate certain points of vegetable physiology of interest to cultivators by means of the electric light. There was reason to believe that facilities for the purpose might be obtained at Kew in connection with the Jodrell laboratory.

Floral Committee.—Dr. Denny in the chair. Messrs. James Veitch & Sons exhibited the New Bornean Pothos ceratocaulis, described at p. 200; a plant of the handsome Dendrobium crassinode Barberianum with two splendid spikes of flowers, to which a Cultural Commendation was awarded; a flowering plant of the scarce Lælia Dormanniana, and several seedling forms of Amaryllis. Cut flowers of Rhododendron fulgens, obtained from trees growing in the open air, were shown by Mr. Cox, The Gardens, Redleaf, Penshurst, Kent; and Mr. J. Harris, gr. to Mrs. Vivian, Singleton, Swansea, sent some cut blooms of Rhododendron barbatum, also grown in the open air. Mr. Melville sent from Dunrobin cut flowers of several varieties of Snowdrop; and Mr. James showed a set of single blooms selected from his this season's batch of seedlings, and which were Highly Commended. Messrs. E. G. Henderson & Son showed flowering plants of several varieties of double-flowered Primulas, the best of which as decorative plants being the old Double White and the old Double Purple; while amongst those well worth growing to supply full double flowers for wiring were Miss Eva Fish, a pretty shaded rosy-lilac flower, and Princess of Wales, pure white. Mr. Speed, of Chatsworth, received a vote of thanks for a fine flowering specimen of Renanthera coccinea, from 7 to 8 feet high, and bearing two branching spikes of its deep scarlet flowers, and the remains of several previous bloom-spikes. Mr. Harding, gr. to the Marchioness of Huntley, Orton Hall, Peterborough, received a vote of thanks for cut blooms of Clianthus puniceus, and the still more beautiful Clianthus Dampieri. From Mr. R. Dean, of Ealing, came examples of the pretty bedding Primrose, lilacina, also of the fine dark maroon coloured Primrose auriculæflora, and a pretty variety named Cardinal, of a lighter shade of colour than the former, and having a short pink line in the centre of the margin of each segment. Mr. Rapley, gr. to J. Brand, Esq., Bedford Hill House, Balham, showed a seedling Cineraria named George Brand, a large bold decorative flower, purplish-crimson in colour. A full rich regal-purple coloured Cineraria, named Intensity, was also shown by Mr. Cannell. From G. F. Wilson, Esq., came a species of Begonia received from New Granada, with a graceful pendulous habit, very small grass-green leaves, and small pink flowers. Mr. Bull also contributed a small group, conspicuous amongst which were Cattleya Trianæ var. rosea, Odontoglossum Ruckerianum with one good spike, the Indian Dendrobium Freemanni, and a very pretty Algerian species of Fritillaria named oranensis (see fig. 62). Mr. G. Baker, Combe Cottage, Kingston-on-Thames, showed a very handsome seedling Amaryllis named marginata superba, with four grand flowers, white, heavily banded with crimson. Messrs. James Carter & Co. exhibited a scarlet-flowered species of Fuchsia, received from Mexico, and which has the peculiarity of producing its flowers on the old wood before producing leaves. The same firm also exhibited examples of two new Fern-leaved Chinese Primulas, one of which may be considered the nearest approach to a blue Primula that has yet been obtained. The colour is a pale shade of porcelain-blue. A prettily fringed Fern-leaved and white-flowered variety was also shown by Mr. B. S. Williams; and Mr. H. Bennett, of Stapleford, exhibited a seedling Tea Rose named Lady Mary Fitzwilliam, a large, full, double flower, rose-pink in colour, and deliciously scented. Messrs. Paul & Son, Cheshunt, contributed a nice assortment of cut blooms of Camellias; and from the Rev. J. G. Nelson, Aldborough Rectory, Norwich, came flowering examples of his new hybrid Lachenalia.

New Plants Certificated.

First-class Certificates were awarded to Messrs. James Veitch & Sons, for Polystichum tripteron, a Japanese species with pinnate fronds of a bright green colour, remarkable for their narrow outline, and for the two much enlarged basal pinnæ. To Mr. H. Cannell, Swanley, for Fuchsia pendulæflora, a showy and attractive plant, with the character of F. corymbiflora in miniature, but which was generally believed to be the same as F. boliviensis. To Mr. Greenfield, The Priory Gardens, Warwick, for Cineraria Mrs. Thomas Lloyd, the finest double-flowered variety that has yet been shown—the almost globular full double flowers measuring 1½ inch in diameter, and in colour a rich deep shade of purplish-magenta. To Mr. James, Redlees Gardens, Isleworth, for Cineraria Master Harold, one of the most perfect single-flowered varieties that even this successful raiser has yet obtained. It is a crimson shade of magenta in colour, with a white ring surrounding a grey disc, and in form, substance, and colour, excepting only the grey disc, is all that the most fastidious florist could desire. To Mr. Wiggins, gr. to H. Little, Esq., Hillingdon Court, Uxbridge, for Primula sinensis var. Meteor, a rich crimson-scarlet in colour, but scarcely up to first-class form, and as shown certainly not so decorative a plant as Chiswick Red. To Mr. King, gr. to J. Simpson, Esq., Wray Park, Reigate, a Second-class Certificate was awarded for a large white-flowered seedling Abutilon named Purity.

Variorum.

Theory and Practice.—Hypothesis is a veritable Scylla, that captivates the imagination, and often sends the visionary to destruction, while practice alone is a hard-hearted Charybdis, that lures the matter-of-fact practical man to folly and expense. Practice must be tempered with theory to utilise advantageously the great forces of Nature, and theory itself must be based on practice, or on facts, to be comprehensive and acceptable. Hence success is the offspring of the marriage of practice and theory. . . . What is theory? It is an explanation of the hidden cause of certain effects that are evident to the senses. It is an effort of the imagination to account for operations which are in themselves invisible and insensible, but which result in facts which are observable and known. Hypothesis is an imaginary explanation of the cause of certain phenomena which remains to be shown probable or proved to be true. Theory is this supposition when it has been shown to be highly probable, and all known facts are in agreement with its truth. . . . The criterion of a good theory is its power of prediction. A false theory has never led to prevision—neither the corpuscular theory of light, nor the fluid theories of heat and electricity, ever led to the prediction of something which eyes had not seen, nor ears heard. The triumphs of prediction in astronomy, sound, light, and heat, are innumerable. *Preece.*

Vitality of Seeds.—The greater portion of St. George's Hills, Byfleet, is covered with Scotch Fir. In one particular locality, where the trees have attained large dimensions, it has been the custom to plant from time to time various kinds of shrubs, &c. Now it is rather remarkable that, although there is no natural undergrowth of any kind at this particular place, as soon as the soil is turned over to a certain depth a quantity of Birch seedlings show themselves, thus proving that the soil must be full of seeds of this tree. Within the memory of man no Birch has grown there, but evidently at one time it must have existed in quantity. There is no means of knowing how long these seeds have been lying in the earth; but, as they have become covered with a body of soil thick enough to prevent their germinating, it must have been at some remote period in the history of this country. *J. C. B., in the "Field."*

A Note on the Weather of 1880. — Our forefathers used to

"Divine by the firste daye of the yere and by the Crystmasse daye what it shall falle in the yere followynge. If it falle on the Sondaye the wynter shall be good and the somer good and drye and plente of wyne. Oxen and sheep shall well wexe and multiplye. Olde men and olde women shall deye, and peas and accord shall be made that yere also.

"The kalendas of Januarye fell on thursdaye whan as theye saye shulde falle plente of all good and peas also. [It did in this present year of grace 1880.]

"All the yere foloweth the dysposycyon of the xii days in Crystmasse. So that the fyrste moneth shall be suche in Wedrynge as the fyrste daye of the xii dayes is, the seconde moneth as the seconde daye is, and so forth all folowynge." "*Dives and Pauper,*" 1496, 1st Comm. cap. xlvii. xlviii.

Mackenzie E. C. Walcott, in "Notes and Queries."

Giant Gum Trees. — One of the most remarkable trees, which was pointed out to me by Mr. T. Kirk, F.L.S., is the Rata, a Metrosideros, M. robusta. This, though a myrtaceous plant, has all the habits of the Indian Figs,* reproducing them in the closest manner. It starts from a seed dropped in the fork of a tree, and grows downward to reach the ground, then taking root there and gaining strength, chokes the supporting tree and entirely destroys it, forming a large trunk by fusion of its many stems. Nevertheless, it occasionally grows originally directly from the soil, and then forms a trunk more regular in form. Another Metrosideros, M. florida, is a regular climber. *Notes of a Naturalist on the "Challenger," by H. N. Moseley.*

Cheapness of Corn in the Sixteenth Century.—Here is a curious and amusing extract from *Pepys' Diary* of January 1, 1668:—"Dined with my Lord Crewe, with whom was Mr. Browne, clerk of the House of Lords, and Mr. John Crewe. . . Here they did talk much of the present cheapness of corne, even to a miracle; so as their farmers can pay no rent, but do fling up their lands; and would pay in corne; but (which I did observe to my lord and he liked well of it), our gentry are grown so ignorant in everything of good husbandry, that they know not how to bestow this corne; which, did they understand but a little trade, they would be able to joyne together, and know what markets there are abroad, and send it thither, and thereby ease their tenants and be able to pay themselves." *The Farmer.*

* T. Kirk, F.L.S., "On the Habit of the Rata, Metrosideros robusta," *Trans. New Zealand Inst.*, vol. iv., 1871, p. 26.

Obituary.

We regret to record the death, on the 26th ult., of Mr. William Halliday, for many years assistant to Mr. Marnock, in which capacity he made a host of friends. He commenced his career in the Royal Botanic Society's Garden, Regent's Park, and subsequently entered the service of Messrs. James Veitch & Sons, with whom he stayed for several years, and then became assistant to Mr. Marnock, with whom he remained until that gentleman retired a year or two ago. Mr. Halliday then commenced business as a landscape gardener at Sheffield, with the prospect of a successful career before him. He was, however, attacked by acute bronchitis, and died on February 26, at the comparatively early age of forty-five. He was buried on March 2, at West Brompton, several of his oldest friends attending to pay the last mark of respect that could be shown to a very worthy man.

—— Died, on the 9th inst., at 15, Brownswood Park, Stoke Newington, Sarah Elizabeth, the beloved wife of Shirley Hibberd, in her 57th year.

Answers to Correspondents.

Artificial Manures: *J. Marshall.* You cannot do better than continue to use what you have found very good.

Begonia: *R. Keen.* The Begonia is a splendid thing in its way, whatever its habit. Of this latter we can form no idea, as you do not send a leaf nor any indication of its parentage. The flowers, clustered in great bunches at the ends of a thrice-branched dichotomous cyme, are large and of a brilliant vermilion-red.

Brazilian Plants: *Young Beginner.* There are many fine Brazilian Orchids and various bulbs, such as Hippeastrums, well worth growing. There is no reason why these should not flourish in your two vineries, provided you can transfer them to other suitable pits or houses when the Vines require to be kept dry and cool.

Calceolarias: *C. Richards.* Your last year's seedlings ought to be "inclined" to blossom now.

Cauliflower Plants: *R. P. W.* We can offer no further suggestion. The leaves had all the appearance of being eaten by thrips. What had been previously growing in the frame into which they were pricked out? Was the soil used fresh, or had some other insect-bearing crop been grown in it?

Leather Parings: *W.* These, like horn-shavings, consisting of animal matter, make a useful manure. We cannot tell you the price.

Names of Plants: *E. C. M.* 7, Pleopeltis pustulata; 8, Asplenium marinum; 9, Cyrtomium caryotideum; 10, Niphobolus Lingua; 11, Lastrea quinquangulare; 12, Candollea cuneiformis; 13, Coronilla Emerus.—*H. M. E.* The Cape Pond-weed (Aponogeton distachyon). It must have been thrown out of some garden pond, as it is very unlikely it would have grown in a Cornish salt marsh.—*R. F.* Rhododendron fulgens.—*Mrs. C. Maynard.* 1, Smilax aspera; 2, Quercus Ilex; 3, indeterminable; 4, Cistus sp., no flowers; 5, Euphorbia sp., no flowers; 6, Thymelæa hirsuta.—*W. A. C.* 4, Columnea erythrophæa (not C. hirsuta, as inadvertently printed last week).—*F. R. Smith.* Cypripedium barbatum—very different from Maulei, which is a variety of C. insigne. — *R. S. H.* 2, Ilex opaca. The Pinus next week.

New Zealand: *A Young Gardener.*—We know of no reason why you should not do well, if you have a fair knowledge of your business, and go out with a determination to succeed. At first you would probably have to accept what work you could get, until you learn your way about.

Primulas: *J. Tomkins.* They are all three very fine sorts. The carmine-crimson is a bright and effective

sort—bold, and well fimbriated; the purple has a bright magenta tint, and contrasts finely with the crimson; these are from 1¾ to 2 inches across. The blush flower with a large yellow eye is particularly striking on account of its size, being nearly 2½ inches in diameter.—*A. M.* Your "long-leaved" form is what is called the Fern-leaved Chinese Primrose. This form originated in a sport from seed at least a quarter of a century ago, and there are now white and red-flowered varieties, both single and double, having this distinct and peculiar type of foliage.

TEA ROSE: *H. Bennett.* The flower of Hon. George Bancroft was a little gone off when it came to hand, but enough remained to show it to be a most desirable dark purplish-tinted variety.

VIOLA ARGENTIFLORA: *G. Lee.* Much the finest single white Violet we have yet seen, and very fragrant.

WATERING VINE BORDER: *Young Gardener.* No; the warm water is certainly preferable to cold, as it would not chill the roots. Much, however, would depend on the season of the year and the stage of growth of the Vines.

WINDOW FLOWER BOXES: *J. A. E.* We think your best plan would be to look into Covent Garden, and there you will see the flowers that can be easily procured, and suit your own taste as to the kinds; or contract with some one who undertakes furnishing of this sort. The best things in season of this particular class of plants are sure to be found in the market.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—Ellwanger & Barry (Mount Hope Nurseries, Rochester, New York), Descriptive Catalogue of Fruits, and Descriptive Priced List of Strawberries.—Harrison & Sons, Leicester), Price List of Choice Seeds for the Farm.—Max Deegen, Jun. (Köstritz, Thuringia), Catalogue of Dahlias.

COMMUNICATIONS RECEIVED:—A. B.—H. C.—W. H. D.—J. V. & Sons.—Sir T. L.—T. N. S.—P. Fry.—J. C. & Co.—T. B.—C.—F. B.—J. E.—W. M. G.—G. F.—A. H.—C. L.—W. G. S.—J. E. H.—D. N.—E. R. C.—E. W. B.—M.—N. W.—J. K.—J. B.—A. T. S. (as soon as the pressure on our space will permit).—C. S. & Co.—G. T. A.—A. M.—J. E. T. A.—C. H. F.

Markets.

COVENT GARDEN, March 11.

Business is still quiet, with a good demand for well-kept Grapes. Outdoor vegetables have experienced a great decrease in value. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Oranges, per 100	6 0–12 0
— American, barrl.	18 0–30 0	Pears, per dozen	4 0– 8 0
Cob Nuts, per lb.	1 0– ..	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb.	10 0–12 0	Strawberries, per oz.	1 6– 2 0
Lemons, per 100	3 0–10 0		

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	6 0–10 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— English, p. 100	12 0– ..	Mint, green, bunch	1 6– ..
— French, per bun.	7 0–25 0	Mushrooms p. baskt.	1 6– 2 0
Beet, per doz.	1 0– 2 0	Onions, per bushel	8 0– ..
Brussels Sprouts, lb.	0 6– ..	— Spring, per bun.	0 6– ..
Cabbages, per doz.	1 0– 2 0	Parsley, per lb.	1 6– ..
Carrots, per bunch	0 8– ..	Peas, per lb.	1 0– ..
— French, per lb.	0 6– ..	Potatos (new), per lb.	0 3– 0 9
Cauliflowers, per doz.	2 0– 5 0	Rhubarb (Leeds), per bundle	0 9– ..
Celery, per bundle	1 6– 4 0	Seakale, per punnet	3 0– ..
Chilis, per 100	3 0– ..	Shallots, per lb.	0 6– ..
Cucumbers, each	1 0– 2 0	Spinach, per bushel	5 0– 6 0
Endive, per score	4 6– ..	Tomatos, per dozen	3 0– ..
Garlic, per lb.	0 6– ..	Turnips, new, bunch.	0 6– ..
Herbs, per bunch	0 2– 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s* to 160*s.*; and Champions, 150*s* to 190*s.* per ton. German, 6*s.* to 7*s.* 6*d.* per bag; new English, 2*s.* per lb.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ficus elastica, each	1 6– 7 6
Azaleas, per dozen	18 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–18 0	Fuchsias, per dozen	9 0–15 0
Bouvardias, per doz.	12 0–24 0	Genista, per dozen	9 0–18 0
Cinerarias, per doz.	6 0–12 0	Hyacinths, per doz.	4 0– 9 0
Cyclamen, per dozen	9 0–24 0	Myrtles, per doz.	6 0–12 0
Cyperus, per dozen	4 0– 9 0	Palms in variety, each	2 6–21 0
Dielytra, per doz.	9 0–15 0	Pelargoniums, scarlet zonal, per doz.	6 0– 9 0
Dracæna terminalis	30 0–60 0	Primula, single, per dozen	4 0– 6 0
— viridis, per doz.	12 0–24 0	Solanum, per dozen	6 0–12 0
Erica gracilis, per dozen	9 0–18 0	Tulips, 12 pots	6 0–12 0
— hyemalis, p. doz.	6 0–24 0		
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Narcissus, Paper-white, 12 spikes	1 0– 1 6
Arum Lilies, per dozen	4 0– 9 0	Pelargoniums, 12 spr.	1 6– 3 0
Azalea, 12 sprays	0 6– 1 0	— zonal, 12 sprays	0 6– 1 0
Bouvardias, per bun.	1 0– 4 0	Primroses, 12 bunch.	1 0– 1 6
Camellias, per doz.	1 0– 6 0	Primula, double, per bunch	0 6– 1 0
Carnations, per dozen	1 0– 3 0	— single, per bunch	0 6– ..
Cyclamen, 12 blms.	0 4– 1 0	Roses (indoor), doz.	1 6– 9 0
Epiphyllum, 12 blms.	0 6– 1 0	— Roses, Fr., doz.	2 0– 6 0
Eucharis, per doz.	4 0– 9 0	Snowdrops, 12 bunch	1 6– 3 0
Euphorbia, 12 sprays	3 0– 6 0	Spiræa, 12 sprays	1 0– 2 0
Gardenias, 12 blms.	4 0–12 0	Tropæolum, 12 bun.	1 0– 3 0
Heliotropes, 12 sp.	0 6– 1 0	Tuberoses, per dozen	4 0– 6 0
Hyacinths, 12 spikes	4 0– 9 0	Tulips, 12 blooms	1 0– 1 6
— small	1 6– 4 0	Violets, Fr., per bun.	1 6– 2 6
— Roman, 12 spikes	1 0– 2 0	— English, p. bun.	1 0– 2 0
Lily of Val., 12 spr.	0 9– 2 0	White Lilac, Fr., per bundle	4 0– 8 0
Mignonette, 12 bun.	6 0– 9 0		

SEEDS.

LONDON: *March* 10.—Messrs. John Shaw & Sons, of 37, Mark Lane, state that the consumptive demand for sowing having now begun in earnest, a daily increasing activity is seen on the seed market. With regard to values a fair amount of steadiness is apparent all round. Some very handsome new Canadian red Clover is now obtainable on Mark Lane at exceedingly moderate prices. The imports of Clover and grass seeds into the United Kingdom for the past month amounted to £225,995, against £162,317 for the corresponding month of last year. There is more inquiry for Italian Rye-grass. Spring Tares are rather scarce, and being in good request realise more money. White Dutch runner Beans are now unusually cheap. Very moderate quotations also rule for Haricots, Lentils, and white boiling Peas. There is no change in either Canary, Millet, or Hemp seed. The trade for feeding Linseed is slow.

CORN.

At Mark Lane on Monday no change was quoted in the value of Wheat, but the trade was very slow, and any pressure to sell was accompanied with a reduction. Barley found but few buyers, and rates were with difficulty supported. Malt was quiet and without alteration in price. Oats moved off slowly, and except for the best corn prices ruled in buyers' favour. Maize was dull, and in some instances rather easier in price. Beans and Peas were taken off to a limited extent on former terms. Flour met with a poor enquiry, and quotations had a drooping tendency.—Trade for Wheat on Wednesday was exceedingly quiet; the tone was dull, with a tendency to lower prices. Prime malting Barley was scarce and quite as dear as on Monday, but for the other kinds the trade was slow. Oats, Beans, and Peas were steady in price, but the flour trade was decidedly quiet.—Average prices of corn for the week ending March 6:—Wheat, 44*s.* 7*d.*; Barley, 34*s.* 2*d.*; Oats, 22*s.* 4*d.* For the corresponding period last year:—Wheat, 39*s.* 1*d.*; Barley, 34*s.* 4*d.*; Oats, 20*s.* 5*d.*

CATTLE.

At Copenhagen Fields on Monday trade was active for choicest kinds of beasts, otherwise it was slow, and prices on the average were no better, with a few lots left unsold. Trade in sheep was dull, consequently it was difficult to realise the previous Monday's quotations, except for very best qualities. Good calves were scarce and dear. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.*, and 5*s.* 4*d.* to 5*s.* 10*d.*; calves, 5*s.* to 6*s.* 6*d.*; sheep, 5*s.* to 5*s.* 6*d.*, and 6*s.* to 6*s.* 10*d.*; pigs, 3*s.* 6*d.* to 5*s.*—Thursday's cattle trade was inactive and without feature. Supplies of beasts and sheep were about the average for a Thursday. Throughout the demand was restricted to Monday's prices. Calves were quiet and unaltered.

HAY.

From Tuesday's Whitechapel Market report we learn that there was a small supply and a steady sale at the annexed quotations:—Prime Clover, 100*s.* to 130*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 100*s.*; inferior, 50*s.* to 70*s.*; and straw, 30*s.* to 38*s.* per load.—On Thursday there was a moderate supply of fodder on sale. The trade was good for best sorts, prices for which were firm, lower sorts being neglected.—Cumberland Market quotations:—Superior meadow hay, 100*s.* to 110*s.*; inferior, 40*s.* to 75*s.*; superior Clover, 120*s.* to 132*s.*; inferior, 84*s.* to 100*s.*; and straw, 36*s.* to 40*s.* per load.

POTATOS.

The Borough and Spitalfields Markets reports state that the trade has been steady. Supplies are only moderate, and sound Potatos are firm in price. Scotch Regents, 140*s.* to 160*s.*; Champions, 180*s.*; Lincoln, 180*s.*; Victorias, 160*s.* to 180*s.* per ton; German reds, 6*s.* 6*d.* to 8*s.*; Dutch rocks, 5*s.* 6*d.* per bag.—During last week 155,000 bags were received at London from Hamburg, while the arrivals from other parts of the Continent were on the same liberal scale.

Government Stock.—On Monday the closing price of Consols for delivery was 97¾ to 97⅞, and for the account 98 to 98⅛. Tuesday's figures were, for delivery, 97½ to 97⅝, and 97 1/16 to 97 13/16 for the account. The closing prices of Wednesday were, for delivery, 97¾ to 97⅞, and 97 15/16 to 98 1/16 for the account. The final figures posted on Thursday were 97⅞ to 98 for delivery, and 98 to 98⅛ for the account.

The Manufacturers of this valuable Manure have hitherto thought it best not to publish Testimonials, as they have particularly wished that no exaggerated statements should appear respecting it. They consider, however, that the opinion of the well-known Florists, Messrs. J. & J. Hayes, of Edmonton—than whom there are no better Plant Growers in England—will be considered of especial value:—

"Dear Sirs,

"We have been using Clay's Fertiliser largely for some years, and are pleased to say that we consider it by far the best Manure we have ever tried.

"J. & J. HAYES."

Sold in Packets 1s. each, and in Bags,

¼ Cwt.	½ Cwt.	1 Cwt.
7s. 6d.	12s. 6d.	20s.

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Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.

Fresh SPHAGNUM, 10s. 6d. per bag.

WALKER AND CO., Farnborough Station, Hants.

PEAT.—Superior Black or Brown Fibrous Peat, for Rhododendrons, Azaleas, Orchids, &c., as used by all the noted Growers. Trucks containing 6 tons loaded at Bagshot or Camberley Stations, S. W. R., £4 4s. Address, W. TARRY, Bailiff, Golden Farmer, Farnborough Station.

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Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

TO Gardeners.

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An Important Discovery.

SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1s. 6d., 2s. 6d. and 12s. 6d. each. Special quotations for large quantities.

London Agents: HOOPER AND SONS, Covent Garden, and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

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TRAINING STICKS and LABELS,
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WHOLESALE RUSSIA MAT WAREHOUSE. Importers of RAFFIA FIBRE, TANNED NETTING, 1, 2, and 4 yards wide.—MARENDAZ AND FISHER, James Street, Covent Garden, W.C.

Established 150 years.

WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

	Inches.	Inches.		
15-oz.,	6 × 4 to	8 × 6,	11s., 12s., 13s., 14s.	Per 100 ft. Box.
	9 × 7 to	12 × 9,	12s., 14s.9d., 15s.3d., 16s. 3d.	
	13 × 9 to	18 × 12,	12s. 6d., 15s., 16s., 17s.	
	20 × 12 to	24 × 16,	12s.9d., 15s., 16s 6d., 17s.9d.	
	20 × 17 to	24 × 18.	12s.9d., 15s., 16s.6d., 17s.9d.	
	Inches.	Inches.		
21-oz., Orchard House,	20 × 12,	20 × 13,	16s. 6d., 19s. 3d., 20s., 21s.	
	20 × 14,	20 × 15,		
	20 × 16,	20 × 17,		

15-oz., for Cutting up, 35s., 39s., 46s., 50s. per 300 feet case.
21-oz., for Cutting up, 35s., 39s., 46s., 55s. 6d. per 200 feet case.

LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.

Lists on application.

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HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 200 feet,

Carriage Paid to any Railway Station in England.

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BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities, of

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9, LOWER THAMES STREET, LONDON, E.C.

B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

DOULTON & CO.,

LAMBETH POTTERY, LONDON, S.E.

VASES, PEDESTALS, FOUNTAINS, GARDEN EDGINGS, &c.,

IN

IMPERISHABLE TERRA COTTA,

PLAIN AND ORNAMENTAL PAVINGS.

TILES FOR LINING WALLS OF **Conservatories.**

NEW and EXTENSIVE SHOW ROOMS,

ALBERT EMBANKMENT, LONDON, S.E.

A LARGE STOCK OF GOODS ALWAYS ON HAND.

PRICE LISTS FORWARDED on APPLICATION.

DOULTON & CO., LONDON, S.E.

Geometrical Mosaic and Encaustic

TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.

MAW AND CO., Benthall Works, Broseley, Shropshire.

"THE GARDEN" POTTERY.—"Your pots are the best."—Mr. PAYNE, *Gr. to the* Rt. Hon. and Rt. Rev. the Lord Bishop of Bath and Wells.

Works:—Chilcompton and Evercreech Junction Stations.

Address:—T. J. HICKES, Shepton Malet.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.

T. ROSHER AND CO., Brick and Tile Merchants.

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SILVER SAND, fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries.

KENT PEATS or LOAM supplied at lowest rates in any quantities.

F. ROSHER AND CO.—Addresses see above.

N.B.—Orders promptly executed by Rail or to Wharves.

A liberal Discount to the Trade.

ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.

ALFRED GRANT AND CO., Steam Works, 39½, Leather Lane, London, E.C.

GARDEN BROOMS, handles included, 3s., 4s., and 5s. per dozen; STABLE BROOMS, 4s. and 6s. per dozen; and all kinds of BROOMS and BRUSHES at low prices. Special terms to the Trade and large cash buyers.

MANLEY AND CO., Long Lane, London, S.E.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.

TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards 20s.; 4 yards wide, 6d. per yard, or 50 yards 20s.

NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.

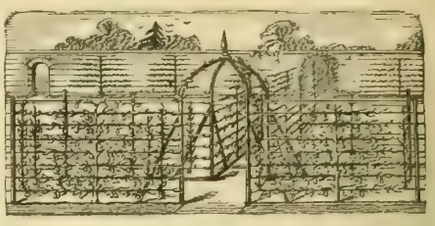
TIFFANY, 5s. and 6s. per piece of 20 yards.

LAWN TENNIS NETS from 16s. to 25s.

EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

BOULTON & PAUL, NORWICH.

IMPROVED ESPALIER FENCING & WALL TRAINERS.



Estimates given free of charge for Espalier Trainers for Fruit Trees, &c The Espalier can be easily fixed, wood or stone blocks being unnecessary. In writing for estimates please give exact lengths required, with a rough sketch showing angles, if any.

FITTINGS FOR WIRING FRUIT WALLS.—Having a large stock, orders can be executed on receipt at reduced prices. Experienced workmen sent when required to fix Espaliers and Wall Trainers. Illustrated Lists, with full particulars, free on application.

WROUGHT IRON GARDEN ARCHES made to suit any situation—a large stock kept.

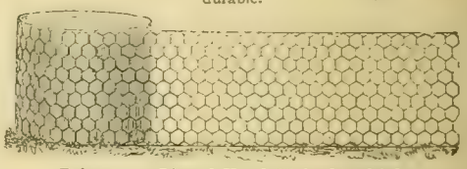
BOULTON & PAUL, NORWICH.

J. B. BROWN & CO.'S
GALVANISED WIRE NETTING

PARIS SILVER MEDAL,

1878.

WITH **IMPROVED REGISTERED SELVAGE,** making the Netting stronger more rigid, and much more durable.



Prices per Lineal Yard 24 inches high.

Mesh.	Mostly used for	Gauge.		Gauge.		Gauge.	
1⅝ in.	Small Rabbits, &c.	19	3d.	18	3½d.	17	4¼d.
1½ in.	Smallest Rabbits.	19	3½d.	18	4¼d.	17	5½d.

ILLUSTRATED PRICE LISTS of Wire Netting, Iron Hurdles, Bar and Wire Fencing, French Espalier Fencing and Wall Wiring for Training Fruit Trees, on application.

J. B. BROWN & CO.,
90, CANNON STREET, LONDON, E.C.

RALPH WALLER AND CO., 45, Dale Street, Manchester, Manufacturers of all kinds of GARDEN NETTING, &c., for protecting Fruit Trees from frost; also HOTHOUSE SHADINGS, of various thicknesses, superior to any other yet discovered for lightness, strength, and durability, standing as they do all weathers. TIFFANY, of various kinds, always on hand. NETTING and SHADING, in pieces 30 yards long by 1½ and 2 yards wide.

NETTING—No. 1, 4d. per square yard; No. 2, 3½d. per square yard; No. 3, 4½d. per square yard; and No. 3, 2 yards wide, 7½d. per run.

HOTHOUSE SHADINGS.

FINE NETTINGS, 4½d.; No. 6A., 7½d.; No. 6, 8½d.; No. 6 Improved, 9d. per square yard.

TIFFANY, No. 1, 3s. 6d.; No. 2, 4s. 6d. per piece of 20 yards long, 38 inches wide. Mineralised, 6d. per piece extra.

Samples on application.

SHAW'S TIFFANY.

SHAW'S ELASTIC NETTING.

The above articles, after twenty years' test, have been proved to be the best, cheapest, and most durable materials ever introduced for protecting plants and fruit-trees from spring frosts, and shading Hothouses in summer. The Advertisers, being the Inventors and Sole Manufacturers, caution the public against spurious Imitations, and to see that each piece bears the Makers' stamp, without which none is genuine.

For Samples and Prices apply to

JOHN SHAW AND CO.,

20, Oxford Street, Manchester.

WM. PETERS has still some good colour Soft ARCHANGEL MATS, very suitable for tying purposes, also ARCHANGEL and ST. PETERSBURG MATS, for covering.

JUST TO HAND, *ex Duart Castle*, a parcel of RAFFIA, fine quality, good colour, and extra strong.

SEED BAGS and SACKS. Specially prepared Sewing or Tying, White or Tarred TWINE, ROPES, LINES, &c. NETTING and SHADING CANVAS. RICK CLOTHS and WATERPROOF COVERS of all descriptions.

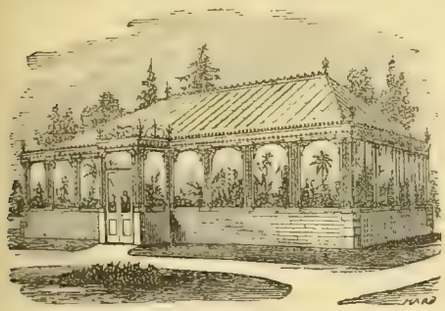
Prices on application to

44, Tenter Street South, Goodman's Fields, E., and Well Street Warehouses, London Docks, E.

W. G. SMITH & CO., VICTORIA WORKS, BURY ST. EDMUNDS,

SOLE MANUFACTURERS OF

BEARD'S PATENT METALLIC NON-CONDUCTING GLASSHOUSES.

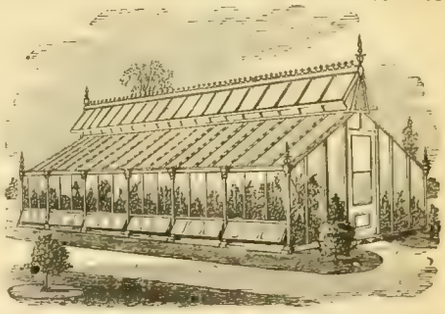


Iron Houses possess many valuable advantages over Wood. They are much more Durable, Lighter and Stronger. The Glass is screwed in between two layers of Elastic Material, whereby a perfect joint is secured without risk of breakage.

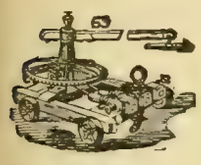
Catalogues and Price Lists Free.

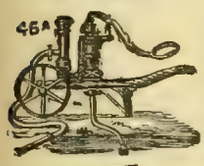
HEATING APPARATUS IN ALL ITS BRANCHES.

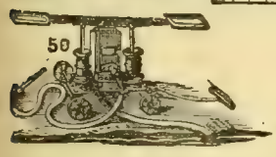
Plant Protectors, Cucumber and Melon Frames always in Stock.

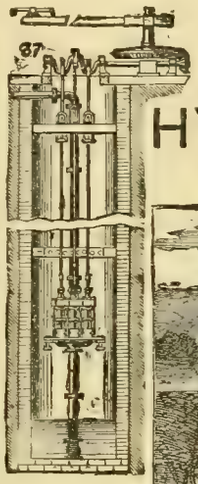


HORTICULTURAL BUILDINGS OF EVERY DESCRIPTION IN IRON OR WOOD.





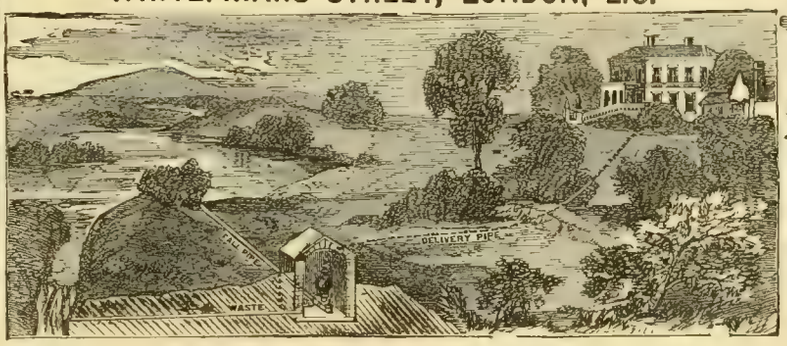


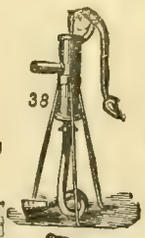


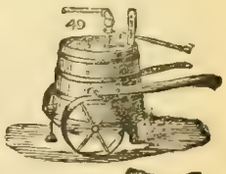
S. OWENS & CO.,

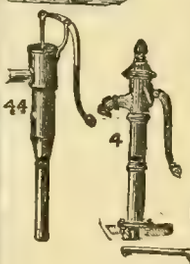
HYDRAULIC ENGINEERS,

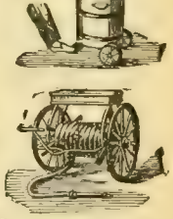
WHITEFRIARS STREET, LONDON, E.C.

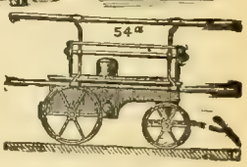












THE IMPROVED SELF-ACTING HYDRAULIC RAM.

This useful Self-acting Apparatus, which works day and night without needing attention, will raise water to any height or distance without cost for labour or motive-power, where a few feet fall can be obtained, and is suited for supplying Public or Private Establishments, Farm Buildings, Railway Stations, &c.

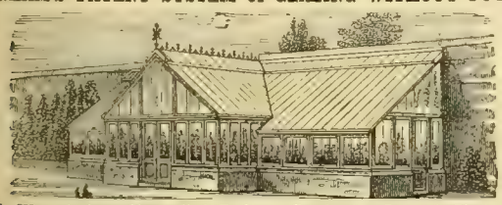
No. 37. DEEP WELL PUMPS for Horse, Hand, Steam, or other Power.
No. 63. PORTABLE IRRIGATORS, with Double or Treble Barrels for Horse or Steam Power.
No. 46*a*. IMPROVED DOUBLE-ACTION PUMPS on BARROW for Watering [Gardens, &c.
No. 49*a*. GALVANISED SWING WATER CARRIERS, for Garden use.
No. 50 and 54*a*. FARM and MANSION FIRE ENGINES of every description.
No. 38. PORTABLE LIQUID MANURE PUMPS, on Legs, with Flexible Suction.
No. 49. GARDEN ENGINES, of all sizes, in Oak or Galvanised Iron Tubs.
No. 54*b*. THE CASSIOBURY FIRE EXTINGUISHER, as designed for the Right Hon. the Earl of Essex.
No. 44. WROUGHT-IRON PORTABLE PUMPS of all sizes.
No. 4. CAST-IRON GARDEN, YARD, or STABLE PUMPS.
No. 39*b*. IMPROVED HOSE REELS for Coiling up Long Lengths of Hose for Garden use.

S. OWENS AND CO. Manufacture and Erect every description of Hydraulic and General Engineers' Work for Mansions, Farms, &c., comprising PUMPS, TURBINES, WATER WHEELS, WARMING APPARATUS, BATHS, DRYING CLOSETS, GASWORKS, Apparatus for LIQUID MANURE distribution, FIRE MAINS, HYDRANTS, HOSE PIPES, &c., &c.

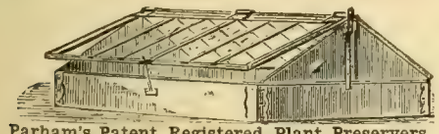
Particulars taken in any part of the Country. Plans and Estimates furnished.

ILLUSTRATED CATALOGUES CAN BE HAD ON APPLICATION.

PARHAM'S PATENT SYSTEM of GLAZING WITHOUT PUTTY.



With Wrought-iron Channelled Rafters, Continuous Lapped Glass, and Rainproof Ventilators under Glass Super Roof.



Parham's Patent Registered Plant Preservers,

With "Truss" Hinge, and no Principals. The Ridge always fits close, the interior is free from all obstruction, and the corners are secured in iron angle-plates: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
6 feet by 3 feet	.. ..	£2 7 6	12 feet by 3 feet ..	..	£4 0 0
6 feet by 4 feet	.. ..	3 0 0	12 feet by 4 feet ..	..	5 0 0
6 feet by 5 feet	.. ..	3 15 0	12 feet by 5 feet ..	..	6 5 0
6 feet by 6 feet	.. ..	4 15 0	12 feet by 6 feet ..	..	7 10 0

Any other sizes at proportionate price.

Both systems avoid the heavy expense of re-puttying and breakage of glass, and effect a great saving in cost of re-painting and repairs, combined with absolute freedom from drip.

The sole manufacture of both the above systems is carried on by

WILLIAM PARHAM,

Horticultural Builder and Hot-water Engineer,

NORTHGATE WORKS, BATH;

AND

280, Oxford Street, London, W.

(Who has purchased the Business of the late Firm of

CRANSTON AND LUCK,

Birmingham).

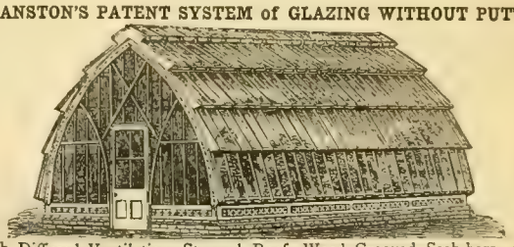
Specimens of both Systems on view at either address.

Illustrated Catalogues free.

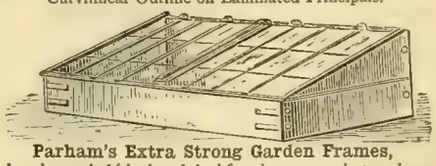
*** Orders amounting to £3 and upwards delivered free to any Railway Station in England and Wales, and to the Principal Ports in Ireland and Scotland.

No Charge for Packing Cases if returned free and in good condition.

CRANSTON'S PATENT SYSTEM of GLAZING WITHOUT PUTTY



With Diffused Ventilation, Stepped Roof, Wood Grooved Sash-bars, and Curvilinear Outline on Laminated Principals.



Parham's Extra Strong Garden Frames,

With 2-inch sashes and 1½-inch red deal framing, secured at each corner with two wrought-iron strap bolts: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
4 feet by 6 feet, 1 light ..		£2 2 0	16 feet by 6 feet, 4 lights..		£7 5 0
8 feet by 6 feet, 2 lights..		3 12 0	20 feet by 6 feet, 5 lights..		8 15 0
12 feet by 6 feet, 3 lights..		5 7 6	24 feet by 6 feet, 6 lights..		10 10 0

Patent Glazed Sash Lights, as above, with Sills and Bearers for Brickwork at proportionate prices.

GARDEN NETTING for Sale, in small or large quantities, for Protecting Fruit and Wall Trees, and Seed and Strawberry Beds from Birds, Blight, Frost, &c., 2 yards wide, 1*d* per yard; 4 yards wide, 2*d*. per yard, and any quantity of Netting required will be forwarded on receipt of Post-office Order made payable to
W. A CURTIS, 34, Jury Street, Great Yarmouth, Norfolk.

PROTECT YOUR PLANTS.

"FRIGI DOMO."

REGISTERED TRADE MARK.

THE BUSINESS of "FRIGI DOMO," recently carried on by the late Elisha T. Archer, is now the Sole Property of BENJAMIN EDGINGTON, with all registered Trade Marks and Rights.

MADE OF PREPARED HAIR AND WOOL.

A perfect non-conductor of heat or cold, keeping a fixed temperature where it is applied. It is adapted for all Horticultural and Floricultural purposes.

Protection from Cold Winds, Morning Frosts, and Scorching Rays of the Sun.

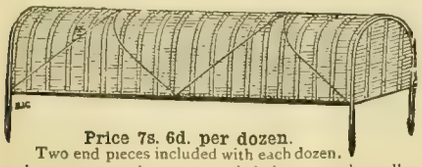
Introduced by the late Elisha T. Archer more than 20 years ago.
Cut to any Lengths required.
To be had of all Nurserymen and Florists.

FOR PRICE LIST & PARTICULARS ADDRESS:
BENJAMIN EDGINGTON
2 DUKE ST. LONDON BRIDGE

GOLD MEDAL
AWARDED TO
J. J. THOMAS & CO.,
Paris Exhibition, 1878,
For Wire applied to Horticultural Purposes.

PEA AND SEED GUARDS,

GREAT SUCCESS.
REDUCED PRICES, SEASON 1880.
Superior Quality. Galvanised after made.
NEW PATTERN, WITH DIAGONAL STAYS.
No. 76.—3 feet long, 6 inches wide, 6 inches high.



Price 7s. 6d. per dozen.
Two end pieces included with each dozen.

The above are strongly recommended, being much smaller in the mesh than the ordinary diamond pattern, and proof against the smallest birds.

ORDERS EXECUTED ON RECEIPT.

Illustrated and Priced Catalogues of Horticultural Wire-works, Fittings for Wiring Walls, &c., on application.

*** Five per cent. discount allowed for cash with order. Special quotations for large quantities.

J. J. THOMAS & CO.,
Paddington Iron and Wire Works,
285 and 362, EDGWARE ROAD, LONDON, W.
P.O. Orders to be made payable at 310, Edgware Road, N.

Protect your Fruit Trees, &c.

TANNED GARDEN NETTING, 1 yard wide, 1*d*., 2 yards wide, 2*d*., 3 yards wide, 3*d*., 4 yards wide, 4*d*. per yard.
SCRYM, TIFFANY, PATENT SHADING, &c.: sample-book of above, post-free two stamps.
SECOND-HAND BUNTING, all wool, 6*d*. per square yard.
ARCHANGEL and DUNNAGE MATS, &c.
Illustrated Catalogues of all their manufactures on application.
JOHN EDGINGTON AND CO. (Established 1805), Marquee, Tent, Flag, and Rick Cloth Makers to the Royal Family, 48, Long Lane, West Smithfield, London, E.C

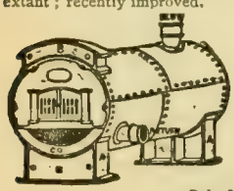
BROWN'S FLORAL SHADING.—A Protection for the Bloom of Wall Trees from frost, and for Shading Plants under Glass from the sun Sold by Nurserymen and Seedsmen. Prices and samples on application to BROWN AND CO. (late Charles Brown), Greenheys, Manchester.

REDUCED PRICES.

STEVENS'

TRENTHAM GREENHOUSE BOILER,

After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



Sole Makers,
F. & J. SILVESTER,
CASTLE HILL FOUNDRY, NEWCASTLE, STAFFORDSHIRE.

X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for
HOT-WATER PIPES and CONNECTIONS.
F. AND J. SILVESTER, Castle Hill Foundry, Engineering and Boiler Works, Newcastle, Staffordshire.

UNGLAZED PIT LIGHTS, 6 feet by 4 feet, 2 inches thick, iron strengthening rod through, 5*s*. each. Orders amounting to 40*s*. carriage paid.
BOULTON AND PAUL, Horticultural Builders, Norwich.

LAWN MOWERS — LAWN MOWERS.

New and Improved Machines for 1880.

SAMUELSON & CO.'S
NEW
"VILLA" AND "FAVORITE"
PATTERNS ARE THE BEST.

London Agents: HILL & SMITH, Queen Victoria Street
T. BRADFORD AND CO., Holborn
(and all respectable Ironmongers in Town or Country).
MANUFACTORY: BANBURY, OXON.

PORTABLE OR PERMANENT

PEACH WALL COVERS,

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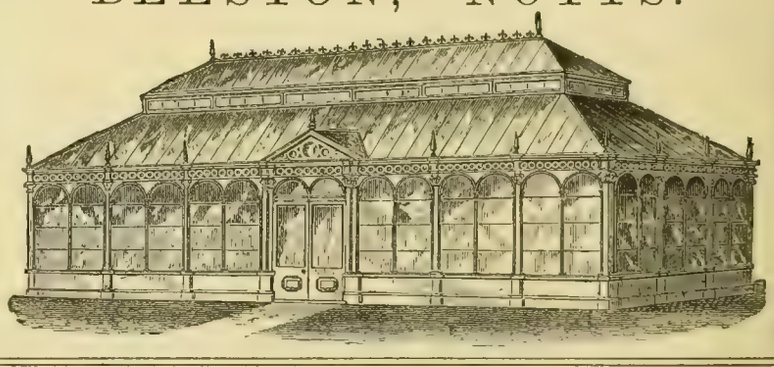

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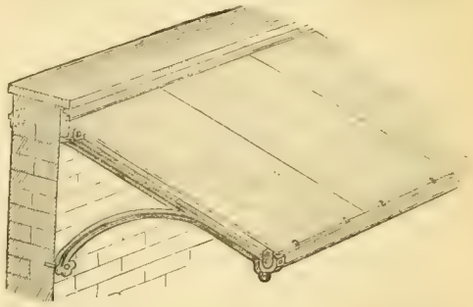

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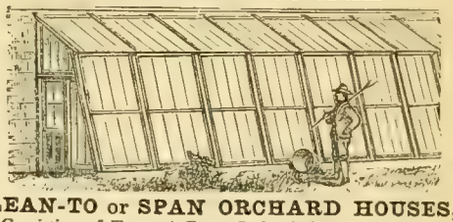

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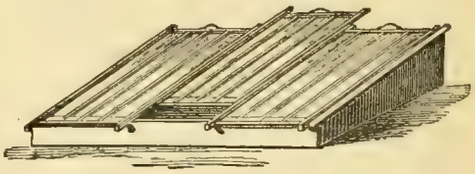

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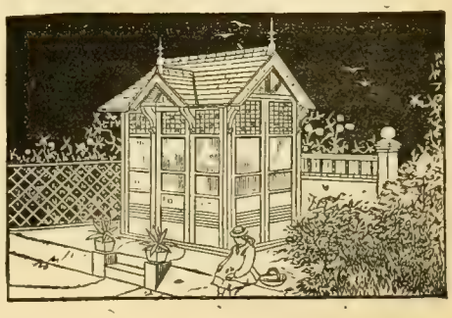

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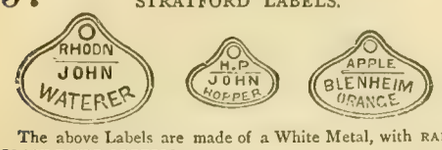

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Can be worked by a Lady.

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To cut 12 inches ... ... „ 4 10 0
Can be worked by a Man.

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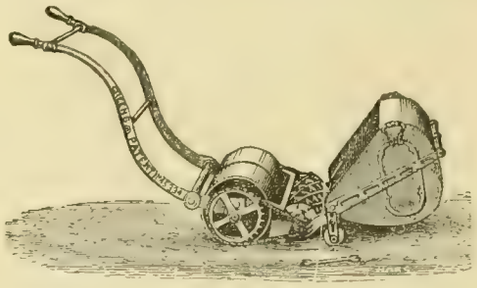

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This can be worked by One Man on an even lawn.

To cut 18 inches ... ... „ 7 10 0
By a Man and Boy.

To cut 20 inches ... ... „ 8 0 0
By a Man and Boy.

*To cut 22 inches ... ... „ 8 10 0
* If made stronger, suitable for Donkey, 30s. extra.

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Prices of Donkey, Pony, and Horse Machines, including Patent Self or Side Delivery Box, Cross-stay complete, suitable for attaching to Ordinary Chaise Traces or Gig Harness :—

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The 26 and 28 inches can easily be worked by a Donkey, the 30 inches by a Pony, and the larger sizes by a Horse ; and as the Machines make little noise in working, the most spirited animal can be employed without fear of it running away, or in any way damaging the Machine.

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N.B.—Those who have Lawn Mowers which require repairing should send them to either our Leeds or London Establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

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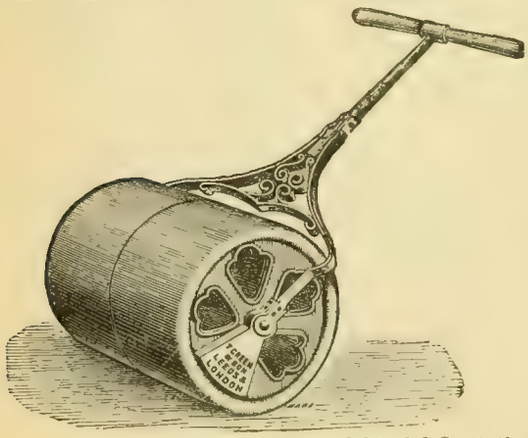

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16 inches by	17 inches	2 15 0	24 inches by	26 inches	5 0 0
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PRICE OF ROLLERS, IN TWO PARTS,

Fitted with Shafts for Pony or Horse.

Diam.	Length.	£ s. d.	Diam.	Length.	£ s. d.
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30 „	36 „	14 0 0	30 „	60 „	19 10 0
30 „	42 „	15 10 0	30 „	72 „	22 0 0

Weight Boxes extra, and Special Quotations made for Rollers 3, 3½, and 4 feet diameter, fitted with Shafts for One or Two Horses.

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Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, March 13, 1880.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 325.—Vol. XIII. {New Series.} SATURDAY, MARCH 20, 1880. {Registered at the General Post-office as a Newspaper.} Price 5d. Post Free, 5½d.

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NOTICE TO ADVERTISERS.

FRIDAY NEXT, *March 26, being* GOOD FRIDAY, *the* "GARDENERS' CHRONICLE" *will be published on* THURSDAY, *the 25th inst., at 2 p.m.*

ADVERTISEMENTS *for* NEXT WEEK *must therefore reach the Office not* LATER *than* WEDNESDAY MORNING, *the 24th inst.*

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

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ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral at 11 A.M., Scientific at 1 o'Clock—Ordinary Meeting for Election of Fellows and Lecture by Shirley Hibberd, Esq., on Hyacinths and Amaryllis, at 3 P.M., on TUESDAY NEXT, March 23. Admission, 1s.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EXHIBITION of SPRING FLOWERS, WEDNESDAY, March 24. Gates open at 2 o'Clock. Tickets to be had at the Gardens only on vouchers from Fellows of the Society, price 2s. 6d. each.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

SPRING EXHIBITIONS of PLANTS and FLOWERS, WEDNESDAYS, March 24, April 21. SUMMER EXHIBITIONS, WEDNESDAYS, May 19, June 16. EVENING FETE, WEDNESDAY, June 30. Tickets, Schedules of Prizes, &c., are now ready.

PELARGONIUM SOCIETY.—Notice is hereby given that the ANNUAL EXHIBITION of the Pelargonium Society will be held, by permission of the Council of the Royal Horticultural Society, in the Gardens at South Kensington, on JUNE 29 next. Members only can compete for the prizes offered.

THE PELARGONIUM SOCIETY'S CERTIFICATE OF MERIT will be awarded, on the conditions already announced in the Schedule of Prizes for 1880, to deserving Seedlings exhibited at the Annual Exhibition, and also to those produced at the meetings of the Royal Horticultural Society to be held on June 22 and July 13. Both members and non-members may compete for this honorary award on giving the notice required by the Schedule, a copy of which may be obtained on application to the Honorary Secretary, Mr. THOMAS MOORE, Botanic Garden, Chelsea, London, S.W.

INTERNATIONAL POTATO EXHIBITION.

President, The Right Hon the LORD MAYOR of London.

The SIXTH ANNUAL EXHIBITION will take place at the Crystal Palace, on September 22 and 23. Schedules of Prizes and all particulars may be obtained on application to

J. A. McKENZIE, Secretary.

Tower Chambers, Moorgate, E.C.

Notice to the Seed Trade.

HURST AND SON, 6, Leadenhall Street, London, E.C., wish to remind their Customers that GOOD FRIDAY and EASTER MONDAY will be HOLIDAYS, and Goods required should be ordered before THURSDAY, the 25th, to ensure quick despatch.

Frost-proof Ornamental Trees and Shrubs.

W. JACKSON AND CO., Nurseries, Bedale, Yorks, beg to refer to their Advertisement of the above in the *Gardeners' Chronicle*, March 13, p. 326.

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To the Trade.

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WANTED, Large CALADIUM ROOTS. W. F. BOFF, 203, Upper Street, Islington, N.

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To the Trade.

LARCH, 300,000, from 1 to 3 feet. Also ASH, 3 to 5 feet. Prices and sample on application to HIRAM SHAW, Richmond Hill Nursery, near Sheffield.

SPRUCE FIRS.—Many thousands, 2, 3, 4 and 5 feet. Stout, well furnished, and good rooted. ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

Special Offer of

FOREST TREES.—Transplanted ASH, BIRCH, Spanish CHESTNUT, HAZEL, SPRUCE FIR and QUICKS. Samples and prices on application. W. C. SLOCOCK, Goldsworth Nursery, Woking.

RHODODENDRONS, for Covert Planting, &c., fine tree, 1½ to 4 feet high, £9 per 1000. A few Hybrid Seedlings, same size, £12 per 1000. W. JACKSON, Blakedown, near Kidderminster.

Strong Scots Fir (true Native).

THOMAS METHVEN AND SONS have a quantity of the above to offer, 2 to 2½ feet high, well rooted. Price on application. Leith Walk Nurseries, Edinburgh.

Cheap Evergreen Trees.

H. LANE AND SON have a very large stock of the above, from 1 foot to 15 feet high, in great variety; also ROSES, FRUIT TREES, &c. CATALOGUE on application. The Nurseries, Berkhamsted, Herts.

FERNS from Devonshire, Cornwall and Somerset (Instruction Book for Making Rockery, Planting, &c., with each 5s. order), named varieties, 7s. per 100; small, post, 2s. for 30. CLUB MOSS, 3 varieties, 1s. PRIMROSE, 2s. 6d. per 100. CATALOGUE 2d. E. GILL, Lodging House Keeper, Lynton.

DAHLIAS, 400 vars.—Catalogue and Price on application to KELWAY AND SON, Langport, Somerset.

JAMES MITCHELL AND SONS have to offer several thousand MANETTI STOCKS. Price on application. Pilt Down Nurseries, near Uckfield, Sussex.

TEA ROSES, worked on the Seedling Brier, from the open ground, fine plants for potting:—9s. per dozen, 60s per 100. MORRISON BROTHERS, Aberdeen.

Verbenas, Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other good Bedding and Exhibition varieties, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, for cash with order. Queen's Road Nursery, Markhouse Common, Walthamstow.

LARGE FLOWERING PETUNIAS.—Finest strains in cultivation. "In every way the finest we have seen."—T. MOORE, Esq., *Gardeners' Chronicle.* Per packet, Singles, 250 seeds, 2s.; Doubles, 200 seeds, 5s. HENDER AND SONS, Nursery, Plymouth.

Pansies—Pansies.

PANSIES.—The finest collection in Europe for Exhibition and Bedding purposes, 3s. 6d., 6s., and 9s per dozen, post-free. PHLOX, new herbaceous, 6s. to 12s. per dozen. PYRETHRUMS, double, large flowering clumps, 18s. per doz. HENRY HOOPER, Nurseryman, Widcombe Hill, Bath.

Seeds—Seeds—Seeds.

WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application. Highgate, London, N.; and Barnet, Herts.

WM. FLETCHER has to offer a very fine lot of MUSSEL and PEAR STOCKS—Mussel, 35s. per 1000; Pear, 40s. per 1000. Ottershaw Nursery, Chertsey, Surrey.

To the Trade.

MANGEL SEED.—CHAMPION YELLOW GLOBE MANGEL WURZEL. Guaranteed stock at low price. SANDER AND CO., St. Albans.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s 6d per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1880. Extra strong SEAKALE, 2s per dozen. RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade.

ASPARAGUS, GIANT, 1 and 2-yr Price on application. JAMES BIRD, Nurseryman, Downham.

SALES BY AUCTION.

Imported Orchids.

MR. J. C. STEVENS has received instructions to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 22, at half-past 12 o'Clock precisely, an Importation, in splendid condition, of the beautiful CYPRIPEDIUM STONEI and HOOKERI, also BOLBOPHYLLUM BECCARI, just arrived from Borneo. At the same time will be offered an Importation of ANGULOA CLOWESII and SACCOLABIUM GIGANTEUM, also in excellent condition, comprising many fine pieces.

May be viewed the morning of Sale, and Catalogues had.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, March 22, at half-past 12 o'Clock precisely, a COLLECTION of ESTABLISHED ORCHIDS, the property of a gentleman recently deceased, and comprising well known and popular kinds; also some large specimen VANDA SUAVIS and TRICOLOR, PHALÆNOPSIS of various kinds, ODONTOGLOSSUMS, including the beautiful and rare O. ANDERSONIANUM, DENDROBIUM FORMOSUM, GIGANTEUM, TORTILE, &c.

On view the morning of Sale, and Catalogues had.

Lilium auratum, Tigridias, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 23, at half-past 12 o'Clock precisely, 5000 fine roots of TIGRIDIA GRANDIFLORA from New Jersey, an importation of LILIUM AURATUM and other good LILIES from Japan; a great variety of rare HARDY and GREENHOUSE BULBOUS PLANTS and ROOTS from various parts; English-grown LILIES, GLADIOLI, BEGONIAS, &c.

On view the morning of Sale, and Catalogues had.

An Importation of Cymbidium eburneum, and CŒLOGYNE ASSAMICA, in fine masses.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, March 23, at half-past 12 o'Clock precisely, a quantity of Established Plants of CYPRIPEDIUM NIVEUM, DENDROBIUM FORMOSUM GIGANTEUM, PHALÆNOPSIS GRANDIFLORA, SACCOLABIUM BLUMEI MAJUS, and other choice sorts; an importation of LÆLIA ALBIDA, CATTLEYA CITRINA and ODONTOGLOSSUM MACULATUM from Vera Cruz; a collection of ESTABLISHED ORCHIDS, for sale without reserve; 36 fine trunks of DICKSONIA ANTARCTICA, and 24 SEAFORTHIA ELEGANS; specimen PALMS, ORCHID BASKETS; also an importation of CYMBIDIUM EBURNEUM and CŒLOGYNE ASSAMICA, in fine masses.

On view the morning of Sale, and Catalogues had.

Hardy Trees and Shrubs, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 24, at half-past 12 o'Clock precisely, a consignment of Hardy TREES and SHRUBS from Holland; Standard and Dwarf ROSES from France; FRUIT TREES, CARNATIONS, PICOTEES, and PINKS; HERBACEOUS PLANTS, GLADIOLI, LILIUMS, &c.

On view the morning of Sale, and Catalogues had.

Choice Imported Orchids from the Philippine ISLANDS and BURMAH.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, March 24, at half-past 12 o'Clock precisely, by order of Messrs. Hugh Low & Co., imported plants in fine condition of VANDA LAMELLATA BOXALLI (H. G. Rchb. f.), AERIDES QUINQUEVULNERUM in quantity; VANDA DENISONIANA, amongst them a fine mass 3 feet high 2 feet wide, with numerous growths; VANDA CŒRULESCENS, CYPRIPEDIUM HAYNALDIANUM, CYPRIPEDIUM ARGUS, SACCOLABIUM GIGANTEUM, DENDROBIUM SUPERBUM GIGANTEUM, D. FARMERI, D. CRASSINODE, D. HETEROCARPUM, D. INFUNDIBULUM, D. NODATUM, D. FIMBRIATUM OCULATUM GIGANTEUM, D. DEVONIANUM, and other choice ORCHIDS. At the same time will be offered healthy established plants of PHALÆNOPSIS SCHILLERIANA, CYMBIDIUM LOWIANUM, CATTLEYA DOWIANA, CYPRIPEDIUM BOXALLI, &c.

May be viewed the morning of Sale, and Catalogues had.

Rare and Valuable Orchids.

MR. J. C. STEVENS will SELL by AUCTION, by order of Mr. F. Sander, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, March 25, at half-past 12 o'Clock precisely, an Importation of new and rare ORCHIDS, among others the grand cœrulescens variety of Masdevallia Harryana, in unusually fine condition, full of leaves and growths; also the quite new Odontoglossum vexillarium, which the late F. Klaboch discovered—the variety is dark, and has a clearly defined white centre; a new Odontoglossum in flower, and many other rare and very valuable Orchids.

On view the morning of Sale, and Catalogues had.

Established Orchids, Lilies, and Bulbs.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, 300 lots of ESTABLISHED ORCHIDS, from various private collections, including Odontoglossum vexillarium, Alexandræ, Roezlii, Rossii majus, roseum; Aerides d loratum majus (true), Lobbii, Fieldingii; Chysis aurea; Masdevallia Veitchii, tovarense; Cattleya Warneri, Aclandiæ, Trianæ, maxima, Schilleriana, Regnellii, Mendelii, Mossiæ; Lælia anceps, purpurata, Dayana; Oncidium Barkeri, prætextum, Rogersii; Bollea cœlestis; Dendrobium Findleyanum, Cambridgeanum; Phalænopsis grandiflora, Schilleriana; Cymbidium eburneum; Cypripedium Boxalli, Parishii; Angræcum sesquipedale; and numerous others. Also several fine STOVE PLANTS, PALMS, and double white CAMELLIAS; together with an assortment of English-grown LILIES, HARDY PLANTS and BULBS, 1000 AMERICAN TUBEROSES, named GLADIOLUS and PÆONIES, BEGONIAS, HELLEBORUS, HOLLYHOCKS, PRIMULAS, and a consignment from St. Michael's of a quantity of CAMELLIA STOCKS, and sixty small plants of ARAUCARIA COOKII and EXCELSA.

On view the morning of Sale. Catalogues at the Mart and 98, Gracechurch Street, E.C.

City Auction Rooms, 38 and 39, Gracechurch Street, E.C.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Rooms as above, on TUESDAY, March 23, at 12 o'Clock precisely, about 600 fine Standard and other ROSES, Selected FRUIT TREES, Hardy CONIFERÆ, EVERGREEN and DECIDUOUS SHRUBS, AMERICAN PLANTS, choice AZALEA INDICA, CAMELLIAS, and other GREENHOUSE PLANTS, LILIUM AURATUM, and others, DAHLIAS in DRY ROOTS, &c.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Cheltenham.

HIGHLY IMPORTANT SALE of probably the grandest Collection of STOVE and GREENHOUSE SPECIMEN EXHIBITION PLANTS ever submitted to public competition.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, without the slightest reserve, in the large Pittville Pump Room, Cheltenham, Gloucestershire, on WEDNESDAY, March 31, and THURSDAY, April 1, at 11 for 12 o'Clock precisely each day, by order of Ed. Pilgrim, Esq., who is giving up exhibiting, the whole of the unrivaled Collection of SPECIMEN EXHIBITION PLANTS, which have been exhibited with unprecedented success at the leading shows throughout the country. Amongst the Stove and Greenhouse specimens may be mentioned twelve remarkably fine Anthurium Scherzerianum, large-spathed varieties, a matchless plant of Cordyline indivisa with thirty-six leaves, several magnificent Crotons, unsurpassed for rich colouring and perfect training; fifteen grand Ixoras, including a noble plant of Pilgrimii, and nine smaller plants (being the entire stock of this splendid novelty). Also an extensive assortment of Specimen Cape Heaths and Indian Azaleas, containing a great number of matchless plants, and consisting of the choicest Exhibition varieties; also fine examples of Lapageria alba and rosea, Allamandas, Dipladenias, Bougainvilleas, &c.; also a large assemblage of remarkably handsome Palms and Cycads, many of which are the grandest examples in Europe; several large Exotic Ferns, embracing twenty unapproachable Specimen Gleichenias, also several fine Todeas, Cyatheas, Alsophilas, together with a few Established Orchids; likewise Two newly-built GREENHOUSES, HOT-WATER PIPING, STOCK BRICKWORK, and Two well-made Exhibition VANS, with all modern improvements, made to travel by road or rail.

The stock may be viewed any day prior to the Sale. Catalogues may be had (price 6d. each, returnable to purchasers) of Mr. HAMLET, Head Gardener, Fern Lawn, Pittville, Cheltenham; and of the Auctioneers, Estate Agents, and Valuers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

Clifton Nursery, Clifton Villas, Warwick Road, Paddington, W.

CLEARANCE SALE of 10,000 VARIOUS and USEFUL PLANTS.

MR. HAWKINGS is instructed by Mr. Andrew Meikle, who is giving up Clifton Nursery, to SELL, Without Reserve, by PUBLIC AUCTION, on the above Premises, on TUESDAY, March 23 at 11 o'Clock precisely, 10,000 GREENHOUSE and HARDY PLANTS, including Azaleas, Ferns, Palms, Myrtles, Fuchsias, Geraniums, Lilies, Spiræa, Pyrethrum Golden Feather, Mignonette, Sweet Peas, Forget-me-not, Chrysanthemums, Roses, Ivy, Virginian Creepers, Lobelia, Musk, and various other Roots, in small lots, to suit all Purchasers. Also a large quantity of empty FLOWER POTS.

N.B.—As the Premises must be cleared by March 24, and the Sale is unreserved, great bargains may be expected.

May be viewed the day previous and morning of Sale, when Catalogues may be had on the Premises, and of the Auctioneer, 26, Lisson Grove, N.W.

Business will be carried on as usual at Blomfield Road Nursery.

Anchor Hotel, Knaphill.

Two Miles from Woking Station, London and South-Western Railway.

IMPORTANT NOTICE to Gentlemen and others Planting, of a SALE of 10,000 EVERGREENS, consisting of a splendid lot of Aucuba japonica, from 1 to 5 feet, all handsome plants, many with berries; a quantity of Green Holly, from 1 to 4 feet, well formed bushes; some fine Specimens of the same, perfect pyramids, 7 to 9 feet, will move well; a quantity of Gold and Silver Holly; also fine Portugal Laurel, 4 to 6 feet; Tree Box, 4 feet; Common Laurel, 4 feet; Silver Fir, 4 to 8 feet; and a collection of Border Shrubs.

MR. WM. ABRAHAM will SELL the above by AUCTION, Without Reserve, on the Premises, as above, by order of Mr. Jay (who is leaving), on WEDNESDAY, March 24, at 11 for 12 o'Clock, prompt, in consequence of the number of Lots.

Catalogues one week prior to the Sale, at the Hotel, or of the Auctioneer, Goldworth Nursery, Woking, Surrey.

To Gardeners and Others.

TO BE DISPOSED OF, the Lease, Stock, and Goodwill, of a small NURSERY, FLORIST, and JOBBING BUSINESS, in a first-class neighbourhood in the South of London. This is a good opening for any energetic man. For full particulars apply to

G. A., 11, Clarence Street, Clapham, S.; or by letter to G. A., 74, Camden Road, N.

TO BE LET, for 99 years, a 6-roomed COTTAGE, and about 10,000 feet of Glass, well stocked with Plants for growing Cut Flowers. The Plants and Houses to be taken at valuation. Rent £50.

Apply to WM. SMITH, Beaumont Road Nursery, Leyton, Essex.

TO LET, a FLORIST'S and NURSERY, on 21 years' lease; 6-roomed House, 4 Greenhouses, Pits, Stable, &c. Established 10 years, 7 miles out, W. Incoming about £250.

Mrs. BRITTEN, 2, Shaftesbury Villas, Kew Road, Richmond.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

Special Offer to Farmers, Gardeners, and Others.

GEE'S SUPERIOR BEDFORDSHIRE GROWN SEED POTATOS, CABBAGE, and SAVOY PLANTS, &c.

F. GEE has fine stocks of the above, which have been grown carefully on new land, fine samples, free from disease, and such that he can highly recommend to all who require a change of seed. They can be supplied in almost any quantities (if unsold) as follows (put on G.N. rails.) for cash with orders :—

	Per Peck of 14 lb.	Per Bush. of 56 lb.	Per Cwt. of 112 lb.	Per Ton.
	s. d.	s. d.	s. d.	£ s.
SNOWFLAKES, very fine, scarce ..	2 6	8 0	15 0	14 0
EARLY ROSE and CLIMAX.—Fine quality and productive sorts .. .. / LATE ROSE and PEERLESS ..	2 0	7 0	12 0	10 0
NEW BEAUTY of HEBRON.—Splendid quality, very handsome, wonderfully productive, and one of the finest disease-resisting varieties. Very promising ..	2 6	9 0	16 0	15 0
NEW BURBANK SEEDLING and THE WASHINGTON. — Two new American kidneys of great promise, wonderfully productive, and very handsome, and good disease-resisters	3 0	10 0	19 0	18 0
NEW MAGNUM BONUM. — Sutton's true. Splendid sample, fine quality, and very productive, and the finest disease-resister..	2 6	8 0	15 0	14 0
NEW SCOTCH CHAMPION.—True. Fine sample, extraordinarily productive, and marvellous disease-resister	2 0	7 0	13 0	12 0
PORTER'S EXCELSIOR.—Fine quality, good cropper	2 6	8 0	15 0	14 0

Good Peck Bags charged 3d. each, Bushels 6d., and Common Sacks, to hold 1½ Cwt., 8d. each.

ASPARAGUS PLANTS, splendid stuff, Battersea and Connover's Colossal, 1s. 6d., 2s. 6d., 3s. 6d. and 5s. per 100; 10s. to 40s. per 1000

RHUBARB, splendid for Planting, Victoria, Early Scarlet, and Prince Albert, 2s. to 4s. per dozen; 10s. to 20s. per 100. Price varying according to size.

CABBAGE and SAVOY PLANTS, grown from F. GEE's noted stocks. F. GEE can only now supply a very limited quantity as follows (if unsold on receipt of orders):—

EARLY ENFIELD CABBAGE—very small now left—small plants, 5s. per 1000.

DRUMHEADS, small plants, 4s. per 1000.

RED DUTCH, fine stock, 7s. 6d. per 1000.

GREEN CURLED SAVOY, very fine, 5s. per 1000.

Packages for Cabbage Plants, 6d. per 1000 extra.

Splendid Double DAISIES, choice dark scarlet, 2s. 6d. per 100, 15s. per 1000.

New flowering PYRETHRUM, very choice, mixed colours, principally double, 2s. to 3s. per dozen, 10s. to 20s. per 100.

CARNATIONS and PICOTEES, common, mixed colours, 2s. per dozen, 10s. per 100.

WALLFLOWERS, fine dark blood-red, 1s., 2s. and 3s. per dozen; 5s., 10s. and 15s. per 100.

SAGE and THYME ROOTS, very fine, 2s. and 3s. per dozen, 10s. to 20s. per 100.

Any quantity can be supplied.

Large buyers liberally treated with.

And CATALOGUES and lowest prices also of FARM and GARDEN SEEDS, on application to

F. GEE Biggleswade, Beds.

To the Trade.

HOME-GROWN MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE will be pleased to give special quotations for their fine selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS.

Seed Growing Establishment, Wisbech.

VIOLAS, 20,000 fine strong plants :—
" cornuta, white, } 5s. per 100, 45s. per 1000.
" " Queen of Blues, }
LETTUCE, strong autumn sown :—
" Siberian Cos, } 7s. 6d. per 1000.
" Giant Brown, }

Cash only. Carriage and package free to London.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

To the Trade.

MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.

Seed Growing Establishment, Wisbech.

Limes, Limes, Limes.—For Avenue Planting.

MORRISON BROTHERS, Aberdeen, having an overstock of the above, can supply fine healthy, well rooted trees :—

7 to 8 feet high, at 6s. per dozen, 40s. per 100.
8 to 10 feet high, at 9s. per dozen, 60s. per 100.

Stock Plants.

GERANIUMS.—Stock Plants of New and valuable Geraniums with cuttings, for cash.

The magnificent new Silver-edged Geraniums, with grand flowers of all colours, strong plants 4s. 6d. per dozen, 25s. per 100, packed and put on rail. Strong rooted cuttings of all the best sorts 3s. per dozen, or 18s. per 100, by post. Cuttings 10s. 6d. per 100, post-free.

LISTS free on application. P.O.O. payable to

CHARLES BURLEY, Nurseries, &c., Brentwood, Essex.

CATTELL'S "ECLIPSE" BROCCOLI.—The hardiest and latest white Broccoli in cultivation. Price per packet, 1s. 6d. post-free.

Spring CATALOGUE of Home-grown Seeds gratis and post-free on application.

JOHN CATTELL, Nursery and Seed Establishment, Westerham, Kent.

SPANISH CHESTNUT, 3 to 4, 4 to 5, 5 to 6 feet.

ALDER, 4 to 5, 5 to 6, 6 to 7 feet. | HAZEL, 2 to 3 feet.
ASH, 3 to 4, 4 to 5 feet. | BIRCH, 3 to 4 feet.

The above are all well-rooted, transplanted Plants. A large quantity at reasonable prices. The Trade liberally dealt with.

GEORGE CHORLEY, Costers Nursery, Midhurst, Sussex.

To the Trade.

"PRIDE OF ONTARIO" POTATO.

H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.

Seed Growing Establishment, Wisbech.

New Cucumber, Sir Garnet Wolseley.

JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, post-free for 30 stamps.

"The points in which Cucumber Sir Garnet Wolseley surpasses all other long-fruited varieties are the symmetry of its fruit, and the abundance with which they are produced; there being no shank or handle to Sir Garnet." — *Gardeners' Chronicle*, September 27, 1879.

WILLIAM BARRON AND SON'S Descriptive CATALOGUE of Coniferæ, Hardy Ornamental Trees, and General Nursery Stock—also their Rose, Forest, and Fruit Tree CATALOGUE—may now be had on application. A personal inspection of their unrivalled stock solicited. The Nurseries are three minutes' walk from the Borrowash station on the Midland (Derby and Nottingham) Railway.

Elvaston Nurseries, Borrowash, Derby.

Important Notice.

To NURSERYMEN, BUILDERS, and OTHERS.

MESSRS. R. AND G. NEAL having to Clear a large portion of their Grounds (15 Acres), the Land being required for Building Purposes, at once, beg to offer the whole of the stock at a very low price, to effect a clearance. The stock consists of hundreds of thousands of FOREST and ORNAMENTAL TREES, such as Limes, Planes, Poplars of all kinds, Elms, Willows, Almonds, Laburnums, &c.; also thousands of large FRUIT TREES, SHRUBS, CLIMBING PLANTS, &c., and millions of SMALL PLANTS suitable for Nurserymen.

Special LISTS on application to

Messrs. R. AND G. NEAL, Nurserymen, Wandsworth Common, S.W.

BENJAMIN REID AND CO., NURSERYMEN, Aberdeen, N.B., beg to offer at reduced rates the following extra stocks of transplanted TREES and SHRUBS, all clean and well rooted. Early orders solicited:—

ALDER, 4 to 5 feet.
ASH, Mountain, 3 to 4 feet, and 8 to 10 feet.
CHESTNUT, Horse, 5 to 6 feet, and 7 to 9 feet.
LIME, 4 to 5 feet, and 6 to 8 feet.
MAPLE, Norway, 8 to 10 feet.
POPLAR, Black Italian, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
SERVICE, 5 to 6 feet.
SLOE THORN, 1½ to 2 feet, and 2 to 3 feet.
THORN, 1½ to 2 feet, and 2 to 2½ feet.
ABIES DOUGLASII, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
" ORIENTALIS, 1 to 1½ foot.
CEDRUS ATLANTICA, 1 to 1½ foot, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.
" DEODARA, 1½ to 2 feet, and 2 to 3 feet.
CUPRESSUS LAWSONIANA, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
" NUTKAENSIS, 2 to 3 feet.
THUJA GIGANTEA, 2 to 3 feet.
AZALEA PONTICA, 1½ to 2 feet, and 2 to 3 feet.
LAUREL, Bay, 1½ to 2 feet, and 2 to 2½ feet.
" Portugal, 1 to 1½ foot.
BERBERIS DARWINII, 2 to 3 feet.
" VULGARIS, 1½ to 2 feet, and 2 to 3 feet.

Prices on application.

Special List of Cheap Ferns.

THE ABOVE SPECIAL LIST of a large number of varieties of FERNS and SELAGINELLAS, offered at very low prices, will be forwarded on application. Ferns being our Speciality, and having an immense stock, we are able to supply them at the most reasonable prices.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, have to offer the following, at per 1000:—

ALDER, 2 to 3 feet, 20*s.*; 3 to 4 feet, 25*s.*
ASH, Mountain, 3 to 4 feet, 18*s.*; 4 to 5 feet, 25*s.*
DOGWOOD, Red, 1 to 1½ foot, 30*s.*; 1½ to 2 feet, 40*s.*; 3 to 4 feet, 70*s.*
FIR, Spruce, bushy, 1½ to 2 feet, 20*s.*
POPLAR, Black Italian, 3 to 4 feet, 20*s.*; 4 to 5 feet, 25*s.*
WILLOW, Huntingdon, 5 to 6 feet, 30*s.*
PERNETTYA MUCRONATA, transplanted last spring, 25*s.*
RHODODENDRON, hybrids, 6 to 9 inches, 65*s.*; £27 per [10,000.
" " 9 to 12 inches, 75*s.*; £32 per 10,000.
" Stocks, for grafting, 80*s.*; £17 10*s.* per 5000.
WHINS, double, 1 foot, transplanted last spring, 80*s.*
YEWS, 1 to 1½ foot, 100*s.*; 2 to 3 feet, 200*s.*
LARCH, 2 to 3 feet, 25*s.*
BROOM, 1-yr., 2*s.* 6*d.*, 40*s.* per 25,000; 2-yr., 3*s.* 6*d.*, 60*s.* per 25,000; transplanted, 2 to 2½ feet, 15*s.*
GORSE, 1-yr., 2*s.* 6*d.*, 40*s.* per 25,000; 2-yr., 4*s.* 6*d.*, 80*s.* per 25,000.

CHRYSANTHEMUMS, FUCHSIAS, PHLOXES, &c., all in the best and most distinct kinds, including the finest novelties:—

10,000 CHRYSANTHEMUMS, in all classes, our selection of large-flowered, Japanese, Pompons, &c., 3*s.* per dozen, 10*s.* per 50, 15*s.* per 100.
5,000 FUCHSIAS, the finest sorts included, 3*s.* per dozen, 10*s.* per 50, 15*s.* per 100.
7,500 PHLOXES, the finest sorts included, 3*s.* per dozen, 11*s.* per 50; 20*s.* per 100.

Cuttings of any of the above half-price.

All other Indoor and Outdoor Plants, Trees or Shrubs for Garden or Conservatory, the best of varieties, most moderate prices, good quality, true to name. See large Advertisement, and apply for CATALOGUE to

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

Illustrated Hardy Perennials.

THE present year's issue of this CATALOGUE is now ready, and contains a fine selection of New, Rare and Hardy Perennials, also collections of Orchids and Carnivorous Plants; Bulbs, including Anemones and Ranunculus; Hardy Ferns, Aquatics, Bamboos, and Ornamental Grasses, &c. Also an abbreviated List of Hardy Florists' Flowers, consisting of such only as should be planted at this early season. Post-free on application.

THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London

SUTTON'S FLOWER SEEDS

ARE THE BEST.

	s. d.	s. d.		s. d.	
CYCLAMEN ..	1 0	2 6	and	5 0	per packet.
GLOXINIA ..	..	2 6	"	5 0	" "
PRIMULA ..	1 6	2 6	"	5 0	" "
BALSAM ..	0 6	1 0	"	1 6	" "
CALCEOLARIA	1 6	2 6	"	5 0	" "
CINERARIA ..	1 6	2 6	"	5 0	" "
PHLOX ..	0 6	1 0	"	2 6	" "
AURICULA ..	1 0	2 6	"	5 0	" "

And all other kinds.

SUTTON'S FLOWER SEEDS

POST FREE.

SUTTON & SONS,

THE QUEEN'S SEEDSMEN,

And by Special Warrant to

H.R.H. THE PRINCE OF WALES,

READING.

PARIS MARKET: NEW GARDEN TURNIP.—A fine new Continental variety, of rapid growth and delicious flavour. Quite distinct from all other Turnips. It is exceedingly sweet and juicy, and should be found in every Garden. Per oz. 1*s.*, post-free.—DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

DANIELS' DEFIANCE CABBAGE.—The finest variety in cultivation, grows rapidly to a large size, and is of the most delicious marrow flavour. Has been awarded First Prizes wherever exhibited. Per packet 1*s.* 6*d.*; per oz. 3*s.* 6*d.*, post-free.—DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

DUKE of EDINBURGH CUCUMBER (Daniels').—Beautiful white-spined variety, pronounced by all competent judges to be the finest Cucumber in cultivation. Fine robust constitution and habit, fruit growing rapidly to the length of 30 to 36 inches, being at the same time of the most beautiful proportions, and of a fine rich green colour, which it retains to the last. First-class for Exhibition. Per packet, 1*s.* 6*d.* and 2*s.* 6*d.* post-free. Beautifully Illustrated CATALOGUE free to all customers on application. — DANIELS BROS., Royal Norfolk Seed Establishment, Norwich.

LEICESTER RED CELERY has again proved itself to be the hardiest, sweetest, most solid, and best Celery this unfavourable season; when most kinds have been soft and watery this has been good in every way. Those wishing to obtain the true article should have it in printed packets, price 1*s.*; post-free on receipt of 13 stamps.

BROCCOLI, Harrison's new Dwarf Hardy; a late valuable kind, 1*s.* per packet.
SAVOY, Harrison's King Coffee Garden, 1*s.* per packet.
TURNIP, Harrison's Exhibition; a perfect round white variety, from 6*d.* per packet.
CARROT, Harrison's Early Market, 6*d.* per packet.

HARRISON'S "LEICESTER SEEDS," of choicest quality, are supplied in collections of 21*s.* and upwards, sent carriage free. Trade Prices and full particulars on application to

HARRISON AND SONS, Seed Growers, Leicester.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.

Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

MAGNUM BONUM POTATOS. — A splendid sample of the above, grown from Seed, direct from the raiser (Mr. Clarke), price 7*s.* 6*d.* per bushel of 56 lb., free on rail, sacks included.

Also about 10,000 strong HAZEL, at 15*s.* per 1000.

H. T. BATH, Seedsman, &c., 80, High Street, Lymington.

TREES for AVENUE, PARK, or STREET PLANTING.

ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
" Horse, 14 to 16 feet, girting 8 to 10 inches.
" Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
" Occidental, 12 to 14 feet, girting 5 to 6 inches.

A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.

POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.

They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.

The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

New Catalogue for 1880.

WM. CLIBRAN AND SON, The Oldfield Nurseries, Altrincham, Cheshire, will have great pleasure in sending their DESCRIPTIVE PRICED LIST upon application. Their stock of Florists' Flowers, Bedding and Soft-wooded Plants generally, is surpassed by none either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to purchasers is that none of the Plants offered are taken from a warm propagating-house and sent off immediately, but are all carefully hardened, and most of them potted off singly, and are thereby fitted for transit by post or rail without the slightest injury. A great proportion of the under-mentioned are autumn-struck plants, and can be had in pots if required, and all in a variety of sorts and colours, all good for exhibition or home decoration:—

Our Selection.	Per doz.—s.	d.
Abutilons, in variety ..	3	0
Achimenes, in variety ..	3	0
Ageratums, small plants, per 100, 5*s.*	1	0
Ageratums, in pots, per 100, 15*s.*	2	6
Antirrhinums	3	6
Begonias, Tuberous, from 4*s.* to	18	0
Other sorts	3	0
Bouvardias, 4*s.* to ..	6	0
Caladiums	9	0
Calceolaria Golden Gem (not in pots) per 100, 5*s.*	1	0
Carpet Bedding Plants (see Catalogue)		
Carnations and Picotees, 12 plants	7	0
12 pairs	12	0
Chrysanthemums, in great variety, per 100, 18*s.*	3	0
Clematis, to name ..	9	0
Coleus	3	0
Dactylis elegantissima, per 100, 6*s.*	1	0
Dahlias, per 100, 20*s.* ..	3	6
Delphiniums	6	0
Epiphyllum	9	0
Ferns, Stove and Greenhouse, 6*s.* to	9	0
Fuchsias, per 100, 18*s.*	3	0
Gardenia florida ..	6	0
Greenhouse Plants ..	9	0
Geranium bicolor ..	3	0
Geranium, Silver-edged	3	6
Geranium, Double ..	3	0
Geraniums for Bedding	3	0
Geraniums, for pot culture, 3*s.* to	6	0
Gladiolus, splendid seedlings, per 100, 20*s.* ..	3	0
Gladiolus Brenchleyensis, per 100, 6*s.* ..	1	0
Gloxinias, 6*s.* and ..	9	0
Hardy Climbing Plants, in great variety, 6*s.* ..	9	0
Hollyhocks, Seedlings	4	0
Helianthemums	2	6
Herbaceous Plants, per 100, 20*s.*	3	0
Heliotropes	2	6
Hepaticas	4	0
Iresine Lindeni, per 100, 10*s.*	2	0
Iris, German	3	0
Ivies, in variety	6	0
Ivies, Irish	3	0
Lantanas	2	6
Lilium auratum, very fine, each, 1*s.* and 1*s.* 6*d.*		
Lobelias, small, per 100, 4*s.*	1	0
Lobelias, in pots ..	2	6

Our Selection.	Per doz.—s.	d.
Mesembryanthemum fol. var., per 100, 10*s.*	2	0
Mimulus, in variety ..	3	0
Myosotis, per 100, 6*s.* ..	1	6
Pæonies, white, blush, crimson, and other shades	6	0
Pansies, show, per 100, 25*s.*	3	6
Pansies, Bedding, about 20,000 to select from, per 100, 12*s.*	2	0
Pentstemons, per 100, 25*s.*	3	6
Phloxes, per 100, 25*s.* ..	3	6
Pelargoniums, Show, Fancy, and French, 6*s.* to	9	0
Pinks, per 100, 25*s.* ..	3	6
Potentillas, Double ..	6	0
Polyanthus, Seedlings, per 100, 5*s.*	1	0
Polyanthus, named sorts (see Catalogue)		
Primroses, Double, 4*s.* to	9	0
Primroses, old Double Velvet, 1*s.* 6*d* each.		
Primroses, Single, assorted colours ..	2	0
Pyrethrums, Double ..	6	0
Roses, H.P., fine plants from ground, per 100, 40*s.*	6	
Roses, Climbing or Mosses	4	0
Rock Plants, per 100, 15*s.*	3	0
Salvias	3	0
Saxifrages	3	0
Sedums	3	0
Sedum acre aurea, elegans, and glaucum, per 100, 8*s.*	1	6
Stove Plants	9	0
Succulents, 4*s.* to ..	6	0
Tropæolums	3	0
Violas (immense stock of best sorts), per 100, 8*s.* to 12*s.*	2	0
Verbenas, stock plants, in pots	3	0
Verbenas, young, not in pots	1	6
Violets, sweet	3	0
Vines, all the leading kinds for planting and fruiting, 30*s.* to ..	60	0
Strawberry Runners (our collection contains 65 varieties), per 100, 2*s.* 6*d.*		
Apples, Pears, Plums, Cherries, Pyramid, 6*s.* to	18	0
Dwarf-trained, 18*s.* to ..	30	0

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

SEED POTATOS.

Plant the Great Disease Resisting "CHAMPION"

MR. R. BATH has 60 Tons for disposal, 12*s.* per cwt., 7*s.* per bushel, 3*s.* per peck; well sorted ware at the same prices, bags included.

Cheque or Post-office Order in each instance with order. No deliveries are made without prior remittance.

Crayford, Kent.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—

VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6*s.* per 100, 50*s.* per 1000; 100, in 12 choice sorts, 8*s.*; or in 25 sorts, 10*s.*
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2*s.* 6*d.* per 100, 20*s.* per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10*s.* per 100; Madame Vaucher and Virgo Marie, two best whites, 12*s.* per 100; Master Christine, best pink, 12*s.* per 100; White Vesuvius and New Life, 20*s.* per 100; Dr. Denny, nearest to blue, fine, 5*s.* per doz. Pelargoniums, in 12 best varieties, 5*s.* per doz., 30*s.* per 100.
" TRICOLORS—Mrs. Pollock, 2*s.* 6*d.* per doz., 18*s.* per 100; Sir R. Napier and Sophie Dumaresque, 3*s.* per doz., 20*s.* per 100.
" SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 12*s.* per 100; Princess Alexandra and Prince Silverwings, 15*s.* per 100.
" GOLD-LEAVED—Crystal Palace Gem, 12*s.* per 100; Happy Thought 15*s.* per 100.
" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 12*s.* per 100; Madame Amelia Baltet, very fine white (the best). 20*s.* per 100.
" BRONZE—Maréchal McMahon, the best for bedding, 18*s.* per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5*s.* per 100, 50*s.* per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6*s.* per 100, 50*s.* per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5*s.* per 100, 40*s.* per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10*s.* per 100.

Packing included. Terms cash.

Cemetery Nursery, Gravesend.

Cheap **Orchids.**

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

Choice Coniferæ, Evergreen Shrubs, &c.

March and April are the best months for transplanting all Evergreen and Coniferous Trees for Ornamental Planting, Coverts, or Fencing.

HAVING A VERY LARGE STOCK of well transplanted Trees, we are induced to offer the following, for present delivery, at considerably reduced prices, viz.:—
ABIES DOUGLASII, 2 to 3 feet, 9*s*. per dozen, 50*s*. per 100; 3 to 4 feet, 12*s*. per dozen, 75*s*. per 100.
" " specimens, 18*s*. to 24*s*. per dozen.
CEDRUS ATLANTICA, 2 to 3 feet, 9*s*. per dozen, 50*s*. per 100; 3 to 4 feet, 12*s*. per dozen, 75*s*. per 100; 4 to 5 feet, 18*s*. to 24*s*. per dozen.
CEDRUS DEODARA, very fine, 2 to 3 feet, 24*s*. per dozen, 150*s*. per 100; 3 to 4 feet, 36*s*. per dozen.
CRYPTOMERIA ELEGANS, perfectly hardy, 1 to 2 feet, 6*s*. per dozen, 40*s*. per 100; 2 to 3 feet, 9*s*. per dozen, 60*s*. per 100.
CUPRESSUS LAWSONIANA, 2 to 3 feet, 9*s*. per dozen, 60*s*. per 100; 3 to 4 feet, 12*s*. per dozen, 75*s*. per 100; 4 to 5 feet 18*s*. per dozen.
PICEA LASIOCARPA, splendid plants, 1 to 2 feet, 24*s*. per dozen; 2 to 2½ feet, 36*s*. per dozen; 2½ to 3 feet, 48*s*. per dozen.
PICEA NORDMANNIANA, 2 to 3 feet, 24*s*. per dozen; 3 to 4 feet, 30*s*. per dozen; 4 to 5 feet, 42*s*. per dozen.
PINUS AUSTRIACA, 2 to 3 feet, 20*s*. per 100; 3 to 4 feet, 40*s*. per 100; 4 to 5 feet, 60*s*. per 100.
PINUS LARICIO, 1½ to 2 feet, 20*s*. per 100; 2 to 3 feet, 25*s*. per 100.
PINUS EXCELSA, 2 to 3 feet, 9*s*. per dozen, 60*s* per 100; 3 to 4 feet, 12*s*. per dozen, 75*s*. per 100; 4 to 5 feet, 18*s*. per dozen.
THUJA LOBBII, 2 to 3 feet, 8*s*. per dozen, 50*s*. per 100; 3 to 4 feet, 10*s*. per dozen, 75*s* per 100; 4 to 5 feet, 12*s*. per dozen; 5 to 6 feet, 18*s*. per dozen.
" SIBIRICA, 2 to 3 feet, 8*s*. per dozen, 50*s*. per 100; 3 to 4 feet, 12*s*. per dozen, 75*s*. per 100.
THUJOPSIS BOREALIS, 2 to 3 feet, 12*s*. per dozen, 75*s*. per 100; 3 to 4 feet, 18*s*. per dozen, 120*s*. per 100.
WELLINGTONIA GIGANTEA, 1 to 2 feet, 18*s*. per dozen; 2 to 3 feet, 24*s*. per dozen; 3 to 4 feet, 30*s*. per dozen.
YEW, English, 1 to 2 feet, 25*s*. per 100; 2 to 2½ feet, 35*s*. per 100; 2½ to 3 feet, 50*s*. per 100; 3 to 4 feet, 9*s*. per dozen, 60*s*. per 100.
LAUREL, Common, perfectly green and untouched by frost, 1½ to 2 feet, 16*s*. per 100; 2 to 2½ feet, 20*s*. per 100; 2½ to 3 feet, 25*s*. per 100.
" colchica, 1 to 1½ foot, 20*s*. per 100; 1½ to 2 feet, 25*s*. per 100; 2 to 1½ feet, 30*s*. per 100.
" Portugal, 1 to 1½ foot, 20*s*. per 100; 1½ to 2 feet, 30*s*. per 100.
RHODODENDRON PONTICUM, 1 to 1½ foot, 30*s*. per 100; 1½ to 2 feet, 40*s*. per 100.
BOX, broad-leaved, 1 to 1½ foot, 10*s*. 6*d*. per 100; 1½ to 2 feet, 20*s*. per 100; 2 to 2½ feet, 30*s*. per 100.
FIR, Spruce, 1½ to 2 feet, 40*s*. per 1000; 2 to 2½ feet, 50*s*. per 1000.
LIMES, fine straight stems, 9 to 10 feet, 18*s*. per dozen; 10 to 12 feet, 24*s*. per dozen.
" Weeping, new broad leaf, 8 to 10 feet, 2*s*. 6*d*. to 5*s*. each.
ASH, Weeping; ELMS, POPLARS; Double-flowering Scarlet, Pink and White THORNS; CHERRIES, PRUNUS, &c.
PAMPAS GRASS, strong roots, 75*s*. per 100.
CLIMBING and WALL PLANTS in great variety.
Descriptive LISTS free on application to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.—March 10.

Tricolor Geraniums.

ALFRED FRYER offers the following, in Autumn-struck Plants, at per dozen for cash:—Golden Tricolors: Isle of Beauty, 4*s*. 6*d*.; Lady Cullum, 3*s*. 6*d*.; Macbeth, 4*s*. 6*d*.; Mrs. Pollock, 3*s*. 6*d*.; Peter Grieve, 6*s*.; Sir C. Napier, 3*s*. 6*d*.; S. Dumaresque, 3*s*. 6*d*. Silver Tricolors: Lass o' Gowrie, 3*s*. 6*d*.; Mrs. John Clutton, 3*s*.; Queen of Hearts, 3*s*. 6*d*.; Prince Silverwings, 3*s*.; A Happy Thought, 3*s*. Package free for cash with order. Post-free for 6*d*. per dozen extra.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Trade Offer.

RODGER, McCLELLAND, AND CO, 64, Hill Street, Newry, have to offer as noted below—prices on application:—
PRIVET, Oval-leaved, 1½ to 2 feet, and 2½ to 3½ feet.
THORN QUICKS, all sizes up to 2½ feet.
MAHONIA AQUIFOLIA, 1 to 2 feet.
PINE, Austrian, very fine, all sizes up to 1½ foot.
COTONEASTER SIMMONDSII, 2 to 3 feet.
POPLAR, Canadian, 4 to 10 feet.
LAUREL, Portugal, 1½ to 2 feet.
" Colchic, 1½ to 3 feet.

SEEDLINGS.—
2-yr. SCOTCH FIR.
2-yr. AUSTRIAN PINE.
2-yr. ALDER.
2-yr. LARCH.
2-yr. ASH.
2-yr. SILVER FIR.
Special low prices on application.
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

LOBELIAS, Brighton and pumila magnifica, stout, bushy tufts, well hardened, that will furnish cuttings, 4*s*. per 100, 500 for 18*s*., post-free.
GERANIUMS, Master Christine, Wonderful, Vesuvius, Mrs. Wm. Paul, 1*s*. 6*d*. per dozen, 10*s*. per 100; Sir H. S. Stanhope and Wellington (Nosegays), 1*s*. 6*d*. per dozen, in well-rooted plants.
PANSIES, Show and Fancy (separate), from seed saved from an unsurpassed collection of named varieties, transplanted, 1*s*. 3*d*. per dozen, 7*s*. per 100.
WALLFLOWERS, Saunders' fine dark variety, transplanted, 1*s*. per dozen, 5*s*. per 100.
J. J. MARRIOTT, Highfield Nurseries, Matlock Bridge.

RICHARD SMITH & Co. WORCESTER

FIFTY ACRES of FRUIT TREES.—Apples, Pears, Plums, Cherries, Peaches, Nectarines, Apricots, and other Fruit Trees, as Standards, Dwarfs, Pyramids, Bushes, Cordon and Trained Trees, in great variety, all full of vigour and warranted true to name. Descriptive Price List, containing a sketch of the various forms of Trees, with Directions for Cultivation, Soil, Drainage, Manure, Pruning, Lifting, Cropping, Treatment under Glass; also their Synonyms, Quality, Size, Form, Skin, Colour, Flesh, Flavour, Use, Growth, Duration, Season, Price, &c., for a penny stamp.

TWELVE ACRES of ROSES.—Standard, Dwarf, and Climbing, all the popular sorts; also 80,000 choice Tea-scented and Noisette Roses in pots; extra strong Roses in pots for immediate forcing. See Descriptive Price List, free for a penny stamp.

GRAPE VINES and ORCHARD HOUSE TREES in POTS.—Grape Vines, extra strong, and warranted free from Phylloxera, Oidium, and all disease; Planting Canes, 3*s*. 6*d*. to 5*s*. each; extra strong Fruiting Canes, 7*s*. 6*d*. to 10*s*. 6*d*. each. Orchard-house Trees, fruiting in pots, consisting of Peaches, Nectarines, Apricots, Plums, Cherries, Pears, Apples, and Figs. Descriptive Price List for a penny stamp.

WORCESTER PEARMAIN APPLE (awarded a First-class Certificate by the Royal Horticultural Society).—One of the handsomest and most useful Apples in cultivation. For full description see "Extract from the *Journal of Horticulture*," and RICHARD SMITH & Co.'s Fruit List, which may be had for a penny stamp. Coloured Plates, 6*d*. each. Maiden Trees, 1*s*. 3*d*. each; Bushes, 2*s*. 6*d*. each; Standards, Pyramid and Dwarf-trained Trees, 3*s*. 6*d*. and 5*s*. each.

LIST of all the EVERGREEN FIR TRIBE, suitable for Britain, giving size, price, popular and botanical names, derivations, description, form, colour, foliage, growth, timber, use in arts, native country, and size there, situation, soil, and other information, with copious index of their synonyms. Free by post for six stamps.

LIST of STOVE and GREENHOUSE PLANTS, comprising the best selections of Camellias, Azaleas, Ericas, Epacris, Ferns, &c., free for a penny stamp.

LIST of EVERGREEN and DECIDUOUS SHRUBS, RHODODENDRONS, STANDARD ORNAMENTAL TREES, CLIMBING and TWINING PLANTS, with their generic, specific, and English names, native country, height, time of flowering, colouring, &c., and general remarks, free for a penny stamp.

ALL kinds of GARDEN SEEDS, of first quality, BULBS, MUSHROOM SPAWN, TOBACCO PAPER, ARCHANGEL MATS, and other GARDEN REQUISITES. See Lists, which may be had on application.

RICHARD SMITH & Co. WORCESTER

GEO. JACKMAN & SON WOKING NURSERY SURREY

JACKMAN'S Descriptive Priced CATALOGUE, Free on application, containing—
JACKMAN'S List of FRUIT TREES, suitable for large or small Gardens.
JACKMAN'S List of ROSES—selected Dwarfs and Standards.
JACKMAN'S List of AMERICAN PLANTS, for Peat and Loamy Soils.
JACKMAN'S List of CONIFERS, for Lawns and Pleasure Grounds.
JACKMAN'S List of HARDY SHRUBS, adapted for Belts, Shrubberies, Screens, &c.
JACKMAN'S List of ORNAMENTAL TREES, suitable for Parks and Private Gardens.
JACKMAN'S List of HARDY CLIMBERS, including their celebrated Clematises.
JACKMAN'S Assortment of TREES and SHRUBS, adapted for planting by the Sea-coast, on Chalk Soil, beneath the Shade of Trees, and in Cities and Towns.

GEO. JACKMAN & SON WOKING NURSERY SURREY

VEGETABLE & FLOWER SEEDS SEED POTATOS. TOOLS &c
BEST QUALITY - CARRIAGE FREE.
PRICED CATALOGUE - POST FREE.
JAMES DICKSON & SONS
SEED-GROWERS.
108 EASTGATE ST. CHESTER

APPLE TREES with MISTLETO growing on them. Price from 7*s*. 6*d*. to 21*s*. each.
RICHARD SMITH AND CO., Nurserymen, Worcester.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Verbenas—Verbenas—Verbenas.

STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6*s*. per 100; 50*s*. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8*s*. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

The Planting Season.

CHESTNUTS, Spanish, extra strong fine transplanted, 3 to 4 feet.
ASPARAGUS PLANTS, fine strong, 1, 2, 3, and 4-yr.
Extra strong. Price on application.
Address, WM. WOOD AND SON, Woodlands Nursery, Maresfield, near Uckfield, Sussex

To the Trade.

NEW ROSES for 1880.—Best thirty varieties, including Bennett's Pedigree and a choice selection of Tea Roses. Strong plants, in 4½-inch pots, now ready.
Descriptive Price LISTS post-free on application.
CRANSTON'S NURSERY and SEED COMPANY (Limited), King's Acre, near Hereford.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to
Mr. JEAN NUYTENS-VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium
London Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

STRONG FOREST TREES.
ALDER, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

DAHLIAS, Pot Roots, Select Varieties; PINKS, Show and Fancy PANSIES, strong plants, finest named sorts. Prices per dozen, 100, or 1000, on application to
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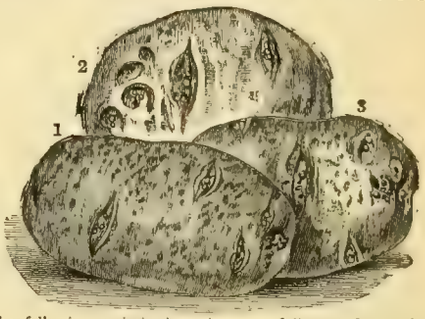

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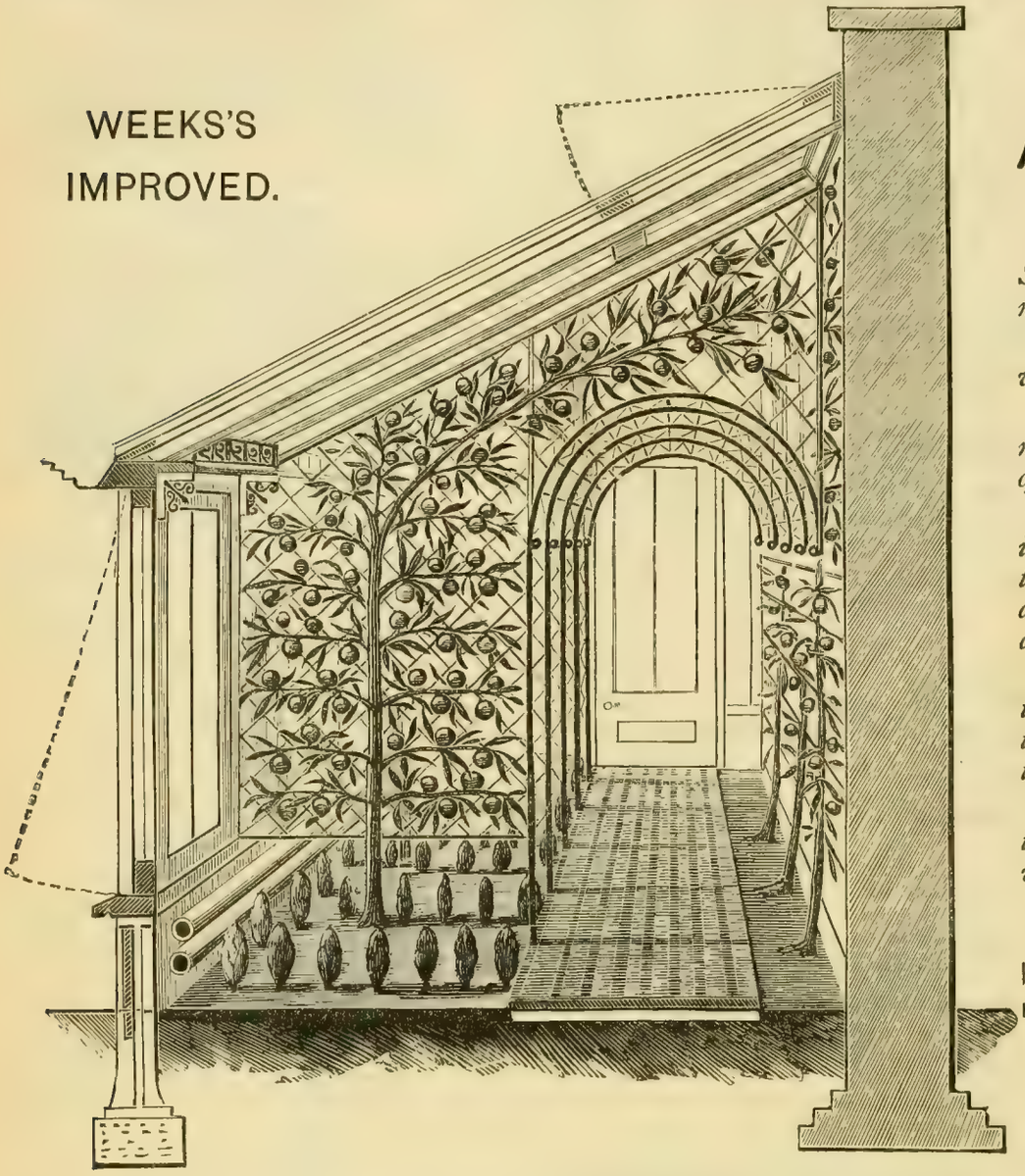

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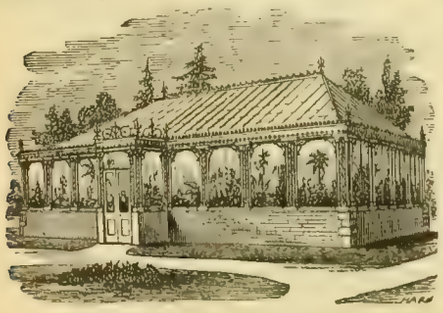

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THE

Gardeners' Chronicle.

SATURDAY, MARCH 20, 1880.

FORCING BY ELECTRIC LIGHT.

My object in making these experiments was to ascertain whether electric light exercised any decided effect upon the growth of plants. For this purpose I placed the regulator in a lamp with a metallic reflector in the open air, about 2 metres above the glass of a sunk Melon-house. A considerable number of pots were provided, sown and planted with quick-growing seeds and plants, such as Mustard, Carrots, Swedes, Beans, Cucumbers, and Melons. The plants could then be brought at suitable intervals under the influence of daylight and electric light, without moving them, both falling upon them approximately at the same angle. The pots were divided into four groups.

1. One pot of each group was kept entirely in the dark.

2. One was exposed to the influence of the electric light only.

3. One was exposed to the influence of daylight only.

4. One was exposed successively to both day and electric light.

The electric light was supplied for six hours, from five to eleven each evening, all the plants being left in darkness during the remainder of the night.

In all cases the differences of effect were unmistakable. The plants kept in the dark were pale yellow, thin in the stalk, and soon died. Those exposed to electric light only showed a light-green leaf, and had sufficient vigour to survive. Those exposed to daylight only were of a darker green and greater vigour. Those exposed to both sources of light showed a decided superiority in vigour over all the others, and the green of the leaf was of a dark rich hue.

It must be remembered that, in this contest of electric against solar light, the time of exposure was in favour of the latter in the proportion of nearly two to one, but all allowance made, daylight appeared to be about twice as effective as electric light. It was evident, however, that the electric light was not well placed for giving out its power advantageously. The nights being cold, and the plants under experiment for the most part of a character to require a hot moist atmosphere, the glass was covered very thickly with moisture, which greatly obstructed the action of the light, besides which, the electric light had to pass through the glass of its own lamp.* Notwithstanding these drawbacks, electric light was clearly sufficiently powerful to form chlorophyll and its derivatives in the plants. It was interesting to observe that the Mustard-seed stem, when placed obliquely, turned completely towards the light in the course of two or three hours, and that Cucumber

* Professor Stokes has shown, in 1853, that the electric arc is particularly rich in highly refrangible invisible rays, a circumstance which seems to point to a great loss on passing those rays through glass.

and Melon plants were affected in the same way, though at a slower rate. The Cucumber and Melon plants which have been exposed to both day and electric light have made great progress, and my gardener, Mr. D. Buchanan, says that he could not have brought on the latter, without the aid of electric light, during the early winter. Some of these commenced to blossom on February 14.

These preliminary trials go to prove that electric light can be utilised in aid of solar light by placing it over greenhouses, but the loss of effect in such cases must be considerable. I, therefore, directed my observations, in the next place, to the effect of electric light upon plants, when both were placed in the same apartment. A section of the Melon-house, already referred to (7′ 3″ × 3′ 8″, 2.21 m. × 0.19 m.), was completely darkened by being covered in with thick matting, and was white-washed inside. The electric light was placed over the entrance door, and shelves were put down, in a horseshoe form, to receive the pots containing the plants to be exposed to the action of electric light, the plants being placed at distances from the lamp varying from 0.5 metre to 2 metres. Upon the first occasion of trying the naked electric light in this manner, some of the plants, and especially some Melon and Cucumber plants, from 20 centims. to 40 centims. in height, which were within a metre distance from the lamp, commenced to suffer; those leaves which were directly opposite the light turning up at the edges and presenting a scorched appearance. On subsequent nights, therefore, the stands were so arranged that the distance of the plants from the light varied from 1.5 metre to 2.3 metres.

The plants under experiment were divided into three groups; one group was exposed to daylight alone, a second similar group was exposed to electric light during eleven hours of the night, and were kept in the dark chamber during the daytime, and the third similar group was exposed to eleven hours' day and eleven hours' electric light. These experiments were continued during four days and nights consecutively, and the results observed are of a very striking and decisive character, as regards the behaviour of such quick-growing plants as Mustard, Carrots, &c. The experiment was unsatisfactory in this one respect, that during the third night the gas-engine working the dynamo-machine came to a standstill, owing to a stoppage in one of the gas channels, and thus more than half the electric-light influence that night was lost to the plants. But, notwithstanding this drawback, the two groups of plants showed unmistakably the beneficial influence of electric light. The plants that had been exposed to daylight alone (comprising a fair proportion of sunlight) presented their usually healthy green appearance; those exposed to electric light alone were, in most instances, of a somewhat lighter, but, in one instance, of a somewhat darker hue than those exposed to daylight; and all the plants that had the double benefit of day and electric light far surpassed the others in darkness of green and vigorous appearance generally. A fear had been expressed that the Melon and Cucumber plants, which had been scorched by excess of electric light on the first evening, would droop or die if further exposed to that agency, but I insisted upon their being placed within the influence of the electric light, at a distance from it exceeding 2 metres, and all of them have shown signs of recovery, throwing out fresh leaves and pearls of moisture at their edges.

The Electric Light Supplies Heat.

One object I had in view in this experiment was to observe whether the carbonic and nitrogenous compounds produced within the electric arc exercised any deleterious action upon the plants. All continuous access of air into the stove was closed, and in order to prevent excessive accumulation of heat the stove-pipes were thickly covered with matting and wet leaves. But although the access of stove heat was thus virtually stopped, the temperature of the house was maintained throughout the night at 72° Fahr., proving that the electric lamp furnished not only a supply of effective light, but of stove heat also. No hurtful effect was moreover observed on the plants from the want of ventilation, and it would appear probable that the supply of pure carbonic acid resulting from the complete combustion of the carbon electrodes at high temperature, and under the influence of an excess of oxygen, sufficed to sustain their vital functions. If the nitrogenous compounds which Professor Dewar has shown to be developed in the electric arc were produced in large quantities, injurious effects upon the plants must undoubtedly ensue, but it can be shown that in a well-conditioned electric lamp, with a free circulation of air round the carbon electrodes, the amount of these products is exceedingly small, and of a different nature than is produced in a confined space. They could not indeed be perceived by their smell in the stove, when all ventilators were closed, and no injurious effects from them have hitherto been observed in the plants.

Rest of Plants.

These experiments are not only instructive in proving the sufficiency of electric light alone to promote vegetation, but they also go to prove the important fact that diurnal repose is not necessary for the life of plants, although the

Fig. 63.—Plan of arrangement of electric light in fruit garden.

duration of the experiments is too limited perhaps to furnish that proof in an absolute manner. It may, however, be argued from analogy that such repose is not necessary, seeing that [annual] crops grow and ripen in a wonderfully short space of time in the northern regions of Sweden and Norway, and Finland, where the summer does not exceed two months, during which period the sun scarcely sets.

The next step in the course of these experiments was to remove the electric lamp into a Palm-house, constructed of framed glass, which was 28 feet 3 inches long, 14 feet 6 inches wide, and averaging 14 feet 6 inches (8.62 m. × 14.42 m. × 4.42) in height. In the centre of this house a Banana and a few small Palms are planted, the sides of the house all round being occupied with a variety of flowering plants. The electric light was fixed as high as practicable at the south corner of the house, in order that its rays might fall upon the plants from a direction and at an angle coincident with those of the sun during the middle of the day. A metal reflector was placed behind the lamp in order to utilise the electric rays as much as possible. Along the eastern side of the house are some young Vines, having their roots in a bed outside. Three pots of Nectarines, just beginning to bud, were placed on the floor at various distances from the electric light, and also some pot Roses, Pelargoniums, Orchids, &c. The temperature of the house was maintained at 65° Fahr., and the electric lamp was kept alight from 5 P.M. to 6 A.M., for one week, from February 18 to February 24, excepting Sunday night. The time was hardly sufficient to produce very striking effects, but all the plants continued to present a healthy appearance. Of three Alicante Vines, the one nearest the electric light made most progress, and the same may be said of the Nectarines and Roses. It was observed that other plants, such as Pelargoniums, continued to exhibit a vigorous appearance, notwithstanding the heat of the place. The electric light appeared to impart the vitality necessary to prevent a collapse of the organism through excessive temperature. This experiment is of importance in showing that the electric light if put into conservatories or greenhouses does not injure the plants, but rather improves their appearance and growth. The leaves assume a darker and more vigorous appearance, and it seems that the colouring of the flowers becomes more vivid, but a further period of time is necessary to establish this observation absolutely. The effects producible by electric light in conservatories are very striking, owing to the clear definition of form and colour produced, far exceeding that of ordinary daylight.

The Electric Light Out-of-doors.

No further results of any particular interest could be expected from a continuance of this experiment, and I decided to try the effect of electric light as a means of promoting growth in the open air and under glass at the same time. The regulator was put back into its first position, 2 metres above the ground, with a sunken Melon-house on one side, and a sunken house containing Roses, Lilies, Strawberries, and a variety of other plants on the other. The space of ground between these, about 1 metre broad and 7 metres long, was covered with boxes sown with early vegetables, including Mustard, Peas, Beans, and Potatos, and in order to prevent cold winds from injuring the plants low protecting walls were put up across the openings of the passage between the two houses. The effect of electric light could thus be observed at the same time, upon the Melon and Cucumber plants in the one house, upon the Roses, Strawberries, &c., at a lower temperature in the other, and upon the early vegetables unprovided with covering.

Some weeks must elapse before any absolute results can be given, but growth is evidently promoted under all these various circumstances. In order to test this clearly, a portion of the plants both under glass and in the open air were shaded from the electric light without removing them from their position of equal temperature and exposed to solar light during daytime. The effect upon the flowering plants is very striking, electric light being apparently more efficacious to bring them on than sunlight. Although the amount of heat given off from the electric arc is not great compared with a gas flame (giving off its products of combustion), yet the rays of intense heat of the arc counteract that loss of heat by radiation from the leaves into space which during a clear night causes hoar frost. For this reason I expect that electric light may be usefully employed in front of fruit walls, in orchards, and in kitchen gardens, to save the fruit-bud at the time of setting; and in this application electric light will probably be found a useful agent not only to promote rapid growth, but to insure a better yield of fruit. Experience alone can determine absolutely the effect of electric light upon the ripening of delicate fruit, but considering its evident power to form chlorophyll, there seems no reason to suppose that its action would not also in this case resemble that of the sun, and that saccharine matter, and more especially the aromatic constituents, would be produced. In this country solar light is too often found insufficient to ripen the fruit or even the wood of fruit trees during the short summer months; and I believe that electric light will be found a most useful auxiliary to solar light to effect the production of ripe and aromatic fruit both under glass and in the open air.

Estimated Cost of Electro-Horticulture.

A very important question is that of the cost of electro-horticulture. This will depend in a great measure upon the cost of the fuel or other source of energy, and upon the scale of application. To work only one electric lamp by means of a small steam or gas engine is expensive both in fuel and in cost of attendance. If steam-power has to be resorted to, an engine of sufficient size should be employed to give economical results per horse-power of energy produced, and the electric arc should be of sufficient brilliancy to give a good effect for the power expended. Experience in electric illumination has established a form and size of machine, both convenient and suitable for the attainment of economical results, viz., the medium dynamo-electric machine, which, if applied to a suitable regulator, produces fully 6000 candle-power of diffused light with an expenditure of 4 horse-power.

The experiments before given show that the most effective height at which to place the naked electric light of 1400 candle-power is about 2 metres (6 feet 5 inches). By providing a metallic reflector, and thus throwing the major portion of the upward rays down upon the surface to be illuminated, that height may be taken at 3 metres. If the electric arc employed were equal to 6000 candles, the height would be $\frac{\sqrt{6000}}{\sqrt{1400}} \times 3 = 6.2$ metres, at which such an electric light should be fixed under the protection of a tin plate or other reflector. In operating upon an extended surface several lamps should be placed at such distances apart as to make the effect over it tolerably uniform. The effect of radiation would be equally distributed over the ground if the radiating centres were placed at distances apart equal to double their height above the ground; for under these circumstances a square foot of surface midway between them would receive from each centre one-half the number of rays falling upon such a surface immediately below a centre. A plant at the intermediate point would, however, have the advantage of presenting a larger leaf-surface to the two sources of light; and in order to compensate for this advantage the light centres may be placed considerably further apart, say at distances equal to three times their elevation, or 18 metres. Nine lights so placed would cover an area 54 metres square, or just about three-quarters of an acre. If this space were enclosed with a high fruit wall (as shown with the lamp centres marked in the accompanying sketch, fig. 63), this will also get the full benefit of electric radiation, and would serve at the same time to protect the plants from winds. Protection against injury from this latter cause might be further carried out with advantage by following the plan adopted (with excellent results I believe) by Sir William Armstrong—that of subdividing the area under forced cultivation by vertical partitions of glass.

The engine-power necessary to maintain this radiant action would be $9 \times 4 = 36$ horse-power, involving the consumption of $36 \times 2\frac{1}{2} = 90$ lb. of fuel per hour, or say, for a night of twelve hours (with an allowance of 40 lb. for getting up steam) 10 cwt., which, at 16*s.* per ton, would cost 8*s.* This expenditure would not include, however, the cost of carbons and of an attendant, which would probably amount to another 8*s.*, making a total of 16*s.* If, however, an engine can be found doing other descriptions of work during the daytime, the cost of steam-power and attendance for the night-work only would be considerably reduced. In the calculation just given I have assumed the employment of fuel for the production of mechanical energy, whereas the question will assume a totally different aspect if natural sources of power, such as waterfalls, can be made available within the reasonable distance of half a mile. The expenditure for energy will, in that case, be almost entirely saved, and that of attendance be greatly diminished, and under such circumstances it seems probable that electro-horticulture may be carried out with considerable advantage.

The experiments furnish proof that the management of the electrical apparatus presents no particular difficulty, as the gas-engine, dynamo-machine, and regulator have been under the sole management of my head gardener, Mr. D. Buchanan, and his son, an assistant gardener. The regulator requires no attention beyond the replacement of carbons every four or five hours, which period may easily be increased to twelve hours by a slight modification of the lamp. *C. William Siemens.* [The substance of a paper presented to the Royal Society.]

Since the above communication was put into type we have received the following letter from Dr. Siemens, which is so important that we lose no time in laying it before our readers:—"The Strawberries exposed to the electric light have made extraordinary progress, and I shall exhibit before the Royal Society to-morrow night (March 18) two pots that were exactly alike a fortnight ago, the one which was exposed to the electric light having now ripe fruit, while the other, which was exposed to solar light only, but kept at the same temperature, has, as yet, only unripe green fruit. At the Royal Society to-morrow you will have an opportunity of tasting the fruit, to ascertain whether the electric light produces aroma or not. It is also interesting to observe some Melon plants, which did remarkably well under the night influence of the electric light, but which have produced much fewer leaves since the light has been shifted to another point for the Strawberries. Regarding the question of cost, I find that the power costs me 67 cubic feet of gas per hour, say 4*s.* per hour, or, including attendance, 6*s.* per hour for a light of 1400 candle-power. Greater powers than this would be relatively cheaper. *C. W. Siemens.*"

JAPANESE CONIFERS.—XI.

(*Continued from p.* 300.)

Picea Maximowiczii.*—This plant at present is a mystery: very little is known about it. Moreover, if it do not prove better-looking in the future than

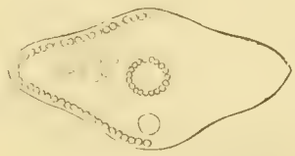

Fig. 64.—Picea Maximowiczii: transverse section of leaf, magn.

the young plants do now, it is not likely to find much favour with planters. All that we know of its history is comprised in the foot-note. The plant, as seen in English gardens, is starved and miserable-looking, as if it were anything but at home in our climate. It is apparently a dwarf Spruce, with the young shoots cinnamon-brown, glabrous, the needle-shaped dark green, four-sided, spine-tipped leaves spread on all sides almost at right angles to the stem. When cut across they present hypoderm uniformly distributed in a single layer, without pallisade cells, but, with what is very curious, a single resin canal beneath the midrib, exactly as in Tsuga, to which otherwise the plant seems to have no resemblance. Sometimes the leaves are destitute of resin canals. M. Carrière describes the seeds and the embryo plant, but gives no opinion as to the affinity of the species. Maximowicz, as cited by Franchet and Savatier, refers the plant as a variety to P. obovata, and states that the seeds were sent probably from Nippon by Tschonoski in 1865. In any case the solitary resin canal is quite exceptional. *M. T. M.*

* Picea Maximowiczii, Regel, Index Sem. Hort. Petrop. 1865, p. 33; Carrière, Traité Général des Conifères, ed. 2, 1867, p. 347; descriptio seminum nec non embryonis.

Abies Maximowiczii, Rob. Neumann, Cat 1865, ex Parlatore, in DC. Prod. xvi. ii. 431; Gordon (nomen tantum).

A. obovata var. japonica, Maximowicz, Ind. Sem. Hort. Petrop. 1866, p. 5, ex Franchet and Savatier, Enum. Pl. Japon. i. 466.

New Garden Plants.

Cypripedium Spicerianum, *n. sp., in litt. ad cl. Veitch*, Dec. 1878.* [*Gard. Chron.* 1880, vol. xiii., p. 41.]

This is a most lovely original species, named by me on December 1, 1878. It stands just beside the curious Cypripedium Fairrieanum, having the same narrow petals, curved down sideways; they are light green, with a purple middle line and copious most minute freckles on the upper side over the middle line, the border much waved. The standard-like upper sepal is the chief ornament. It is transverse oblong, blunt acute, with reflexed margins, thus making one think of an old-fashioned shepherd's hat, pure white at the base, as light green as a young adult green frog (Hyla arborea), the middle line being of a beautiful purple. The connate oblong acute lateral sepals are of a light whitish-green. The lip is shaped like that of Cypripedium Fairrieanum, but it is much larger, olive-green, with a brown anterior part, side lobes with red margin. The nearly square staminode has three very blunt rather evanescent lobes in front; colour mauve with a white anterior border and a queer yellow figure in the centre, which may be compared with two three-branched deer-horns with that part of the skull whereon they are inserted, just as they may often be seen in the rooms or lobbies of enthusiastic hunters.

This lovely plant has recently been figured in these columns. It was sent me in 1878, and exhibited at the end of 1879 by Messrs. Veitch. *H. G. Rchb. f.*

BRITISH AMERICAN VIOLAS.†

In this paper the author states that his object is to interest botanists in the study of a lowly but beautiful family of plants whose headquarters are in the temperate regions of America, but whose relations to each other as species, varieties, or hybrids, are as yet imperfectly known.

He has some of the related species in cultivation for the purpose of studying the remarkable variations in form, texture, and size of organs, of the same individual plants at different periods of the year, and he hopes that other botanists and cultivators may be induced to undertake a careful study of the living plants in the same way, which seems to hold out the only hope of arriving at satisfactory conclusions.

The number of British American species, not counting varieties, is twenty. Of these, eight grow within the limits of the Nova Scotia peninsula, and four others are not unlikely, sooner or later, to be added.

The species are divided into four groups:—(1) those with long and thick fleshy rhizomes, sending up annually radical leaves and flowers from terminal buds; (2) those with rhizomes sending up annually long-stalked radical leaves and leafy flower-shoots; (3) those with slender and woody roots and stems branching into annual leafy flower-shoots; (4) those that have permanent and leafy stems and leafy stipules.

The distinctive characters of each species and of its varieties are pointed out, and also the geographical and local distribution of the various forms, which in many cases has been incorrectly indicated in published works.

The first and most beautiful of all the American Violets is V. pedata, a Saskatchawan and extreme Western species. V. palmata, Linn., which proves to be a constant and distinct species, has, thus far, been found only in one place in British America, viz., on the banks of the Sackville River, at Lucyfield, although it is not rare in the Southern and Western States. Of V. cucullata, the common blue Violet, there are several forms. It abounds in the Maritime Provinces generally, and in Ontario, and extends far West, both in Canada and the United States. V. sagittata (including ovata) is a rarer species, but still not uncommon from the Atlantic seaboard to the Western parts of Ontario, wherever there are sandy soils dry, and sunny banks. Its flowers are paler, and have more of a purplish tinge than those of the common blue Violet, and they come later. V.

* *Cypripedium Spicerianum*, n. sp., Rchb. f., MSS., 1878.—(Acaulia cornuta viridifolia); foliis quam in Cypripedio insigni angustioribus; pedunculo parcissime piloso; bractea ancipiti, ovario trigono calvo breviori; sepalo impari cuneato-ovato apiculato transverso vexillario magno; sepalis paribus ovato acutis connatis labello brevioribus; tepalis triangulo-ligulatis acutis deorsum extrorsumque curvatis, latere sepali imparis energetice curvatis; labelli sacco utrinque angulato, medio antice retuso; staminodio subquadrato, antice medio angulato, utrinque emarginato, ante basin utrinque margine, margine profunda et anguste sinuato. *H. G. Rchb. f.*

† A paper "On the British-American Species of the Genus Viola." By Professor George Lawson, Dalhousie College, Halifax. Communicated by Mr. Sadler to the Botanical Society of Edinburgh on March 11.

rotundifolia is more circumscribed in its distribution. Viola blanda is the common white Violet, so abundant everywhere about Halifax and throughout the other Maritime Provinces and Ontario, growing in wet places, and on Alder banks. It is the first Violet to bloom in spring, appearing in average seasons in April with the Mayflower. Its flowers are delicately sweet-scented. We read in Aiton's *Hortus Kewensis*, the standard work of its time on garden plants, that this species was introduced to England by his Royal Highness the Duke of Kent, who no doubt obtained it at "The Prince's Lodge," near Halifax, where it still abounds. V. primulæfolia was found for the first time last summer in a swamp at the Three Mile Church, near Halifax. It is closely related to the V. Patrinii, described in the East Indian Floras as inhabiting the Nilgherries. It does not appear to have been previously found in British America. It seeds sparingly, and there seems reason to believe that it may be a hybrid between V. lanceolata and V. blanda; this point still remains to be determined. V. lanceolata is the white-flowered, narrow-leaved Violet, so common about Steele's Pond and Lily Lake, usually found only in swamps and by the margins of lakes.

Although this species occurs in Illinois and Kentucky, and is nowhere else so abundant as in Nova Scotia, yet it appears to be absent from the greater portion of the Province of Quebec and the whole of Ontario. V. striata, on the other hand, is essentially an Ontario species. The most puzzling of all the British American species is the blue leafy-stemmed Violet, which has been mostly known to botanists as V. Muhlenbergii, having been named in honour of the American (Dutch) botanist of that name. More recently it has been identified with the Viola canina of Europe. V. canina is an aggregate species, embracing several very distinct segregates in Europe. The only one of these which the plant resembles is V. sylvatica, of Fries—the common Dog Violet of Western Europe.

Although there is no plant in America corresponding to the European forms canina (proper), lactea, or stagnina, yet in the Far West, on both sides of the Rocky Mountains, there is a remarkable cæspitose form, viz., albiflora, of Hooker's *Flora Boreali-Americana*, which does not seem to occur in Europe. The nearest European approach to it is apparently the mountain and arctic sub-species, arenaria, DC. V. rostrata belongs to the same group as V. canina, but is very distinct in appearance, and a larger and more handsome plant, yet almost the only technical character is the greater length of the spur of the flower, and there is a form intermediate in this respect.

There is an Ontario species, occurring in the woods around Kingston, Belleville, Toronto, &c. V. canadensis is more abundant throughout Ontario; it is the tallest of all the Violets, growing from 9 inches to 2 feet in height.

The last is the leafy stipuled species, V. tricolor, the original of the parti-coloured varieties of the garden Pansy. Its perennial form occurs in some places, but it is not originally a native plant in America.

DEFENCE IN PLANTS.

Perhaps I may be allowed to call attention to a peculiar although perhaps not singular fact, which has lately come under my notice. Eriodendron anfractuosum, or the Silk Cotton-tree, when in a young state, is always armed with stout prickles. As the stem enlarges these are gradually shed, the bark becoming hard, and losing its green appearance. It is one of the peculiar features of the tree that the base of the stem rises in buttresses of varying thickness at the point where root and stem join, and which form a support to bear the enormous weight of the very large trunk and branches. These buttresses are not very prominent until the branches spread widely in a longitudinal direction from the trunk, when they commence to increase in size, mostly on their upper surface or ridge, and rise in a vertical direction.

On the growth taking place, there appears on their rounded surface the chlorophyll, or leaf-green, common to the epidermis at a younger stage. It is not formed on all the buttresses, or ridges, at the same time, but appears only on those situated on the side of the tree which is most in need of support, and which are therefore increasing in size most rapidly. Wherever this green appearance fully covers the part of the growth it is protected by stout prickles, developed gradually from the epidermis, undoubtedly for its protection. Cattle would not injure old bark, for there is nothing tempting about it; but where it assumes a nice green appearance, every one knows what pains they sometimes take to strip it: hence the need of protection. *J. Hart, King's House, Kingston, Jamaica.*

PROLIFEROUS PLANTAINS.

The common wayside Plantain (Plantago major) is not in general considered very ornamental, nor does it find much favour save with bird fanciers. Nevertheless there are certain forms of it which have held their place in old-fashioned gardens from time immemorial. We hope they will long continue to do so, for though the charm of colour may be wanting to them, elegance of form is not lacking. Moreover, there is an element of curiosity about them (if "interest" be thought too fine a word) which gives them in the eyes of the plant lover an attractiveness which no mere bedding plant possesses. The variety we figure is a very fine specimen of the "Besome Plantain" or "Plantain with spoky tufts" of Ray, of Gerard, of Parkinson, and other old writers, and whose history is given in Loudon's *Magazine of Natural History*, vols. iii. and ix., and in brief in Dr. Masters' *Vegetable Teratalogy*. For the specimen which forms the subject of our illustration (fig. 65) we are indebted to Mr. Cooling, of Derby, who forwarded it to us with the following note:—

Fig. 65.—Proliferous Plantain.

"I have received from the Rev. Gerard Smith, of Ockbrook, near Derby, a very curious and ornamental sport of the common Plantain, which I send for your inspection. The plant was observed growing on the edge of a field two years ago, and was transplanted to the reverend gentleman's garden. Last year the peculiar development was not so marked, but this season it has developed to the extent you see. The plant is quite strong and healthy, and in its present form quite an ornament to the shrubbery border in which it is growing. It has shown no inclination to produce seed at present."

Another form is that which we figure in P. Coronopus, where the secondary branches of the spike all start from about the same spot, and so produce an umbellate appearance. We reproduce (fig. 66) an illustration of this from an earlier volume.

Equally common is the "rose Plantain," a form of Plantago media, in which the bracts form a leafy rosette at the top of the flower-stalk, which in place of lengthening as usual into a spike remains short and contracted.

P. lanceolata, the common Rib-grass, has also its special vagaries, for it is a very singular circumstance, of which we can give no explanation, that each species of Plantain has its own particular mode of transgressing the rule, and only rarely indulges in the same erratic direction as its brother Plantains do, although there is no structural reason to the contrary.

GREENHOUSE POVERTY,

There was a time, not very many years back, when those who owned plants, as well as the gardeners in whose charge they were, apart from the beauty or decorative value of the plants themselves, took a pride in being in possession of such species and varieties as were not easily grown. The gardeners especially took credit to themselves when they could point to a collection composed of the more difficult-to-manage hard-wooded subjects in the vigorous healthy state that gave evidence of the grower being able to manage plants that require something more than the limited care and experience sufficient to produce in fair condition the very limited number of quick-growing, easily-managed things which now almost exclusively go to make up the whole contents of a greenhouse. Not that I have a word to say individually against the merits and usefulness from a decorative point of view of the Zonal Pelargoniums, tuberous-rooted Begonias, Fuchsias, Cinerarias, Primulas, Calceolarias, and winter-blooming bulbs that very often compose the collection, with the addition of a few Camellias and Azaleas. But this I do say, that when these and a few other things of a like character comprise, as they frequently do, the whole assemblage, then very much of the interest, pleasure, and charm that may be derived from a greenhouse is absent.

The following are some of the hard-wooded plants that are now conspicuous by their absence from nine-tenths of the gardens one sees. Commencing with the first months of the year, there are the many beautiful kinds of Epacris, ranging from pure white, all through the shades of blush and pink, to red and crimson—easily grown, profuse flowerers, requiring few or no sticks or ties, which will bear cutting so freely that the plants may each year be reduced to almost the size they were before the season's growth commenced. Boronias, with their elegant drooping shoots clothed with delicate coloured shell-like blooms, several of the species highly fragrant—in addition to which some, like B. Drummondii and B. pinnata, continue in flower for three or four months, beginning in the dead of winter. All the different species need very little tying. Chorozemas, bright coloured, free blossomed plants, the long flexible shoots of which are yearly clothed for many weeks during the spring with their orange and red flowers in such profusion as to almost hide their Holly-like foliage. Adenandras, that bloom as densely as the low bushy tufts of the hardy Daphne Cneorum—one of the kinds, A. fragrans, almost as sweet as the Daphne. Acrophyllum venosum, one of the most distinct plants ever introduced, alike handsome in its leaves and growth as in the dense panicles of its creamy-coloured Meadow-sweet-like inflorescence. Correas, easy to manage, and seldom failing to give a plentiful crop of their red tubular flowers, opening in succession for a long time. Mitraria coccinea, as easily managed as the last-named, its red mitre-shaped blooms differing from anything else sufficiently to make it deserving of a place in any collection. Dracophyllum gracile, elegant in its thread-like shoots, every one of which bears on its point

a snow-white tuft of papery-textured flowers, delicately scented and lasting for a couple of months; they are alike pretty on the plant and useful for cutting. Daphne indica, fresh green-leaved plants, unsurpassed for the fragrance of their flowers, that last well, and are an acceptable addition to any arrangement of cut flowers. Hoveas, free-blooming subjects, with Pea-shaped flowers of a lilac-blue colour, very suitable plants with which to clothe a pillar or occupy the corner of a house. Aphelexes, free-blooming everlastings which stand unequalled for the bright starry-shaped flowers with which the plants are annually clothed in fresh condition for five or six weeks.

In addition to these may be named the elegant-habited Tetrathecas; Pleroma elegans; the white-flowered Eriostemons, profuse bloomers that if need be will bear forcing; the beautiful bright-blossomed Coronilla glauca, with numbers of others, including the numerous group of Cape Heaths, which in themselves afford such variety in habit of growth, colour and form of flower, from the robust yellow-blossomed E. Cavendishiana, the globular, white, sweet-smelling E. suaveolens, to the slender branched E. cerinthoides, bearing from the points of its shoots tufts of the intensest red flowers. So rich in different forms and colours are the Heaths, that one scarcely knows where to begin in pointing to the varieties most suitable for general decorative use. There are the ventricosas, that in themselves give a succession of flowers for three months in spring and summer, varying from flesh colour to the deepest pink; then there are the numerous autumn bloomers, such as E. retorta major, E. Austiniana, E. Marnockiana, E. Irbyana, and others.

Respecting the use of Heaths, and the hard-wooded plants named above, as well as many others of a like description, for ordinary greenhouse decoration, it is sometimes urged that they require an amount of training and tying which gives them too much formality in appearance, as also entailing a considerable amount of labour, and in confirmation of this the formally trained examples seen on the exhibition stage are pointed to. Yet nothing can be more groundless than such an objection, for the obvious reason that the sticks and ties requisite to secure plants in position that have to be moved backward and forward to exhibitions, conveyed as they often are hundreds of miles, are altogether unnecessary when the plants are only wanted for home use; indeed, if duly attended to in the first stages of their growth, by stopping the shoots so as to induce the bushy habit they would assume of their own accord if growing naturally in the open air, and by an annual cutting back after they have flowered, not many sticks and ties would be wanted—simply just enough to support a few of the principal branches. This must be so patent to any one at all acquainted with the nature of the plants in question and the requirements for ordinary greenhouse decoration, that it looks like going over well known ground to point it out.

Even if a portion of the hard-wooded plants I have named found a place in the glass erections devoted to the growth of things that want a cool temperature, greenhouses and conservatories generally would have a very different appearance and be vastly more interesting than they at present are. The cultivation of Ferns and other fine-leaved plants, now for some years on the increase, is desirable, and exhibits a growing appreciation of beauty in form, but the presence of these by no means necessitates the absence of the most distinct and beautiful of flowering plants—rather the reverse, as a contrast and relief from the over-sombre effect too often apparent where there is a preponderance of green foliage. One thing is certain, that if the gardeners in this country had never shown the ability to cultivate a class of plants more difficult to grow, and more generally interesting, than those now almost exclusively to be met with, they would never have had the reputation amongst Continental horticulturists of surpassing all the world in the cultivation of tender plants. *T. Baines.*

Fig. 66.—PROLIFEROUS PLANTAIN. (see p. 364.)

OUTDOOR FIGS.

On looking over some outdoor Figs, I find the difference between those restricted at the roots and others that have unlimited space in which to ramble very remarkable, the young wood of the former being hard and short-jointed, and apparently uninjured by frost, while that of the latter is just the reverse. No doubt the past summer had been very bad for ripening such sappy growth, but the plants to which allusion is made are situated exactly alike, they being on a high south-east wall that is sheltered by others running from the ends and forming a square. They therefore stand the same chance, and may be judged fairly accordingly. From what I have had to do with Figs, I have come to the conclusion that to obtain fruit without limiting the larder is a hopeless task, for do what one will at the top by way of pinching and pruning it seems only to make matters worse, as knifing only produces walking sticks, and does not check the naturally gross habit of the tree; but by cramping and confining the roots one soon becomes master of the situation, and can then keep the branches entirely under control.

Left to themselves Figs ramble far and wide, sending their thong-like feeders half over the garden, a striking instance of which I met with some years ago, when I found some had threaded their way into a Peach border, along which they had travelled nearly its entire length. In districts where Figs are found to be fertile they have a shallow dry soil resting on a chalk bottom, like that near Worthing, where in ordinary seasons heavy crops are obtained. The milder sea air that prevails there may have something to do with their fruitfulness; but then there are other parts just as favoured as regards climate, and yet we do not find the trees there anything like so prolific, for the simple reason that they run riot and make gross shoots full of pith that seldom or never ripen. These as a natural consequence get severely injured by the frost, and the young embryo Figs perish from want of a flow of healthy sap to feed them, but it generally happens that the wood is killed outright. What is needful is to get this short and stubby, with joints not more than an inch or so from each other, as with such growth Figs are as hardy as the points of the branches of an Ash, and almost as firm and consolidated.

Like the straw of Wheat, the wood of Figs appears to require calcareous or flinty matter to build it up; and in planting, therefore, it is always advisable to work in plenty of fine chalk or lime rubbish, which, when mixed with the soil, should be rammed firm, so as to induce the formation of plenty of fibres—a point of great importance, as with a mat-like ball of these a fruitful habit must follow. The readiest and cheapest way of restricting the feeding-ground of outdoor Figs is to thoroughly concrete the bottom, or make it impervious to roots by a layer of bricks with the joints grouted in with cement, and to build a 4½-inch wall, so as to limit the soil they have to use to about a yard square. This, with the assistance of a heavy mulching during the summer, and a soaking or two of liquid manure or clear water when the fruit is swelling, will be found ample space for a large tree.

The best time to set about walling them in is during April when they are on the move, as then they stand the interference without feeling it in the way they do in the autumn with a hard winter at hand to contend with; and the check in spring is beneficial in bringing about the habit required. Root-pruning is generally a sufficient corrective as regards other fruit trees, but the Fig appears to get over an operation of that kind at once, and by the stirring of the soil often starts away again with redoubled vigour. I would therefore recommend the bricking in, as they are done with then once and for all, and I shall be glad to hear if any one else has tried the system, and what results they have met with by so doing. I have often thought that it would be a good plan of growing Figs to have a quantity in large pots or tubs that could be plunged in a warm sunny place in a bed of leaves during the summer, and in the autumn removed to a shed to be wintered: treated in which way they would be quite safe and yield an abundance of fruit. *J. S.*

VIOLETS.

The sight of these at almost every turn, and the sense of their sweet odours, brings to mind that it is high time to be preparing for a winter supply, for to have them in quantity these plants must be propagated and set growing betimes. Like most perennials of this class, much of the success attending their culture depends on the length of season they have afforded them to make a full and free development of the crowns from which the blooms are produced. Unless these are formed there the year previous, it follows that they will be looked for in vain, for, however good the treatment after, they are like trees without bud, and must therefore be barren of blossom. To wait till May for runners makes it too late to get strong plants, and therefore the best way is to take up any old stock that has done flowering, and is healthy, and part the plants so as to single out and save all the finest side-shoots, which, although they may have no roots on at the time, will

soon make some if pricked out in pans or boxes and then placed in frames, where they can be kept close for a time, and syringed, to maintain the leaves in a fresh condition.

If the boxes or pans containing them are stood where they can get a gentle moist heat, all the better, as they strike the quicker; but as soon as this has taken place they must have air to prevent weakness and drawing, and must be gradually hardened off till they are fit to stand in the open bed, prepared after the following manner for their reception. As they are fond of vegetable matter, plenty of leaf-mould or refuse peat should be dug in, together with mild decomposed manure, in which mixture with the ordinary soil Violets specially delight. The site for the bed should be under the shade of some wall or building, quite away from the influence of trees, the roots of which otherwise soon find their way among the plants, and rob them to a serious extent. In putting these latter out, which should be done at 9 inches apart, it is important that they be disturbed as little as possible, as the less check they have the quicker will they set to work and establish themselves in their new quarters. During summer it is a great help to them if a mulching be given, the most suitable being sifted leaf-soil, which may be quickly scattered amongst them, when it will be found of great service in keeping the ground cool and moist by preventing evaporation, besides which it stops any washing of the surface soil when watering or applying liquid manure.

To concentrate the strength of the plants it will be necessary to remove all runners as they form; and to keep down red-spider there is nothing to equal cold clear water, sent with some force to the undersides of the leaves, so as to break up and destroy their webs, which ends in their complete discomfiture. Soot dusted on occasionally is a good antidote against these pests, and an excellent stimulant besides.

After trying a good many sorts of Violets for frames, I have arrived at the conclusion that there are none to beat the old Neapolitan either for delicacy of colouring or sweetness of perfume; but for all this the new double sorts are quite worth growing for the sake of variety to mix in with the others. *S. D.*

OPEN-AIR VEGETATION.*

During the month of February the thermometer was at or below the freezing point nine times, while in February, 1879, it was twenty-one times. The following were the lowest temperatures: on the 6th, 30°, or 2° of frost; 9th, 23°, or 9° of frost; 11th, 25°, or 7° of frost; 13th, 29°, or 3° of frost; 14th, 29°, or 3° of frost; 15th, 28°, or 4° of frost; 26th, 30°, or 2° of frost. There were registered for the month 30° of frost, while in the corresponding month last year there were 98°.

Since March commenced the thermometer has been at or below the freezing point six times, and 25° of frost have been registered. The following were the three lowest readings: 8th, 25°, or 7° of frost; 9th, 23°, or 9° of frost; 10th, 23°, or 9° of frost; and this morning the thermometer stood at 35°.

The few bright sunny days at the end of last week and beginning of this had the effect of opening many spring flowers, and at present there are upwards of sixty different species and varieties in full bloom on the rock garden, among which may be noted:—Andromeda floribunda, Galanthus Elwesii, plicatus, and Imperati; Leucojum vernum, Saxifraga oppositifolia (various forms, including grandiflora, retusa nana, and pyrenaica); Rhododendron præcox, Daphne Mezereum, Crocus Imperati, C. etruscus; Primula denticulata (of various shades), P. cashmiriana (evidently a form of denticulata), P. pulcherrima, P. purpurea, P. marginata.

Of the forty species of spring plants whose times of flowering have been recorded yearly the following have come into flower since last meeting:—

	1879.	1880.
Galanthus plicatus	March 1	Feb. 23
Bulbocodium vernus	April 7	,, 20
Arabis alpina	,, 7	,, 24
Crocus susianus	March 6	,, 20
Sisyrinchium grandiflorum album	April 6	March 4
Draba aizoides	,, 7	,, 4
Daphne Mezereum	,, 9	Feb. 19

&c.; thus showing that vegetation is at present, on an average, at least five weeks in advance of what it was at this date last year.

* Report on Temperatures and Progress of Open-air Vegetation at the Royal Botanic Garden. By Mr. John Sadler, Curator. Read at the March meeting (11th) of the Botanical Society of Edinburgh.

In conclusion, I would call attention to a large addition which has just been made to the rock garden in the form of a fernery, in which has been planted nearly 2000 plants.

Foreign Correspondence.

Melbourne: *January* 1, 1880.—It may interest your readers to learn that an experiment, instituted by one of my assistants, has proved successful. He has been enabled to remove living Livistona Palms from the Illawarra forests to private gardens in Melbourne, the stems being about a dozen feet high, and very many years old. In accordance with precautions adopted by me in the Melbourne Botanic Garden many years ago when moving trees, the roots of these Palms were covered up at once when the ground around the ball of earth was cut, and the Palms left in their original positions for some months in order to form new roots. The Palms were after that lifted with some earth remaining adherent to the roots, and in that state they travelled well, wrapped up in coarse matting, for a week and more without flagging. Thus a villa here may at once be provided with stately Palms as much as twenty years old, or perhaps of any age, and that at quite an insignificant expense, and with the gain of a generation in time. This example might be tried in other Palm countries, and thus a new branch of horticultural trade might be opened up. Many of the Mexican, Brazilian, and Indian coast Palms might probably be shipped in a similar manner to European conservatories. *Ferd. von Mueller.*

Forestry.

Value of Scotch Fir Plantations During Fifty Years' Growth.—I quite agree with Mr. Smith that it is of no use for us to discuss the subject further on the present lines of divergence. As we started so we arrive, nothing gained, nothing lost. Mr. Smith relies upon what he finds in books and pamphlets for his information, while I go to the woodlands and forests for mine.

He finds certain statements in the books he reads, I find in the fields of my research nothing to confirm the book statements, but on the contrary everything to disprove them. Mr. Smith infers that my experience must be limited, the field of observation circumscribed, and that adverse circumstances, inclusive of bad management, must account for and explain the difference between what he finds in books and I find in practice. One or more of these circumstances may satisfy Mr. Smith as the solution of the problem, but if they do he will, I trust, by patience and investigation, find that his premises have been of false construction, and when he does so he will be angry, not with me, but with the books or authors who have put him wrong.

Mr. Smith is quite correct in saying that none of the woods or plantations under my management have yielded one half what he finds stated in books as yielded on other estates: he is also quite correct in saying that I have no prospect, or even hope, of any that I ever may have charge of ever doing so. Now that we mutually agree to conclude, or at least suspend the subject of our present discussion, I hope we shall be more fortunate in seeing eye to eye upon other and succeeding but kindred topics.

Believing that few, if any Scotch Fir plantations are mature and ripe as a crop below sixty to seventy years old, and that between the latter age and ninety years is found the period at which it is most profitable to cut and clear the crop, I will as opportunity affords adduce some statements showing the actual value of such crops in different parts of the country. The following is an extract from a small treatise on the culture of Larch plantations which I read some twenty years ago. The book I only had the loan of and noted some things, and although I have of late made several efforts to procure a copy of it I have hitherto failed in my endeavours, and shall be most thankful to any one who can direct me to it. The author's name is John Smith, and the book was published by Blackie & Sons, Edinburgh. I believe the book is out of print, but I would be glad to purchase a copy of it if for no other than the absurdities and exaggerations it contains, of which the annexed is an example.

On ordinary good ground there are planted 4000 Larch trees to the acre, at about 3½ feet apart. Thinning is commenced

At 9 years' growth, at which 500 trees are thinned out, at 1½*d.* each				£3	2	6
,, 11 years' do., thin out 500 do., at 2½*d.*				5	4	2
,, 13 ,, ,, 500 do., at 5*d.*				10	8	4
,, 15 ,, ,, 500 do., at 7*d.*				9	1	3
,, 18 ,, ,, 500 do., at 9*d.*				16	15	0
,, 22 ,, ,, 500 do., at 15.				25	0	0
,, 27 ,, ,, 500 do., at 3s. 6*d.*				165	0	0
,, 30 ,, ,, 150 do., at 10s.				75	0	0
,, 33 ,, ,, 150 do., at 15s.				112	10	0
,, 40 ,, ,, 100 do., at 25s.				125	0	0
Total produce of an acre of Larch in 40 years				£549	1	3

It is almost unnecessary to say that the above statement, though in print, is almost as far from the truth as it is possible to go; and yet such statements find credence by readers, to their own pleasure, no doubt, but certainly no less to their ultimate disappointment and loss.

I have now and again met with as specious fallacies as the above, but none more so that I can remember. *C. Y. Michie, Cullen House, Banffshire, March* 15.

Garden Operations.

FLOWER GARDEN, ETC.

The Frost.—Now that the worst effects are visible, shrubs and other plants that have suffered by the severity of the winter should have all traces of injury removed before new growth renders the operation tedious. With us Laurustinus, Bays and common Laurels are the most conspicuous amongst the injured, but for the most part it is only the later formed shoots that are destroyed, and all such we are having cut off; none of them seem to have vitally suffered, but doubtless in some parts of the kingdom this will be the case, or, if not, perhaps so much injured that the wisest course would be to cut them down to the ground-line at once. We are obliged so to treat Arbutus Unedo, Berberis Darwinii, and Euonymus elegantissimus variegatus, which seem hopelessly injured; amongst Conifers, Pinus insignis and Abies lasiocarpa are the only kinds that have suffered, and these only in a very limited degree, but as the browned shoots are eyesore they should be cut off, which operation, to promote equality of growth, may render it necessary to shorten some few other shoots. The difference of opinion as to the occasional pruning of Conifers is inexplicable, for the operation ought to be regarded as a part of their culture, as much as when we endeavour to repress a strong watery fruit-tree shoot by pinching out its point to equalise growth over all parts of the tree. Roses have gone through the ordeal well, a few of the Tea section only have succumbed, and it is an instructive fact that the strongest plants, and consequently worst ripened, are amongst the slain. All kinds of Roses should now be pruned, afterwards the dry portion of the winter's mulching raked off, and the remainder lightly forked in; a fresh surface mulching should be given before the sun renders the surface hard and causes the soil to crack. Cocoa-fibre refuse makes a neat mulching, but before it is put on give a good dressing of guano, and this will carry them successfully through the summer.

The Borders.—Shrubbery margins and mixed borders are now gay with Snowdrops, Violets, Crocuses, Scillas, Primroses, &c.; Erica herbacea being extraordinarily well flowered this season. Daffodils, Myosotis, Phlox verna, Aubrietias, Arabis, and the hardier annuals will also very shortly be in flower, and to enjoy their beauty to the full all the surroundings should be kept tidy: weeds, bad walks, and uncut turf, are sufficient to depress, even in the presence of his pets, the most enthusiastic floral devotee. Spring flowers are ever welcome, and I allude to and name some of them here, that their culture may be extended, and also to show that summer bedding is not the only phase of flower gardening I advocate or desire; indeed, I would prefer that all classes of hardy flowering plants had a place in every garden, but the formal parterre or a flower garden immediately in front of a mansion is not the place for them. All such gardens are most appropriately and effectively planted and maintained in neatness by the adoption of the bedding system, the providing of plants for which being just now the principal item in the labour programme.

Bedding Plants.—To get up a stock of Alternantheras gives little trouble, when treated as detailed at p. 228; Iresines, Coleus, and Heliotropes require the best positions, and if possible should be potted singly, or at most but two plants in a 60-sized pot. Lobelias, Tropæolums, Petunias, and the like, may be planted out in pits that can have full exposure as soon as the plants are established; whilst Calceolarias, Violas, and other half-hardy plants may be planted out in turf pits or under south walls, and be protected with mats in

frosty weather. Seedlings of subtropicals should be pricked out as soon as fit to handle, for if the roots once get matted together the check they receive by division is long in healing. The most beautiful and generally useful amongst this section of bedders that can be quickly raised from seed are Ricinus Gibsoni, Acacia lophantha, Grevillea robusta; Solanum marginatum, pyracantha, and robustum; and Wigandia urens. Abutilons are well suited for this kind of bedding, and cuttings of the following kinds struck at once will make good plants by planting time:—Duc de Malakof, Lemoinei, Thompsoni variegata, and Boule de Neige. As climbers, for vases and basket beds, sow seeds in warmth of Cobœa scandens and Maurandya. Sweet Peas, Convolvulus major, and Tropæolum aduncum (the Canary Creeper), may be sown at once in the place they are to occupy the entire season. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

The agreeable change which has taken place in the weather during the past few days has had a wonderful effect in forwarding the buds of fruit trees. So great has been the action of the weather in stimulating bud development in all stages and in all situations, that many operations that must have been behindhand, owing to the unpropitious state of the season, will now have to be brought forward with redoubled vigour. Planting has indeed been a work of difficulty, here at any rate, this season, the work having only been brought to a close within the past week. It should, however, be stated that the situation was a north one, in which position the soil is longer in getting into a workable state than it would be in a more exposed aspect. A rather open soil on the light side, and perfect drainage are the most efficacious remedies to apply with a view to early fertility in such positions. Espalier trained Pear and Apple trees, which from the nature of their position are rendered conspicuous objects, should be well mulched, and the surface blinded over with soil to hide what is in the eyes of some an objectionable appearance. No digging about their roots and no hungry plants robbing them of their daily bread ought to be on any account permitted here. The advanced state of Peach and Nectarine trees will cause a considerable display of activity upon walls where pruning and nailing are still in arrear. Leave the best bearing shoots, and do not be afraid to use the knife upon weakly, immature, or succulent growths, which, however, seldom exist where summer pinching and thinning is carefully attended to. Trees that are swarming with weakly shoots and buds about half their normal size are indicative of neglect or lack of knowledge, and never bear fruit that are fit to look at, much less to eat.

Morello Cherries will now require attention, and will have to be pruned and nailed, whenever time can be afforded from work that is more urgent. The Morello bears its fruit upon the shoots made last year, the best of which should be laid in, bearing in mind also that enough space must be left between the branches to admit of a sufficient quantity of young growths being retained during the coming season for fruiting next year. Gooseberries and Currants grown upon north walls for late dessert purposes may also be pruned, and a net thrown over them to protect them from birds. Fig trees upon open walls have suffered more than I ever remember, and it will be prudent to defer pruning until it can be clearly seen which shoots promise to be most prolific; the trees here on a south wall are moving slowly, and a practised hand might prune with safety. Vines have also suffered severely; the buds which are cosily ensconced at the base of the shoot close to the wall are swelling gradually, but the wood generally is green, and the buds inferior in size. There will be little choice left in the matter of Vine pruning out-of-doors this season; it will be more a question of looking out for shoots pushing from latent eyes to furnish the walls afresh with. With regard to the protection of fruit trees now fast coming into flower the usual preparations will have to be made at once. Apricots are beginning to open their blossoms, and Peaches and Nectarines are not far behind them. The best and most successful protection I ever saw, short of glass, was one made out of a ship's sails. It was brought into use by the gardener of a Liverpool shipowner, who had it fixed on the top of the garden wall in a very workmanlike manner. It worked up and down by means of pulleys and cords, and was used as frequently to retard blossoms as to protect them. It was let down during the hottest hours of the day in order to regulate the great discrepancy of temperature that frequently supervenes, on the cooling down after those hot, dry blinks of a March sun. It was kept a considerable distance from the wall by placing poles equidistant obliquely against the wall. It protected the fruit blossom from wet, frost, extreme cold, and also modified the heat which in hot weather could only be maintained in a proportionate ratio at night by means of glasshouses and hot-water pipes. *W. Hinds, Canford Manor.*

FRUIT HOUSES.

Vines.—Never within the range of my experience have Vines, early and late, broken kinder and better than they have done this season. Non-fermenting material advocates will attribute this satisfactory state to the discontinuance of artificial heat to external borders, but twenty years' experience in a low, damp situation, unfavourable to the growth of good Grapes, leads me to infer that, notwithstanding the severity of the frost, a dry, cold winter is less injurious to the roots than a mild, wet one; moreover, that when covered with some frost-resisting material the borders continue several degrees warmer than they do when clogged by heavy autumnal rains, which chill the roots and prevent the air from getting into them. This being the case it becomes doubtful if many of our Vine borders are not made much deeper and wider than is absolutely necessary to the well-doing of the Vines. At this place, whenever I find a house of Vines going back I always have one remedy, namely, the removal of external or internal borders, shortening of the roots and relaying in new compost, consisting of rough turfy loam and old lime-rubble, manure being used as a mulching only. When treated in this way the wood in the latest houses ripens well, compact handsome bunches follow, and the berries invariably colour and finish satisfactorily. Where spring planting is contemplated the situation and surroundings should be the guide; if high and dry the borders may be 2½ to 3 feet deep, but in low situations 2½ feet will be sufficient. They need not exceed 4 feet in width, and the Vines should always be planted inside the house. Vines in a growing state that have been cut back can then be put in, and if the compost, as suggested in my last paper, has been properly warmed, they will grow away at once, and fill the house with fruiting wood before the end of the season. It will be greatly to the advantage of the Vines if the narrow borders inside and out can be mulched with short manure, which should be kept moist to induce the roots to run along the surface in preference to their striking down into the drainage in search of food, as vigorous young Vines when in full growth take immense quantities of water. Thinning in the early house will now be finished, and the bunches, by their increasing size and weight, will tax the energies of the Vines, especially as the atmosphere is clear and dry. To assist them over the stoning period, all inside borders should be well mulched with good rotten manure, and alternately watered at short intervals with tank liquid and guano-water. The floors and paths may also be damped with liquid after the house is closed, but day and night ventilation must be liberal in proportion to the degree of high feeding. Keep up a circulation of warm air where Grapes are setting. Let Hamburghs have a minimum temperature of 65°, with an allowance of 5° more to Muscats, Mrs. Pince, and Black Morocco. Fertilise these with Hamburgh pollen when the temperature has reached the maximum on fine days. Remove the remains of all fermenting material from internal borders, and proceed cautiously out-of-doors, as a great number of valuable feeders will be working on the surface, and therefore the covering must be removed piecemeal. Give copious supplies of good liquid to pot Vines swelling off crops of fruit. Pot on young ones of this year's propagation when they break away freely into their second growth. Replunge in bottom-heat, slightly shade for a few days, and afterwards expose to sun and light. *W. Coleman, Eastnor.*

Melons.

These have made rapid progress during the bright sunny weather with which we have been favoured during the last fortnight or three weeks. The stopping, tying, and thinning of the shoots must be attended to almost daily, now that the plants are in active growth. Remove all blossoms, male and female, from the plants swelling off their fruits in the early house or pit, which should have the supports put to them in due course, in order to relieve the plants of the weight of the fruit. For this purpose some growers use pieces of deal or lime boards about 6 inches or 7 inches square, and half an inch thick, suspended in a sloping direction to prevent the lodgment of water, by four pieces of wire from the trellis, whilst others use square pieces of small meshed garden netting, which is fastened to the trellis by four pieces of string. Perhaps the latter kind of support is the simpler of the two, inasmuch as it will not exclude any light from the fruit, and being elastic it yields to the pressure of the fruits, and is readily made. Examine the soil and see that the plants do not suffer for want of water. They will now most likely, especially if the roots are growing in a rather confined space, be in a condition to take a weak application of liquid manure, and in giving it them avoid watering close to the stem, which brings on canker, as a preventive of which place a little dry soot and lime around the stems of the plants, say within 3 or 4 inches, and should canker appear, close to the stem. *H. W. Ward, Longford Castle.*

Cucumbers.

Tying, stopping, and thinning the shoots, and removing superfluous fruit, will be the order of the day in this department. Also liberal and frequent supplies of tepid liquid manure in a diluted state must be given to the roots of plants swelling off their fruits, especially to those having their roots in a somewhat confined space, such as pots and boxes. Ply the syringe freely through the plants both ways, so that every portion of the foliage may receive a good washing every morning and afternoon during favourable weather, which, with judicious ventilation and sufficient water to the roots, will keep red-spider at bay. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

Conservatory Creepers.—Roof-climbers of all descriptions will now be on the move, and in the case of Passifloras, Mandevilla suaveolens, and Tacsonias, which flower on the young growth as it forms, it is high time that all the shoots of last year were pruned hard back to the main stems or spurs, leaving only such as are absolutely required for the purpose of laying in to fill vacant spaces, as the less of the old wood that remains the better and fresher will they look. Beautiful and desirable as the Tacsonias are, especially T. exoniensis and T. Van Volxemi, it is very rare that they can be kept long in a house without becoming affected with scale, a pest to which the bark is particularly subject. If this be scrubbed, or brushed over, or thoroughly wetted with a solution of nicotine soap, or Fowler's Insecticide, it will be so effectually cleansed that it will remain tolerably free for the rest of the season. As regards Tecoma jasminoides, and the different varieties of Bignonias, what thinning they require should be left to a later period, for as yet it is impossible to distinguish between the growths that will bloom and others that may be spared to cut out. The first-named, when planted in a border with unrestricted root-space, is generally very shy; but by confining it, and training the top where it can be exposed to the full influence of sun and light, it is exceedingly floriferous, and one of the finest ornaments that can be had, the foliage being of that description and character as to be in a healthy bright condition at all times of the year. To show up in pleasing contrast with its deep green leaves, Cobœa scandens variegata is one of the best things to plant, and particularly so where the roof is at all lofty, so as to admit of the shoots depending naturally from the girders; in which way, if judiciously thinned and regulated, all climbers appear to the greatest advantage.

Camellias.—It often occurs that when Camellias are planted out in these structures they soon outgrow their allotted space, and when it is necessary to prune them it is very important that the work be taken in hand immediately the blossoms fall, for after the plants are lightened of their load active growth takes place at once, and if the cutting back be deferred till then it is impossible for the branches to break as freely and vigorously as they otherwise would. To aid the dormant buds in starting it will be found a great help if the heads can be syringed morning and evening, and the temperature raised by shutting the house up early, by which means, too, a genial atmosphere will be formed of a kind that Camellias specially delight in. Pot plants may be easily treated by removing them to situations where they can enjoy the above-mentioned conditions, and as the sun is now bearing some considerable power when it does get through the clouds, it will be necessary to shade for a few hours during the heat of the day. When the young shoots have fairly made a start, weak liquid manure will be of great assistance if given about twice a week, as by its use plants may be kept in health for years with very limited root-room. Where it is desirable to repot, the present is a good time for doing it. It is an operation that requires great care, the active feeders being always of a remarkably brittle nature, and therefore very susceptible of injury. The soil best adapted for their culture is pure yellow fibry loam, chopped up and used somewhat rough, with just sufficient sharp sand to keep it porous. Camellias do well, too, in a mixture of loam and peat, some growers preferring this, but although the plants make wood perhaps a little more freely, it is a question whether it produces an equal amount of bloom, through being less firm and compact. Having such a galaxy of flowers just now wherewith to make a show, one is apt to be forgetful of the future; but to keep up a continuous display we must be looking ahead, and so managing as to keep back some and to push on others, that they may be had in at any special season desired. As a retarding place a north house is most valuable in any garden, for in it plants may be stood, and brought on in such a gradual manner as to throw them back at least a month out of their ordinary course, but the check given should be during the early stages of the swelling of the buds. *J. Sheppard.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	Mar. 22	Sale of Established and Imported Orchids, at Stevens' Rooms Sale of Established Orchids, Lilies, &c., at the Mart, by Protheroe & Morris
Tuesday,	Mar. 23	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Sale of Imported and Established Orchids and Japanese Lilies, at Stevens' Rooms. Sale of Roses, Fruit Trees, Camellias, and Azaleas, at 38 and 39, Gracechurch Street, by Protheroe & Morris.
Wednesday,	Mar. 24	Royal Botanic Society's Spring Show. Sale of Imported Orchids, from Messrs. H. Low & Co.; Roses from France, Plants from Holland, &c., at Stevens' Rooms
Thursday,	Mar. 25	Sale of an Importation of Rare Orchids, from Mr. F. Sander, at Stevens' Rooms.
Friday,	Mar. 26	Paisley Horticultural Society's Show.

THE present spell of fine weather may do much to wipe out the retrospect of the terrible winter that we have passed through. What was in 1879 called by courtesy summer was more like an ordinary November, and it was, as our readers have too good cause to remember, wedged in between two winters of almost, if not wholly unsurpassed intensity and duration. If the "good old times" we hear so much about were like these we think the sooner they are confined strictly to the domain of memory the better. Experience, however, has shown us that we must expect the occasional occurrence of such adverse seasons, and that nothing we can do will avert them.

It does not follow, however, that because we are powerless to avert them we are to sit still with our hands before us. And as a matter of fact, we do not: we mat up, we bank up the fires, and by-and-bye we shall turn on the electric light, and thus gain additional means of obviating the ill-effect of gloom and cold. So there is some chance, at least, that the "good time coming" will after all be better than the good old times. But if our means of defence are better than those possessed by our forefathers our risks are greater and the flock we have to tend is tenfold larger. There are more plants known in gardens now than ever LINNÆUS knew in his cabinet of mummies. And who shall estimate the gain to humanity in one way or another from this large access of new plants? The task is beyond the power of art. What is not beyond our faculties is the power of selection—of choosing what is good and suitable for our purposes, and of rejecting or relegating to the herbarium what are not adapted for our gardens, fields, or forests. Such seasons as we have had lately, in spite of all their evil consequences, may at least be turned to good account by teaching us what to grow and what not to grow. For our own part we would rather grow and lose than not grow at all. But in many cases loss is not a mere enforced change of one pet plant for another, it means severe distress, possibly ruin, and therefore it is of the utmost importance that the lessons of the two past winters and the intervening hybrid—we will not call it summer—should be gathered together, compared and weighed. Every carefully recorded fact as to the influence of the season on plant growth is of value. What may have no direct or immediate practical bearing may yet be useful from an abstract scientific point of view, and if so its ultimate practical value is a matter of certainty. We would urge then upon our readers the desirability of forwarding to us observations on the effect of the winter on various descriptions of plants. The observations should indicate concisely and briefly the degree of injury—slight, severe or mortal, as the case may be; and should be accompanied by a general statement of the local conditions, such as soil, water, altitude, together with any general observations that may be deemed requisite. It is specially desirable that lists of Roses, Broccolis, and the like, which have survived these adverse conditions, should be drawn up as a guide for the future.

The French, who, like the Belgians, have suffered far more severely than ourselves, are bestirring themselves by issuing a circular, the only objection to which that we can formulate is, that it is too minute for busy men to fill in or for busier men to tabulate. It seems to us more profitable to get a comparatively few well defined precise statements respecting well-known or commercially important plants from different localities than a vast number of loosely-recorded data not admitting of comparison, and many relating to plants of limited interest, scientific or practical. We believe that, under the auspices of the Scientific Committee, a circular will be drawn up and forwarded to various observers throughout the country, and it is with the view of facilitating the objects of the committee that we would request our readers to record their observations, which will then be in a form readily available for the purposes of the committee.

—— PTELEA TRIFOLIATA (fig. 67).—This is a hardy North American shrub, which is less known than it deserves to be, though in truth an old inhabitant of our gardens. As an ornamental shrub or small tree its loose habit is somewhat against it, but its foliage is striking in form, rich green in summer, and bright yellow in autumn. The flowers are inconspicuous, but they are succeeded by winged seed-vessels traversed by branching veins, which are very attractive. They so much resemble the fruits of the Elm that the Greek name for Elm has been applied to the tree. Botanically it has nothing to do with Ulmus, but is a member of the great Rue family, Rutaceæ. Of late the bitter fruits have been proposed as a substitute for Hops in the brewing of beer, but as this is an old notion revived, it is to be presumed the experiment has been tried and not found commercially successful. If once a sufficient stock were obtained, there would be no difficulty in growing a crop with probably less risk than in the case of the Hop, which last season was an utter failure, in spite of the great cost of production.

—— TURNIP-TOPS.—It would no doubt be regarded as a joke were we to assert that there was an intimate connection between the sudden dissolution of Parliament and the price of Turnip-tops, but how otherwise is the extraordinary fall from 2*s.* or 2*s.* 6*d.* per bag at the beginning of the previous week to the miserable figure of 6*d.* at the end of the week to be accounted for? Even the Funds could not be more adversely affected, and if the Prime Minister's act is really the actual factor in this case, then has the already greatly distressed agricultural interest another reason for complaining. In the immediate metropolitan district Turnips have been few and patches rare, therefore the farmers for once had a chance to turn their field crops of this useful vegetable to good account. A good profitable price was obtainable, and the heart of the poor farmer for once was gladdened, when lo! a dissolution sets all the country agog, public credit is affected, and speculators become fearful even of Turnip-tops, therefore down they go 150 per cent., and heavy loss and disappointment are the result. It is all very well to say that this is nonsense; how else is the result to be accounted for? The supply has not suddenly quadrupled, the consumptive power of the average Londoner for Turnip-tops remains the same, therefore why the sudden fall? If not due to want of confidence, then does it arise from the changed nature humanity shows when it is brought under the exciting influence of a general election? All ordinary observers have noted that just then even the sanest and soundest of men go politically mad, and for the time suffer under the influence of strong party mania. Does humanity in that condition find its Turnip-tops as repugnant as the mad dog does water? Here is a nut for the mad doctors to crack; but, whatever their verdict, it can hardly bring much comfort to the unfortunate speculator in these seasonable greens.

—— TO OUR CORRESPONDENTS.—The Publisher desires us to state that as Friday next, March 26, will be Good Friday, the *Gardeners' Chronicle* will be published on the previous day, and desires that advertisements intended for that number should reach the office not later than Wednesday morning. Our correspondents will also greatly oblige by forwarding their communications one day earlier.

—— THE ROYAL SOCIETY.—This venerable society has set an example which will doubtless be followed by other learned bodies, of holding its meetings in the afternoon. On the first meeting after Easter (April 8), and for the remainder of the session, the hour of meeting will be half-past 4 in the afternoon, in place of half-past 8 in the evening—a boon to those who reside in the suburbs.

—— SHRUBS IN FLOWER AT KEW.—The following are some of the most noteworthy shrubs now in flower in the Kew arboretum. The Japanese Lonicera Standishii, the earliest flowering of the Honeysuckles, is remarkable for its deliciously scented creamy white flowers. It is a shrubby species, which can hardly be called a climber. The golden-yellow blossoms borne by Forsythia suspensa, equally profusely by plants on walls, in the mixed shrubbery border, or in isolated positions, render it one of the most valuable of early flowering shrubs. Amongst Rhododendrons the most magnificent of all the Himalayan series is R. fulgens, which with the gorgeous hue of its flowers surpasses all the other species of the genus. This seems to do well at Kew in the open air—better than most, if not all the other Himalayan ones. Its discoverer, Sir JOSEPH HOOKER, calls it "the richest ornament of the alpine regions" (of Sikkim), where on the bleak mountain faces, at elevations of from 12,000 to 14,000 feet, immediately overhung by the perpetual snow, it is at all times conspicuous. The small neat-growing R. dahuricum, from Siberia, with its small purple blossoms, merits attention by reason of its good habit and free flowering.

—— PROFESSOR BELL.—The older Fellows of the Linnean Society will hear with sympathetic regret of the death of one of their former Presidents, whose suave courteous manner and dignified bearing well became the office. Previous to holding the presidency of the Linnean, he had been secretary to the Royal Society for some years. As a naturalist Mr. BELL was best known for his researches on the Crustaceans and on the Mammalia and Reptilia, but in truth he was an active, clear-headed worker in many departments of zoology, insomuch that one of the German societies, the Cæsarian Academy "Naturæ Curiosorum," and whose custom it is to bestow a cognomen on those whom they admit to their Fellowship, bestowed on BELL that of LINNÆUS. Some years since Mr. BELL retired from his profession as a London dentist, in which he had achieved the foremost position, and took up his residence at Selborne, in GILBERT WHITE'S very house. No fitter tenant could possibly have been found: and although we cannot overlook the value of BELL'S other services to natural history, we think it may well be said that the greatest benefit he ever rendered to it was the publication of his edition of WHITE'S *Selborne*. This edition we reviewed at some length at the time of its publication, and we may still say of it that the charm of the book was literally doubled by its latest Editor. Henceforth there should be but one edition of this standard book—BELL'S. Professor BELL derived his title from King's College, London, where he was Professor of Zoology. For many years, however, the title was merely nominal. He had also for many years a professional connection with Guy's Hospital. Professor BELL, who in former years was an occasional contributor to our columns, died on the 13th inst., in his eighty-eighth year.

—— EPIDENDRUM MACROCHILUM.—Several specimens of a fine variety of this somewhat variable Orchid may now be seen in flower in the Kew collection. In point of size of flower E. macrochilum probably takes the lead over all the other species of the genus. In the Kew plants the sepals and petals are of a dingy purplish colour, tipped with green; but the large rose-coloured lip makes up for lack of brighter shades in the narrow sepals and petals. In addition to its beauty the species possesses another recommendation in its agreeable odour.

—— A Spotted Anthurium.—In 1876 Mr. Bergman, gardener to Baron Rothschild at Ferrières, fertilised some flowers of Anthurium Scherzerianum with the pollen of A. Williamsii, and ultimately raised a batch of twenty-five seedlings, all of which, except four, proved to be only good forms of A. Scherzerianum; while the four in question proved to have white spathes nicely spotted with red, and the habit of the plants resembling that of a vigorous type of A. Scherzerianum. The plant was shown in Paris on the 11th inst., at a meeting of the Central Horticultural Society of France, and the exhibitor was awarded a "Prime de première classe" equivalent to a First-class Certificate.

—— British Algæ.—Mr. E. M. Holmes brought before the Linnean Society (March 4) a new British Alga, Codiolum gregarium, A. Braun, discovered at Teignmouth by the Rev. R. Creswell. Mr. Holmes believes that the hypnospores described by Braun do not belong to Codiolum, but to another Alga usually found growing with it. The growth of the plant and its fructification, contrary to Braun's supposition, lasts through the winter and spring. Mr. Holmes also exhibited specimens of the fructification of Chætopteris plumosa, found in Britain for the first time by Mr. J. W. Traill, of Edinburgh. The unilocular sporangia, in this instance, were in a more advanced stage than those figured by Areschoug, and the multilocular sporangia differed in character from the illustration given by the last-mentioned Swedish authority.

—— The Prickly Pear in Ostrich Farming.—A correspondent of *Land and Water*, dating from Cape Colony in January last, draws attention to the use of the Prickly Pear in ostrich farming. Owing, he says, to extreme drought from which the springs and dams were all drying up, the ostriches had to be fed on as much Prickly Pear as they would eat. A few years ago farmers were spending fortunes in clearing it off their farms, in fact they looked upon it as a most useless plant and a regular curse, as it killed so many cattle when they ate it when everything else was dry. The case is now quite different—the plant is looked upon as a real blessing. On the very farms where hundreds of pounds were spent in getting rid of it, it is now being planted, and is valued on account of the ease and rapidity of its growth.

—— Corydalis Ledebouriana.—This newly introduced and pretty species is now blooming at Kew; it is a thick-stalked, dwarf plant, with ternately divided glaucous leaves, and a leafy raceme of pinkish flowers. It will, doubtless, prove a valuable addition to our list of herbaceous plants. It is a native of the south-east districts of Altai, and no doubt will prove perfectly hardy in this country. C. Kolpakowskiana, an allied species of similar habit, is also in fine flower; it has dark purple-red flowers with a paler spur. Judging from the figure given by Regel in *Gartenflora*, the Kew plant is the variety purpurea, as the type (by far the commoner plant) is represented as being much paler and less handsome. This has withstood the St. Petersburgh winters without any protection, so its hardiness in England cannot be called in question. It was discovered by Albert Regel in Kuldscha.

—— Two New Crotons.—We learn from a French correspondent that at the meeting of the Central Horticultural Society of France, held on the 11th inst., MM. Chantrier *frères*, nurserymen, of Mortefontaine, exhibited two of their best new Crotons, C. Bergmanni and C. Carrierei, and received an award equivalent to our First-class Certificate. Croton Bergmanni is the result of a cross between C. maximus and C. Veitchii, and gives promise of proving a valuable decorative plant. It much resembles the variety Baronne James de Rothschild, raised by the same firm, but the colour is pure ivory-white and green, instead of the red and green of the last-named plant. The leaves are very large, and round at the tips, and the plant is a free grower. Croton Carrierei comes from a cross between C. Hookerii and C. Veitchii, and has long green leaves, with middle and side lines of yellow.

—— Diospyros Kaki.—At a meeting of the Central Horticultural Society of France on the 11th inst., M. Duchartre gave some interesting facts concerning the species of Diospyros, and especially of the Diospyros Kaki of the Japanese. This tree has been planted in Algeria, and some fruits were some time ago sent to the Society for tasting, which were pronounced uneatable. It was afterwards ascertained, however, as is well known here, that to be good the fruits must be eaten when they are in the same condition of ripeness as Medlars, as specimens from the same sample tasted six weeks later were reported to be delicious. Under these circumstances it is not unlikely that Diospyros Kaki will be largely planted in Algeria, and prove a good source of revenue to the growers in that colony. It appears that some varieties of Diospyros are more robust than others, proving hardy even where the sea freezes. When planted the trees require but little care.

New Fruit and Vegetable Market.—On Wednesday afternoon the foundation stone of the new London Central Fruit and Vegetable Market, which is about to be erected by the Corporation of the City of London on a site immediately adjoining the Meat and Poultry Markets at Smithfield, was formally laid by Mr. Deputy Lowman Taylor, J.P., the chairman of the Markets Sub-Committee, in the presence

Fig. 67.—Ptelea trifoliata. (see p. 368.)

of a number of leading citizens. The building will occupy the present excavated area at the west end of the Central Poultry Market, fronting four streets or roads, viz.,—Charterhouse Street, Western Roadway, New Southern Roadway, and Farringdon Road. The general principle adopted in the arrangement of the plan is to make the main floor of the market as near as possible the level of the Poultry Market, so that the entire range of markets is readily approachable the one from the other. There being a difference of level of some 10 feet between the Western and Farringdon Roads, the main entrances to the market area are placed—first, that on the east, opposite the western entrance to the Poultry Market; second, that on the north, in Charterhouse Street, near the corner of Western Roadway; and third, that on the south, in the Southern Roadway, in a corresponding position to that in Charterhouse Street. The floor of the market will be level, a slight gradient being necessary only at the several entrances. The plan of the market shows an area of nearly 44,000 feet devoted to wholesale market purposes, surrounded by forty-one shops fronting the several streets, which can be used for retail or other purposes, and these occupy an area of some 16,800 feet. The general, or market area, is approached by the three main or vehicular entrances, as before stated, and by two further entrances for foot passengers from the Farringdon Road corners of Charterhouse Street and Southern Roadway. The market consists of a series of shops, thirty-three in number, having in front pitching stands for goods and waggon stands; the whole approached by a roadway having a width of 18 feet, always clear for vehicular traffic. In the middle of the market area is a further arrangement of pitching stands, with an area of about 4400 feet, including gangways. The basement is suitable for both market and railway purposes. The cost of the buiding is estimated, including land, at £290,000. The Corporation reckon upon an income from the market of nearly £17,000 a-year, and if this expectation is realised there will be a considerable profit after payment of interest on loans and working expenses. The stone was laid by Mr. Deputy Lowman Taylor with masonic precision, and in a cavity in it a vase with the coins of the realm and a copy of the *Times* of that day and of the *City Press* was deposited.

—— Help for the Irish.—We understand that Messrs. Sutton & Sons, of Reading, have presented 100 bushels of their Magnum Bonum Potato to Mr. E. Purdon, of the *Irish Farmers' Gazette* Peasants' Seed Potato Fund, besides a large quantity of the same variety to the Irish Church Mission at Connemara, for distribution among the distressed inhabitants of that district. The Messrs. Sutton have also contributed £100 to the Duchess of Marlborough's Relief Fund.

—— Primula sinensis.—Mr. Bull sends us a box of blooms of Primula sinensis, containing some interesting forms of this now beautiful and much varied species. They represent certain stocks now being grown for seed on his account in Italy, and are mostly of large size and well frilled. The following are amongst the larger single varieties:—Village Maid, white, prettily flecked and striped with rose, small yellow eye; rubra, magenta-rose, with the yellow eye margined with a deeper bronzy tint; alba, blush-white, with conspicuous yellow eye; kermesina splendens, a good form of the carmine-tinted form to which we probably owe all the recent high-coloured sorts; lilacina albo-marginata, pale lilac, with yellow eye and white edge. A smaller flowered sort, called alba luteo-oculata, is white, with a very large yellow eye varying in shade from greenish-yellow to a deep golden hue, the flowers as yet wanting in smoothness. Three interesting semi-doubles make up the collection:—rubra flore-pleno, alba flore-pleno, and kermesina splendens flore-pleno, in which the colours are as in the single flowers noticed above, but the yellow eye is replaced by a tuft of petaloid bodies. The advance made in these flowers has been very rapid of late; and the advent of still more brilliant colours, such as is seen in the varieties named Chiswick Red and Meteor, will secure for them increased popular favour.

—— The Seed Supply (Ireland) Act.—A Dublin correspondent writes:—"Now that the time for sowing the land is so near at hand, and as so many farmers (particularly the smaller ones) have been unable to save any of last year's seed for present use, it may be well to draw attention to the above Act, which has just became law, and which may, if timely taken advantage of, be productive of great good. As the Act has been considerably amended since its introduction, an outline of its final provisions may prove acceptable. The Act can be applied in any Union which the Local Government Board has scheduled. The Board have sent circulars to the Unions that are scheduled, but the amount of seed which the Guardians can now allot is not correctly described. It cannot be too generally known that, if any Union which has not been placed on this special schedule applies for either the whole Union or a portion to be placed under the Act, the Local Government Board has power to so place it, and the Local Government Board and the Irish Government are disposed to use this power. The powers given to the Unions which are not thus scheduled are to make contracts for the supply of seed, and to issue to all occupiers rated at £15 and under sufficient Potatos to sow a statute acre, and sufficient Oats to sow another statute acre. They have further power to issue other seed in lieu of Oats, but in this case a previous application to the Local Government Board is advisable. The total value of seed issued to any one person is limited to £5. There is also a clause by which the Guardians are empowered to supply seed to cultivators who are not, legally speaking, "occupiers," that is, to labourers, or to men taking an acre. In these cases the supply of seed is limited to a quarter of a statute acre of Potatos, and such seed will not be issued unless the occupier becomes security for the payment. This seed is to be paid for by farmers in two equal instalments: the first to be levied by a special rate struck before October 1, 1880, the second before October 1, 1881. It is absolutely necessary that the lands should be immediately prepared, as the Guardians are only authorised to issue seed for "prepared" land. If the Guardians of any Union are not willing to put the Act in force, an authenticated letter may be sent to the Local Government Board, who have the power to work the Act themselves, should the Guardians refuse to do so."

—— The Winter in Russia. — An English gardener in Russia ("J. F. M."), writing under date of March 9, remarks that while the frost has done so much damage in England, France, and elsewhere, the winter in the western part of Russia has been the mildest remembered by the older men. Only on five nights was the thermometer below zero—between November 8 and February 20 "we had frost every night, but seldom more than 16° or 20°. On November 6 there was a fall of 6 inches of snow, but up to February 20 we scarcely saw a cloud in the sky. Nearly every year there is a 2 to 3 feet fall of snow, which keeps our dwarf Roses and low-growing plants safe; but this year they want their covering, and no doubt the effects will be seen soon enough. Dry Fern is plentiful here, so we cover up all tall Roses, small Apples, Pears, Plums, and Cherries, which seem to have passed safe as yet."

—— Protecting Plant-Houses in Russia.—The same correspondent also writes:—"Covering plant-houses is not considered necessary in England, but it is so here, in western Russia. Although the past winter has not been much severer than I have seen in Scotland and England, we cover every night if there is more than 6° of frost. I can testify to its advantages. The fires are done up for the night at 9 o'clock, and are not seen to again till 7 o'clock the next morning; and we can keep up a more regular temperature with a great saving of fuel. The covering for large houses generally consists of boards about 15 inches wide, or blinds, but the latter are very apt to get torn, or otherwise get out of order. For small houses shutters are the best, as a greater length can be put on at a time, and in spring they are used for protecting wall-trees from frost."

—— Hyacinth Show at the Exeter Nursery.—Three years ago Messrs. Lucombe, Pince & Co. started an exhibition of Hyacinths, and offered several prizes for the best collection of these beautiful flowers. The first exhibition proved so successful that it has now developed into an annual institution, and each year it seems to grow in favour. The exhibition for the present year was held on the 12th inst., at the Nursery, and was of such a character that it must have gratified the promoters, as well as the large body of the public who visited the show, and who at the same time were afforded an opportunity of viewing the forcing-houses and the varied collection of shrubs and trees. The firm offered prizes for two competitions, and a fair number of entries were forthcoming. The exhibits were staged in the principal conservatory, which was so arranged as to present a most attractive appearance. This structure is divided into two portions, and the one which the visitors entered first contained a beautiful collection of Palms and Tree Ferns, exhibiting almost every shade of green. The higher part of the building presented a striking contrast, for the shelves on each side were laden with bright flowers of various kinds, set off by a fine collection of Richardia æthiopica, which formed the background. In the first class for twelve distinct varieties of Hyacinths, the 1st prize was awarded to Mr. G. H. Chaplin, of Fordton, Crediton (Mr. Outram, gr.), who had a very fine collection; and the 2d prize to Mr. Rowe, of Lafrowda, Exeter (Mr. Baker, gr.). Mr. Rowe, like Mr. Chaplin, has been a previous prizetaker, and he also exhibited a nice collection. Though only two prizes were offered, the collection shown by Mr. Henry Ward, of Budleigh Salterton, was considered by the judges to be so meritorious that it deserved an extra prize, and the firm, acting on their suggestion, awarded it one. In the second class, six varieties, the 1st prize was taken by Mr. Outram, Crediton, and the 2d by Capt. Waldy, of Howden Court, Tiverton, both of whom had good collections. Messrs. Lucombe, Pince & Co., also exhibited, but, of course, not for competition.

—— Royal Horticultural Society.—We understand that there is every prospect of the show to be held in the large conservatory on Tuesday next being an exceptionally good one. Messrs. J. Veitch & Sons hope to exhibit a splendid group of Amaryllis, comprising nearly 400 plants, the greater number of which are of their own raising. Capt. Patton, St. John's Wood, intends to exhibit about 200 Hyacinths and other plants.

—— Tea Rose Viscountess Falmouth. — Of this charming novelty, raised by Mr. Bennett, of Stapleford, fresh blooms are to hand, and nothing in the way of a cut Rose can be more lovely. The deep green glossy foliage is a clear indication of its Tea parentage. The flowers are of a bright deep rose colour, paler towards the base of the petals, full and globular in shape, with a most powerful and delicious scent—the true odour of Roses. As an addition to the high-coloured section of Tea or Hybrid Tea Roses, whichever it is decided to call them, this variety will be most welcome and most valuable; and Mr. Bennett well deserves the thanks of all rosarians for the new pleasure he has thus put before them.

—— Liverpool Horticultural Association.—The great summer show of this new Association is announced to be held on Saturday, July 31, and Monday, August 2. We are glad to see that the new Association, which only held its first show last year, is in a very healthy condition, the balance in hand at the commencement of the present season being nearly £190. The total amount received in connection with the first show was £740 16*s.* 9*d.*

—— The Weather.—General remarks on the weather during the week ending March 15, issued by the Meteorological Office, London:—The weather, though foggy or hazy at the southern and south-eastern stations, has been generally fine and very dry over England; cloudy and rather rainy in Scotland; and dull and showery over the greater part of Ireland. The temperature has been about equal to the mean in "England, N.E.," but a little above it in all other districts. The highest readings (63°, at Strathfield Turgiss, and 60° at some other stations) occurred on the 11th, 12th, or 13th, while the lowest were at the commencement or end of the period. The wind was easterly or south-easterly over the whole country, and though generally light in force blew freshly at times from the south-east on our west and south-west coasts. The rainfall was rather more than the mean in "Ireland, S." and over Scotland, but less in all the English districts.

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albida, 280, '56; 987, '70; 300, viii., '77
NUNNEZHARIA—
geonomæformis, 715, ii., '74
NUTS—
(*see* Corylus: Filbert: Hazel)
1488, '72 (fig.)
NYCTERINIA—
selaginoides, 71, '54
NYCTOCALOS—
Thomsoni, 236, '68
NYMPHÆA—
alba var. rosea, 696, ix., '78
gigantea, 203, '55
monstrous, 548, '55
species of, 358, '56

O.

OAK—
(*see* Quercus)
American, 660, i., '74; 164, vi., '76
bifacial, 596, '41
Boscobel, 497, 750, x., '78 (fig.)
Cork, 292, '55
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English, 4, '41 (fig.)
evergreen, 632, i., '74
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Japanese, 632, 726, i., '74
Lucombe, 500, '57
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OATS—
varieties of, 204, 219, '50
OCTOMERIA—
tricolor, Rchb. f., 1035, '72
ODONTOGLOSSUM—
Alexandræ, Bateman, = crispum, 1083, '64
—— var. guttatum, 762, '68
—— var. roseum, 300, viii., '77
—— var. Trianæ, 762, '68
Andersonianum, Rchb. f., 599, '68; 41, '72; 814, iii., '75
—— var. *tenue*, Rchb. f., 492, ix., '78
angustatum, 138, ix., 78
anthoxanthum, Rchb. f., 38, '69
astranthum, Lind. et Rchb. f., 494, '67
baphicanthum, Rchb. f., 260, vi., '76
blandum, Rchb. f., 1342, '70
ODONTOGLOSSUM—
brevifolium, 715, ii., '74
cariniferum, 560, '70
Cervantesii, var., 710, '68
—— var. majus, 752, x., '78
—— var. decorum, 219, vii., '77; 43, ix., '78
—— var. *punctatissimum*, Rchb. f., 527, ix., '78
cirrosum, 501, 503, v., '76 (figs.); 366, viii., '77; var., 181, ix., '78 (fig.); 592, x., '78
—— var. *Klabochorum*, Rchb. f., 452, vi., '76; 202, ix., '78
claviceps, Rchb. f., 516, vi., '76
compactum, Rchb. f., 492, iii., '75
constrictum, 738, '69
Coradinei ×, 1068, '72 (fig.); 1498, '73
coronarium, var. *Dayanum*, Rchb. f., 226, vi., '76
crispum var. *fastuosum*, Rchb. f., 690, ix., '78
cristatellum, Rchb. f., 716, x., '78
cristatum, 1014, '68
—— var. *Argus*, Rchb. f., 1014, '68
—— var. *canaria*, Rchb. f., 1014, '68
—— var. *Dayanum*, Rchb. f., 1014, '68
crocatum, Lind. et Rchb. f., 404, '67
crocidipterum, Rchb. f., 1129, '71
Dawsonianum, Rchb. f., 1226, '65 (fig.)
Edwardi, Rchb. f., 74, x., '78
Galeottianum 39, '70; 97, ii., '74
gloriosum, 571, '65 (fig.)
grande var. *splendens*, Rchb. f., 1290, '72
grande var. pallidum = O. Schlieperianum
Hallii, 962, '65 (fig.); 1498, '73
hinnus, var., 902, '71
Humeanum ×, Rchb. f., 170, v., '76
hystrix, 1202, '64
Insleayi var. *pantherinum*, Rchb. f., 1302, '73
—— var. *splendens*, Rchb. f., 1038, '68
Jenningsianum, Rchb. f., 366, ix., '78
Kegeljani, 300, viii., '77
Krameri, Rchb. f., 98, '68 (fig.)
lacerum, 740, ii., '74
læve, 639, '44
leucopterum, 104, '70
limbatum, Rchb. f., 417, '70
—— var. *violaceum*, Rchb. f., 725, ix., '78
Londesboroughianum, Rchb. f., 772, vi., '76
luteo-purpureum, 1498, '73
maculatum, 71, '41
—— var. *integrale*, Rchb. f., 307, '71
madrense, Rchb. f. 804, ii., '74; 102, viii., '77
membranaceum, 839, '46
mulus, 432, '73; 715, ii., '74
Murrellianum ×, Rchb. f., 653, iii., '75
nævium majus, 715, ii., '74
nebulosum, 572, '67 (fig.)
—— var. *candidulum*, Rchb. f., 710, '67 (fig.)
—— var. *Pattisonianum*, Rchb. f., 710, '68
nevadense, 1498, '73
odoratum, 104, '70
—— var. latimaculatum, 1498, '73
—— var. *striatum*, Lind. et Rchb. f., 667, '72
Œrstedii, 302, vii., '77; 811, '77 (fig.)
pardinum, 1498, '73; 302, vii., '77
Phalænopsis, 832, '72 (fig.)
platyodon, Rchb. f., 1163, '71
prænitens, Rchb. f., 524, i., '75
præstans, 323, iv., '75
prasinum, Lind. et Rchb. f., 987, '70
pulchellum, 598, '41
purum, Rchb. f., 1323, '72
radiatum, Rchb. f., 746, '65 (fig.)

Home Correspondence.

A Feast of Phalænopsis—At Henham Hall, East Suffolk, the seat of the Earl and Countess of Stradbroke, there is a choice collection of these lovely Orchids. I took a run over in the first week of March on purpose to see them. It was the richest floral feast I have ever enjoyed. The plants were sent home some years since to the Countess, who is alike distinguished by her taste in landscape art and her keen interest and practical knowledge of all the more choice plants and flowers. It need hardly therefore be added that, since their arrival at Henham, the Phalænopsids have had special care. They are grown in baskets suspended from the roof of a small stove in the pleasure-grounds, and the whole roof was covered with their glorious blossoms. There are forty plants in all, about a dozen of them being P. Schilleriana, the others being chiefly amabilis. Nothing can exceed the healthfulness and beauty of the plants. The foliage is large and fine, and the flower-stems are of immense length and strength. Many of the plants had two flower-stems, a few of them three, and several of the plants carried from seventy to a hundred fully expanded blossoms at the time of my visit. The plants were nicely mixed, and the effects of the different shades of pink with the white was rich and pleasing in the extreme. Many of the flowers were of unusual size, and one or two of P. Schilleriana were so vivid in colour as to appear like distinct varieties. Among the whites there were also degrees of whiteness as well as of size, some of the plants having very fine flowers of spotless purity. About a year ago the present gardener at Henham, Mr. Benham, fresh basketed the plants, and the freshness and size of the new leaves as well as the length of the footstalks showed that they liked their fresh baskets and were hard at work to fill and overflow them with roots. There is one rule enforced at Henham which also no doubt tends to preserve the Phalænopsids in health and beauty—they are never removed from the house in which they are grown to other rooms or conservatories; hence they have no chills nor sudden changes during their flowering period. Individual flowers are often gathered, but the stems are seldom cut. Thus the plants continue in full beauty from first to last, and at the end of the flowering season the plants are as healthy as at the beginning. Those who grow Phalænopsids know that they are not only beautiful but sweet as a Violet, if not sweeter; only practical men, however, are possibly aware how very much sweeter the plants are by night than by day. Having almost lived with the Phalænopsids during my brief visit to Henham, I was much struck with their extreme fragrance at night. It is possible that the insects that effect their impregnation are nocturnal ones, and that their extra fragrance may be the natural means of alluring them to the flowers? Be that as it may, healthy as these plants are, they have shown no disposition to seed, nor have offsets hitherto sprung from the flower-stems, though prominent buds appear on many of them. Stems furnished with such buds have been layered, but hitherto without resulting in young plants. It seems a pity that such magnificent plants should be so slow of increase, as there is nothing within the whole range of horticultural pleasure to equal such a feast of Phalænopsis as is annually spread at Henham. *D. T. Fish.*

Propagating Alternantheras.—I am sure those of your readers whose duty it is to work up a stock of this plant for bedding purposes will concur in the opinion of Mr. Hinds. I find from experience that the middle of April is quite early enough to commence propagating, provided a sufficient stock be in hand for the supply of cuttings. The best plan I have found, and from which I have always obtained the best plants, is to make up a slight hotbed, upon which I insert the cuttings in a compost of cocoa-nut fibre and sand; in this way I have worked up a splendid stock of plants in a month, which were quite ready for transferring to their summer quarters. I may add that the plants remain in this bed after being rooted, never being potted or boxed; and in this way a great amount of labour is saved and better plants are produced, while the hardening off is rendered more easy and simple. I would also recommend this plan as being far more expeditious for increasing the stock of Mentha Pulegium gibraltaricum than either Mr. Wildsmith's, p. 311, or Mr. Waterman's, p. 340. *E. Morgan, The Butts, Harrow-on-the-Hill.*

Pampas Grasses.—Judging from the browned appearance of these there cannot be much life in them, and I greatly fear that the past winter will prove as fatal to them as did those of 1860 and 1861, when large numbers were killed and others so injured that they did not recover, and get strength to reach a good flowering condition for years. Although the frosts have not been so sharp as they were during the period referred to, they appear to have had an equally damaging effect, owing, no doubt, to the sunless summer and the late growth most things made, together with the soft succulent condition they were in, with sap-vessels gorged to repletion. It is therefore not surprising that the expansive force of the ice should force these asunder, and so cause a general collapse of the plant's structure. This seems to have been the case with the Pampas grasses, but though they look bad now many of them may break up again if not interfered with too soon by clearing away the dry lifeless portions, which if left form such an excellent protection against winds, shielding the young tender growths as they emerge from below. As soon as these can be fairly distinguished it will be quite time enough to remove what is dead. This should be done by pulling it away carefully, with a glove on the hand to prevent the flesh being cut by the serrated edges of the leaves, which are as sharp as knives. In cases where it is desirable to replace any defunct Pampas-grass, I should advise the transplanting to be deferred till May, a season when, if taken up with ordinary care, they may be removed with safety and divided if necessary to almost any extent. The thing to insure success is to well flood them with water so as to wash the earth thoroughly in amongst the roots, after which the top part should be filled up with dry soil, and have a forkful or two of manure laid on to prevent any cracking of the crust or loss of moisture through evaporation. *J. S.*

Chimonanthus fragrans.—This plant has not flowered well here this season: it has not missed flowering for a number of years, but this winter it had only two flowers on it. It would be interesting to know if it has flowered or not in other places. I should like also to learn how Magnolias have stood the winter; ours are hit hard, and they were covered with Spruce boughs; a Loquat on the same wall (south) looks better than the Magnolias. *James Tickle, Mells Rectory, Frome.*

New Seedling Begonia.—On calling at Campsey Ashe Gardens a few days since, I was particularly struck with a fine seedling Begonia of the nitida type. The plant was 4 or more feet high, with beautiful foliage, and a few brilliant bold cymes of flowers about three times the size of the best grown nitida. The colour was also of the most brilliant red. It was altogether so striking and such a useful plant for cutting and for conservatory decoration, that I begged Mr. Sheen, the clever gardener—who is so well known as a Rose, Tree Carnation, and Begonia grower—to take the plant up at once to the Floral Committee. Unfortunately, however, Mr. Sheen had cut all the flowers off but one, and this I advised him to send at once to the Editors of the *Gardeners' Chronicle*. Their opinion last week is most favourable (see "Notices to Correspondents"). In ordinary cases it would be wisest to allow the matter to rest there. But so valuable a plant for general decorative purposes and vase work has not come under my notice for a long time, and I feel that I am rendering a service to all cultivators in urging Mr. Sheen to distribute this very fine Begonia at the earliest opportunity. He proposed, at my suggestion, getting a pure white of a similar character and habit, which would also prove a great acquisition. Mr. Sheen has gone largely into the crossing of the bulbous-rooted Begonia, and has thousands of seedlings, many of which will doubtless prove good; but I venture to prophesy, that among all these none will be found of more permanent value than the one I now bring under notice. *D. T. Fish.* [It would be interesting if Mr. Sheen would state the parentage of this fine novelty. Eds.]

Asparagus Kale.—Those who have a plot of ground planted with this valuable Kale at the present time may be considered fortunate, as it is one of the few things which has passed through the ordeal of the late severe weather unscathed. I can confidently recommend it as being truly a gardener's friend, and those who do not happen to have grown it hitherto would do well to give it a trial. They will find it exceedingly useful as a first course vegetable for the dining-room, and extremely valuable as a vegetable for the servants' hall. From plants the seed of which was sown in April last we have just commenced to cut, and we shall, I have reason to think, continue to do so till early Cabbages turn in. *J. Horsefield, Heytesbury.* [Why does this excellent vegetable so frequently rot off in autumn? Eds.]

The Liverpool Horticultural Association.—It is with feelings of pleasure and satisfaction that I send a brief report of the proceedings of the Liverpool Horticultural Association of the past year. It is barely twelvemonths since a meeting was convened consisting of the leading practical gardeners of the district and others interested in horticultural matters to discuss the propriety of holding a grand show worthy of Liverpool in Sefton Park some time during the past summer. The suggestion was received with the greatest enthusiasm by all the principal gentlemen of the district, including the then Mayor of Liverpool. Funds were forthcoming from all quarters when it became known that the new movement was to be conducted under disinterested management without being tainted with "trade influence;" indeed, two or three private gardeners (all honour to their efforts) succeeded in obtaining a handsome sum in the shape of subscriptions from local gentlemen in such an incredibly short time as to render it obvious that all that was required was good management and a "sound principle" upon which to float the new horticultural movement. The first show was held in Sefton Park from August 2 to 4 in last year, and the exhibition turned out to be a great horticultural as well as a financial success. Some of the leading exhibitors of plants and fruits from all parts of the country put in an appearance, the result being that the most sanguine expectations of the hard-working committee were more than realised; indeed, to use the words of a member of the new association, it was one of the finest "horticultural babies" that ever was seen in Lancashire. In addition to the ordinary business of the Society with regard to the arrangement of its exhibitions, &c., a series of monthly meetings have also been established, at which interesting papers on a variety of horticultural subjects are read by members of the Association in turn. This is perhaps the best step that ever was taken to disseminate practical knowledge amongst gardeners, to cement the bonds of friendship closer between members, and to unite gardeners as a whole into something like an organisation which shall have the power and the will to adjust and administer its own affairs in an equitable and proper manner. The wind-up of the financial year is of the most satisfactory character. From figures before me it appears the Association has enough at its bankers to clear all expenses of another show this season, and that a second show is contemplated if the subscriptions are anything equal to last year. I am sure this short report, so promising in every respect, will be received joyfully by all connected with horticulture, when so many people would have us believe that these gatherings are growing unpopular. Let such marked success at Liverpool stimulate and infuse fresh vigour into other societies, and if need be let them dissolve and purge themselves of all elements that are not tending to promote our common cause. It is to be hoped that the committee of this prosperous Association will be furnished with adequate funds to hold a grand Chrysanthemum and fruit show in the autumn, and that classes for vegetables will also be included in the schedule. A real exhibition of this kind without ostrich feathers and grasses would put fresh life into horticulture in so flourishing a neighbourhood for the next seven years, and enhance the art of gardening in the eyes of those who look upon a garden more as a necessity than a pleasure. *Exhibitor.*

Senecio pulcher.—There is something not quite satisfactory about the behaviour of this plant. As the *Gardeners' Chronicle* said last autumn, the roots are proof against cold or mismanagement, and I find that it can be propagated to any extent, as stated, from fragments of root an inch long; but it seems as if it ought to be evergreen, and in cold wet soils the leaves are killed in winter, and in that case the crown of the plant perishes also, and the new growths from underground are not strong enough to make flowering heads the same year. I suspect that for such soils a stock will have to be kept in cold frames, to be planted out in spring; but perhaps others will tell us their experience of it. *C. W. Dod.*

Art in the Conservatory.—I can but hope that practical results will follow from the discussion on this subject, wherein, if success is to be at all likely, simplicity and good proportion of outline must be the governing characteristic rather than an endeavour after quaintness and elaboration of detail. There is one point recommended by Mr. Fish in your last week's article to which I think some objection may be raised. I refer to his advice about the rain-water collected on conservatories being allowed to go into the waste drains rather than being collected, as he advises, in tanks at low or high levels. No doubt endless advantages, and, indeed, artistic effects, could be readily secured by the means of raised tanks, such as waterfalls, and the like arrangements, but in conservatories, where putty glazing is used, the water collected from the roof is always more or less rendered impure by the decomposition of the paint and putty, which in time so impregnates the water as to cover the foliage of plants over which such water is used with a thin film, giving them a dull and deadened look. I have no less an authority to bear me out in this than Mr. Smith, the well-known ex-Curator of the Royal gardens at Kew. This objection leads me to suggest that the old systems based upon putty glazing should be avoided, and a more extended use should be made of those arrangements without putty, such as Helliwell's patent, which practically is an

admirable method, although, as I said in my lecture, I do not quite see how, from an artistic point of view, thewant of apparent constructional lines in houses glazed in this way can be overcome. I am, however, intending at an early date to take up this matter again, and endeavour to show how the difficulty pointed out may be overcome, and I feel sure that for all roof glazing putty will soon be superseded by some one or other of the mechanical methods of fixing the glass now before the public. *Maurice B. Adams, A.R.I.B.A., Kirkcote, Chiswick, W., March* 17.

Hardy Palms. — It may interest the readers of the *Gardeners' Chronicle* to know that the two fine Palms, Chamærops Fortunei, growing in the pleasure grounds here, have again passed through the winter without any injury, and more than that, new leaves are already pushing through the mass of natural protection—the hairy fibres on the trunks—which the plants seem to develope in greater profusion than do the same kinds of plants growing indoors. The soil in which they are growing is a sandy loam, on a gravelly bottom, and the position is well sheltered from the north and east. The only artificial protection they have ever had was a few hay bands twisted round the stems, and these were not put on till the last severe frost set in, on January 15. Our lowest registered temperature—8°, or 24° of frost—occurred on December 11, and at that time the plants were not protected. From the 26th to the 30th January the mercury never rose higher than 28°, and each night it receded as low as 10° and 12°—a severe trial surely to any but the hardiest plants, as is proved by the destruction of some reputedly hardy kinds. Euonymus are all of them much injured, E. elegantissimus variegatus is quite killed, and so is Berberis Darwinii, Arbutus Unedo, Cryptomeria elegans, and Ceanothus azureus: these constitute the whole of the deaths, but several other kinds are more or less injured, amongst them are Sweet Bays and common Laurels, Laurustinus, Magnolia grandiflora on a south wall. Pinus insignis and Abies lasiocarpa are the only Conifers that are injured; the Japanese varieties, usually thought to be tender, are in nowise hurt. *W. Wildsmith, Heckfield, Hants.*

The Gooseberry Caterpillar. — As the season now approaches when our Gooseberry bushes are attacked by the caterpillar, I beg to say we have been freed from those terrible pests by using the following mixture, viz., three parts of powdered quicklime to one of guano, thoroughly mixed, and applied early in the morning in the centre of the bush where the branches start from. We use about a teacupful to each, which falls down the stem and dresses the roots. The mixture should be applied on a quiet day; it not only destroys the caterpillar, but nourishes the bush. *B. H. V., Horsham, March* 11.

—— Having had a taste for horticulture and agriculture in my early days, and consequently being a reader of periodicals devoted to the subjects, it was my practice to enter in a copy-book devoted to the purpose communications which I met with of a useful and practical character, from reliable authorities. On looking into this book recently, at an early date, for another purpose, I dropped by chance on "The Gooseberry Grub." I send you a copy of this (which I have no doubt came from a high authority, though I carelessly omitted to write the name of the author), at this season, bearing in mind the grievous complaints of the devastation of these grubs on the Gooseberry and Currant trees during the last season. *Charles Lawrence.*

"The fly, the source of the grub, has four wings; the antennæ black, the throat yellow, with a large black spot above and below, the body a clear unspotted yellow, the legs yellow, and the feet black; the wings, when extended, cover five-eighths of an inch, and the length of the body is three-eighths of an inch. As soon as the female leaves the nest she gets on the under side of the leaves, and, standing direct over the mid-rib, her back downwards, her wings closely folded, her antennæ stretched straight out, she deposits her first egg on the rib itself, then a succession up to the top of that rib, then to one of the side ribs, then to another, until all the principal ribs are garnished with her eggs ranged in rows. After the first day the eggs begin to grow, and at the end of a week they become three times the original size. It is seldom more than a week before the grub leaves the egg—from four to twelve days. The grub comes down at once from the egg, and begins feeding on the fleshy part of the leaf. The grubs descend in equal numbers right and left, leaving the skins of the eggs attached to the ribs. The searching for and picking off the leaves studded with these eggs is the exact time to save the fruit. If this opportunity be lost the next chance is picking the grubs by children off the leaves into a basket, to be burned. After two months the grub discontinues eating, and either descends down the stem of the tree, or drops from the end of the branch on which it has been feeding to the earth. In this it burrows from 2 to 8 inches according to the lightness or firmness of the soil, where, during the winter, it undergoes some change, and ultimately emerges in a fly in the month of April or beginning of May. From eggs laid the beginning of May the insect will sometimes go through its changes by July 10, or the 15th at latest, the first brood taking about twenty-eight days, the second remaining underground till the following spring. The pickings suggested having been imperfect the next most efficient remedy is to tread or beat the earth immediately round the stem, and to the extent of the branches, as firm as possible, which will prevent the grubs still above ground from burrowing into it, and those which may have entered from getting out of it again."

Clianthus Dampieri.—This grand plant is not grown so much as its merits deserve. Grown as a climber in a cool house it is charming with its silvery foliage and drooping racemes of vivid scarlet blooms, which last in perfection for a long time. It is usually considered somewhat difficult to manage, but this is by no means the case, if the plant is provided with proper drainage, and receives a good supply of water, coupled with ordinary attention. I am informed that it succeeds very well as an outdoor climber in the Isle of Wight: perhaps some of your readers can inform me if that statement is correct. *T. N. S., Buxted Park.*

Meconopsis nepalensis.—We have heard much of the hardiness of this plant, but I have seen no directions given for raising it from seed, and I am sure the gardening public would be thankful for information on the subject, as it is now generally believed that both it and its near relation, M. Wallichii, are biennial, and die after flowering. If any one has succeeded in flowering a plant of either twice, I will offer a humble apology to all those nursery gardeners who advertise them as hardy perennials. *C. W. Dod.*

Trug Baskets or Bodges (fig. 68).—These are the most useful garden baskets I have ever met with, and are much used in some parts of the country, but quite unknown in others. They are very handy for removing soil, collecting Potatos, transplanting, gathering Peas, Beans, &c., and are not easily surpassed for flower gathering purposes; they are, in short,

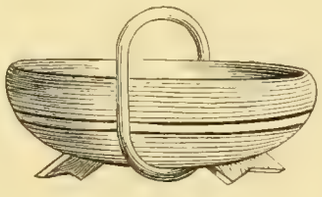

Fig. 68.—TRUG BASKET.

useful for all kinds of work which usually falls to the lot of a gardener. They are made of thin strips of willow nailed to a cross-handle and rims of ash, nearly in the shape of a boat, are furnished with two feet to keep them steady, and are very light, durable, and handy to use. The coopers make them in some parts of the country, but any one who finds any difficulty in obtaining them would do well to communicate with Messrs. Dick Radclyffe & Co., 192, High Holborn, who supply them at a moderate price according to size, &c. *W. H. Divers, Burghley.* [We know them as "Sussex trucks." Eds.]

The Uprooting of Conifers.—I should like to supplement my letter of advice on this subject at p. 181, by giving a little more of my experience on the weighting of tree roots to prevent the tree toppling over by the force of the wind. This subject has been taken up by several correspondents; all of whom have more or less wandered from the subject at issue, and landed on the well known practice of surface dressing of trees. We may take it for granted that gardeners generally know that all trees are benefited more or less by top-dressing, from the small fruit upwards. Mr. Keetley maintains that the roots of trees will bear weighting up considerably without injury. He points out that trees so earthed up are very much benefited, especially in hot dry summers. He ought to be an authority on the subject, for in the relaying out of the gardens at Newton House near here he had plenty of practice in manipulating the roots of trees in every kind of way. For my own part, I would not earth up the stem of a tree at all if it could be avoided, although I have not experienced any ill effects from doing so. Another correspondent advises bricks to be placed round the stem of the tree. This I think would so attract the worms that they would soon form the soil into a consistence almost equal to putty, which would prevent the air reaching the roots, if air they must have from that source. I have seen so many trees earthed up with advantage, that I cannot think a tree would die by having its roots deeply covered up on one side as a correspondent states. If a tree were earthed up in a wet situation the site should by all means be well drained, or the health of the tree would no doubt be affected. Mr. Fish states the principal weight on the roots is required about 6 feet from the stem: this coincides with my own views, except in the case of large trees, when the weight should be considerably extended. Mr. Fish also thinks that coniferous trees would suffer more than deciduous trees from earthing up. I do not understand why this should be so, as the sap action must be more rapid in the evergreen, especially on sunny days when evaporation is going on in the leaves. A considerable weight of soil might be placed on the roots of trees without a visible increase in the height round the stem. The Abies nobilis that I alluded to in my first communication had twelve cartloads of soil placed on the roots, which raised the soil up the stem 12 or 15 inches. This would be equal to about eight tons. The soil has sunk considerably in eight years, but the effect on the growth of the tree was marvellous. I should add that a deep drain was cut partly round this tree when the soil was put on. I may mention two Wellingtonias that were considerably earthed up on levelling a piece of ground a few years since: they are making the best growth of any at this place. We have also earthed up Abies Pinsapo and Cedrus Deodara, the only tree out of several of that sort left alive after the severe winter of 1860 and 1861, when the thermometer fell to 13° below zero. Various other trees are doing well so earthed up: the most notable are two brave old Oaks, with stems 18 feet in circumference; one of those trees had a mound placed round it before my time, the other I earthed up about thirty years since, having to raise a bank on the edge of one of the lakes here. Another instance: when a lake joining the garden was enlarged, more than thirty years ago, a considerable quantity of the soil was wheeled into a clump of Spruce Firs, as an easy way of getting rid of it, and some of the stems were earthed up more than 2 feet: those trees are still healthy and doing well. If I had a choice I would always weight the roots by degrees, as it would always act as a top-dressing as well. In the case of a large Abies Douglasii which looked rather unsafe in the late severe gales, I had the roots weighted only last week with four cartloads of soil, nearly equal to four tons, and next spring I shall give it an equal quantity. *William Culverwell, Thorpe Perrow.*

Planting Evergreens.—Those who have deferred the transplanting of these will be fortunate, the winter having been such that had they been moved in the autumn the probability is that the greater part would have perished, for even those well established have suffered to a considerable extent, and March is not yet out, till which time the full effect the weather has had cannot be seen, though it is greatly to be feared the mischief done will then be only too manifest in brown withered leaves and shrunken bark, the final result of the severe season we have just passed through. No doubt the summer had much to do with the present unsatisfactory condition of evergreens, as owing to the heavy rainfall and absence of sun till the autumn set in they were encouraged to grow later, and the shoots they made under such circumstances could not be other than full of sap, consequently very soft and immature, which rendered them exceedingly tender and readily susceptible of injury from frost, as may be seen by an examination of the bark, the inner portions of which I find are much discoloured, and which will therefore most likely decay later on. In ordinary seasons plants of this class may be shifted with a tolerable amount of success if taken in hand during September and October, but their removal then is always attended with more risk, owing to the great uncertainty of how the winter months may turn out, even should they be mild and favourable it often occurs that March with its cutting blasts searches them to the core and dries all the vitality out of them. Evergreens will stand much cold in still weather, after being planted, but expose them to the fury of raking winds and see what pitiable objects they look with drooping foliage, shivering as it were and calling for commiseration from every passer-by. There will be plenty in this state at the present time, and many gaps and losses to be made good; and as April is the most favourable season of the whole year for carrying out such work, the sooner preparations are commenced for doing it the better. It is very important in all transplanting operations that the trees or shrubs be got in with as little delay as possible, for if the roots are exposed or remain long out, the fine fibry spongioles perish, and it takes some considerable time before others are formed. It is therefore a good plan to dig all the holes that may be necessary at first starting, in doing which plenty of room should be allowed, and the ground well broken in depth, so as to enable the roots to extend in that direction as well as laterally, and although such digging involves more labour it pays in the end, by the increase of growth in the plants and the enhanced appearance it gives in contributing so much to their health. In planting Conifers and such like on lawns their effect may be considerably heightened by choosing the most elevated positions for them, as nothing looks worse than to see a tree so situated as to have its base below

the general level, with the ground inclining to it instead of rolling away in bold sweeps. Mounds like gigantic molehills are to be avoided, as their contour is objectionable, and from the sharp declivity they offer rain is thrown off and prevented from reaching the roots. These, when covered partly with soil, should have it well washed in amongst them by using water in quantity with some force by throwing it on in large volumes, in which way it carries the fine particles of earth with it into all crevices that, without its aid, would remain unfilled. After standing a few hours to settle, the rest of the earth can be thrown in and made level, and then mulched over, to prevent any escape of moisture by evaporation—which is an important matter, as the more uniform the soil is kept the greater are the chances of success. Another thing of equal consideration is the steadying of the tree, for if allowed to sway to and fro it is impossible that the roots can take fresh hold, the movement being such as to cause continual straining and friction, but with a rigid top they emit new feeders at once. For choice trees, such as Conifers, in conspicuous places, the nearest and least objectionable stays are those which may be made by using strong galvanised wire in three pieces, running them out to stout stakes placed triangularly in the ground, at a good distance from the plant to be supported, round the stem of which a collar of some kind should be put [old indiarubber hose is a good material] and the inside stuffed with hay or a piece of mat, as a padding, to keep it from chafing the bark, and to this collar the wires may then be made fast. Long stakes or poles used much in a similar way answer the purpose equally well, or perhaps better, where neatness has not to be thought of. Big Laurels and suchlike are more manageable if they have their heads considerably reduced before removal, by doing which even those of great age and size may be transplanted with safety, and when they break again they furnish up quickly and soon form handsome specimens. *J. S.*

Trachelospermum (Rhynchospermum) jasminoides.—This is a most useful plant for buttonhole work, or grown as a specimen for conservatory decoration. It is very little trouble, and providing it be kept clear of the mealy-bug and scale it will keep growing and flowering for a considerable time. A greenhouse temperature will do for it during the summer, and also till it is wanted for forcing. It may be put out-of-doors during July, stood on ashes with other plants, such as Azaleas, &c.; but I find keeping it in the house best, as its flower-buds plump up stronger. The plants should be kept somewhat drier during the three latter months of the year. Remove it to the forcing-house or pit in January, plunge the plant or plants in a bottom-heat of 75° to 80°, giving the plants at the time of starting them a good soaking of warm water at about 60°, and syringe them every day and on every favourable occasion. If plunged in pits take great care that the heating material does not rise above 85°; should it do so remove a little of the dung with your hand away from the sides of the pots, which will allow the heat to escape without removing the plants; keep a little air on the back of the pits day and night—about the thickness of a penny piece at night. When the flower-buds show signs of opening, raise the plant by degrees about half out of the heating material and reduce the top-heat, and in a few days it may be removed to a cooler house, where cold draughts must be avoided or the young foliage that it has made so quickly will drop off. By the middle of February, if all goes well, you will have a mass of white sweet-scented flowers, and where buttonholes are in daily demand there is nothing much nicer and neater when mixed with a little Bouvardia and Fern. Should the plants be old ones, and not have been repotted for a year or two, Clay's Fertiliser will greatly assist them, or sheep manure-water applied warm, at about 80°, about twice a week. It strikes easily in the spring from cuttings, in three parts of good loam, one part good rotten manure, with a little leaf-mould and sand; shift the plants as they fill the pots with roots, and keep them plunged in bottom-heat, if there is room. The cool end of a stove will suit them, and the shoots should be kept tied down as they grow, not forgetting to keep the syringe at them twice a day, which will keep the young shoots free of insects. Some good-sized plants will thus be obtained by the autumn, and they will repay all the trouble the next spring by a nice lot of flowers. *H. W. H.*

Sowing Onions and Carrots on Clayey Soil.—Having been successful with crops of these on a tenacious, cold soil, which is especially unfavourable to the well-doing of the Carrot, and on which if managed in the usual way it is difficult to catch a good season for sowing, I venture to give you our mode of procedure. Seed sowing is a most important point in the cultivation of all vegetables, for when indifferently carried out it not unfrequently results in the partial, if not total failure of the crop; it also sometimes causes undue complaints respecting the quality of the seeds. I have known one grower succeed while his neighbour failed, where the only difference in their management was that the successful one took the precaution to cover his seeds with light soil, which the other neglected to do. To some this may appear a trivial matter, nevertheless it deserves attention, for it is essential to the production of good crops on cold adhesive soil. In preparing for Onions and Carrots we select in autumn a plot that has had Peas as a preceding crop, and for which it has been heavily manured and double dug the previous autumn. I may here mention that in double digging we do not bring the bottom spit to the surface. The portion for Carrots receives no extra manure, but that allotted for Onions is again liberally dressed with short dung, derived from yards where hunters have run and been fed on corn and hay during the summer. When this is done the whole plot is again double dug, and as the digging proceeds the dung is thoroughly mixed with the top spit, and the soil is well broken, not ridged but left level on the surface; it has no further attention until it is frozen sufficiently hard to bear a man's weight, then as a check to slugs it receives a sprinkling of gas lime, and is again left to the action of the weather until sowing time arrives. About the second week in March we generally catch a favourable opportunity to sow the Onion seed: in the first place the gound is driven with rakes, and cleared of large stones, a shallow drill is then drawn in which the seeds are thinly and regularly distributed, and covered with previously prepared dry light soil, in which wood ashes have been mixed; the young plants easily push through this; it also stimulates, and is of material assistance to the crop. The surface of the drill is then made firm and even, and the ground levelled for the next drill; in this way drill after drill is sown, a foot apart, until all are finished. Early in April we put in James' Intermediate Scarlet as the main crop of Carrots; this is proceeded with in much the same manner as with Onions, the only difference being that the drills are drawn deeper, to admit a good layer of wood-ashes on which the seeds are sown. Since this plan has been adopted there has not been a failure or any annoyance from wireworm in ground where it previously invariably destroyed the crop. Perhaps nothing gives a kitchen gardener more satisfaction than a superior crop of Onions. This we have been fortunate enough to secure each season, with the exception of one, since we practised the above mode of culture. The partial failure was caused by a severe frost which happened just after the young plants were aboveground, which it paralysed and crippled to such an extent that they never thoroughly recovered. At no time previous or since have I known young Onions injured by frost in spring, and I have seen them sown as early as the middle of February several years in succession as far north as Aberdeenshire. After trying several sorts we have fallen back on two good old kinds—Deptford and Brown Globe. These are hardy good keepers, and suit our purpose for spring sowing. *Thos. Coomber, Hendre Gardens.*

White Scale on Pines.—If Mr. Clark will try the following, he will, I think, have little difficulty in getting rid of this troublesome insect. Dissolve 16 oz. of Gishurst Compound in a gallon of soft water, immerse the plants, and let them remain in the liquid for three minutes; then take them out, turn them bottom upwards to drain, and do not wash or syringe after dipping. When the plants are dry plant them in a bottom-heat of 90°, and keep up a good moist temperature in the house; shade them from the sun until they begin to make growth, after which treat them in the ordinary way. Of course, the houses or pits in which the plants have been growing will require a thorough cleansing before making use of them for Pines again—scrubbing the walls and woodwork thoroughly, for which purpose Gishurst Compound may be used of the same strength as that in which the Pines have been dipped, or as much stronger as Mr. Clark may deem necessary; seeing there is nothing to injure or kill but the scale, the stronger it is used perhaps the better. I am certain of the efficacy of this recipe. Some years ago I had some suckers from a friend of a variety I wished to grow, not having the least idea that he had scale in his stock. I planted them with mine and grew them on; not many months, however, elapsed before I found, to my great annoyance, a goodly crop of scale. I could do nothing in the way of clearing the plants then, so fruited them, and selected the suckers and treated them as above recommended. Since that time I have never had a scale on my stock of Pines. *Nemo.*

Weather in the North of Scotland.—The weather here ever since the break up of the storm in the early part of December last has been with little exception so remarkably fine, and has formed such a decided contrast to that in the southern part of the kingdom and many other places on the Continent, that I have considered a statement of the temperature at this place during the two past months might prove of interest to some of the readers of the *Gardeners' Chronicle*, more especially those who are unacquainted with a northern climate. It is the belief of many people who do not make a study of the causes which influence climate, or have not otherwise made themselves conversant with it by reading of their results, that the farther we go north the colder the atmosphere becomes. That this theory is not borne out by the facts we have only to look to the average temperature of the winter season in the Western Hebrides and northern part of Scotland, where Fuchsias and Hydrangeas live unscathed by frost, and grow up to large bushes, while in the Island of Faroe, 500 miles farther north, the winter temperature averages about 2° higher than that of London. There is little doubt but this results from the influence of the Gulf Stream washing our northern shores, and the narrowness or smallness of the area of land: It is worthy of remark that the severest night's frost of the previous winter was on December 13, and was exactly the same as that of December 2 and 3 last. The former winter was a long and protracted one, but scarcely anything suffered with us from its severity, and very little appears to be injured by the last frost, although wood was badly ripened. Laurustinus is now flowering, and Apricots upon the open wall have now (February 20) some flowers fully expanded. The following is a statement of temperature for the months of December, 1879, and January, 1880, from a tested thermometer, sent out by the Scottish Meteorological Society—reading taken by myself:—

1879.	Max.	Min.	1879.	Max.	Min.
	°	°		°	°
December 1 ..	31	29	December 17 ..	46	41
,, 2 ..	27	15	,, 18 ..	44	38
,, 3 ..	31	15	,, 19 ..	41	31
,, 4 ..	32	22	,, 20 ..	42	27
,, 5 ..	35	27	,, 21 ..	45	26
,, 6 ..	31	26	,, 22 ..	52	35
,, 7 ..	38	29	,, 23 ..	50	44
,, 8 ..	42	30	,, 24 ..	42	37
,, 9 ..	42	37	,, 25 ..	43	35
,, 10 ..	32	26	,, 26 ..	41	31
,, 11 ..	42	26	,, 27 ..	55	35
,, 12 ..	39	35	,, 28 ..	51	38
,, 13 ..	44	34	,, 29 ..	42	36
,, 14 ..	52	41	,, 30 ..	40	34
,, 15 ..	53	41	,, 31 ..	51	32
,, 16 ..	49	36			

1880.	Max.	Min.	1880.	Max.	Min.
	°	°		°	°
January 1 ..	56	32	January 17 ..	37	30
,, 2 ..	42	34	,, 18 ..	40	31
,, 3 ..	46	38	,, 19 ..	37	28
,, 4 ..	42	40	,, 20 ..	39	30
,, 5 ..	53	34	,, 21 ..	40	34
,, 6 ..	44	41	,, 22 ..	41	36
,, 7 ..	50	40	,, 23 ..	43	35
,, 8 ..	41	40	,, 24 ..	43	35
,, 9 ..	39	28	,, 25 ..	42	28
,, 10 ..	43	34	,, 26 ..	45	30
,, 11 ..	38	27	,, 27 ..	47	40
,, 12 ..	34	23	,, 28 ..	49	42
,, 13 ..	37	28	,, 29 ..	50	44
,, 14 ..	39	34	,, 30 ..	53	42
,, 15 ..	37	32	,, 31 ..	51	36
,, 16 ..	37	32			

J. Webster, Gordon Castle Gardens, Feb. 20.

Minorca Plants.—I am glad to see Cyclamen balearicum and Hyacinthus Pouzolzii coming up both in a glazed pit and the cold frame. Crocus Cambessedesii, too, has weathered the storm in the open border. *H. Harpur-Crewe, Drayton-Beauchamp Rectory, Tring, March 4.*

Rhododendron barbatum.—I herewith forward you three trusses of bloom of Rhododendron barbatum, cut from plants growing out-of-doors and which never get any protection. We have about fifty plants of this species growing in different parts of the grounds here, and at the present time many of them are masses of flower. Our largest plant measures 15 feet high and about 12 feet through, and I counted this morning 140 fully expanded trusses upon it—a sight that is worth a journey from London to see. R. barbatum is the earliest Rhododendron we have, being just a fortnight earlier than either variety of R. Nobleanum, and the flowers being of good substance stand the weather well, as will be seen by the specimens sent, which have been out in all the hurricanes of wind and rain, and sometimes hail, we have been experiencing this last fortnight. *J. Harris, The Gardens, Singleton, Swansea.*

The Scarcity of Pear and Apricot Blossom.—This it is to be hoped will prove about the last lean legacy of the year 1879. There is, I fear, no question but that the scarcity is general. In a recent run over a considerable district in East Anglia the scarcity of bloom seemed general. Of course there are exceptional trees here and there—we have several; but on the whole I never remember to have seen so thin a sprinkling of Pear and Apricot bloom. We have few of the latter left, and those few are

almost without blossom-buds. Where trees have escaped injury, as at Henham Hall, where the Peaches were killed and the Apricots scarcely injured, thus entirely reversing our experience, the trees promised a fair bloom; but so also did our wrecks of trees, but the promise has faded into bloomlessness—the immature fruit-buds have fallen off before opening. The Pears never showed any bloom-buds. Some attribute this to the heavy crop of last year. There may be something in this, as one of the peculiarities of last season, so erratic in its effect, was plenty of Pears and few or no Apples. True, many of our Pears never ripened. The lateness, however, had probably more to do with the non-development of fruit-buds than the heaviness of the crop, for the fruit and the wood, as a rule, ripen abreast, and hence green fruit in October means also immature wood. The fact, arise how it may, is most discouraging, and will cause a serious blank in our fruit supply this year. *D. T. Fish.*

Primula Sieboldii (cortusoides amœna).—In the spring of 1879 I planted out this species on a shady rockery facing north-east. It has had no protection, but is coming up much more strongly than those plants which have been wintered in pots in the frames. *H. Harpur-Crewe, Drayton-Beauchamp Rectory, Tring.*

Reports of Societies.

Scottish Horticultural Association: *March* 2.—The annual general meeting of this Association was held in 5, St. Andrew's Square, Edinburgh. About 130 members were present, and the President, Mr. M. Dunn, Dalkeith Park Gardens, occupied the chair. After the admission of several new members, a motion to increase the number of Vice-Presidents to five was carried. The Secretary, Mr. Alexander Milne, then read the third annual report of the Association's operations:—

Report of Session 1879-80.—The Council of the Scottish Horticultural Association, in presenting the third annual report, have much pleasure in stating that the progress made during the past year has been more than could have been anticipated at last annual meeting, 117 new members having been added to the roll, this being an increase of six over the previous year. The total membership now numbers 469.

Since the institution of the Association, on March 20, 1877, monthly meetings have been regularly held on the first Tuesday of each month in the hall, 5, St. Andrew's Square, and Council meetings have also been convened from time to time. The attendance at the ordinary meetings increases monthly, and now varies from 80 to 120, and at Council meetings members have been generally nearly all present. Eight meetings of the adjudicating committees have been held, granting twelve certificates of the Royal Caledonian Horticultural Society for new fruits, flowers, and vegetables, on the recommendation of the various committees. This increase in the work of the adjudicating department shows that members are steadily taking advantage of these committees for testing new productions. Cultural Certificates are now being issued by the Council for meritorious productions, and during the last three months the exhibits of three members have been deemed worthy of this mark of honour.

The number of papers and communications read on horticultural subjects during the session amounted to thirty-two, being eight more than the previous session. Discussions which elicited useful and valuable information followed the reading of all the papers. There is to note this year a large increase in the number of exhibits, there being as many as eighty-four different collections of plants, fruits, and vegetables tabled at the twelve monthly meetings; in several instances the collections of plants contained over twenty kinds. These exhibits have been contributed by forty-two members, many of them coming from a long distance and sent by members greatly interested in the advance of horticulture.

The Council take this opportunity of thanking members for having so kindly forwarded papers and exhibits. It is also satisfactory to state that six under-gardeners, members of the Association, entered herbaria for the prizes offered in this competition.

An abstract of the several papers and also a list of exhibits will be found in the printed report. The Council are happy to state that not a few of the papers read at the various meetings have found their way into the leading gardening periodicals, and that one paper was printed in full in pamphlet form by the Association.

The Council are aware of a desire in the Association to have a Journal of their own, and also to have a reading-room and library accessible to members, and although arrangements are not yet matured to carry out these objects, they trust that these desirable adjuncts may yet be accomplished at a date not far distant.

While the Council are happy to have to report on the Association's continued prosperity, they have also to regret to have to put on record the death of the following members:—Peter S. Robertson, Trinity Nursery, Edinburgh; Thomas Kettles, Archerfield Gardens, East Lothian, who were also members of the adjudicating committees; and John Caie, Inverary Castle Gardens, Argyll; Archibald Miller, Inverleith Nursery, Edinburgh; James Bryson, Abercorn Nursery, Edinburgh; and John Hoggan, 31, Lothian Road, Edinburgh.

On the motion of Mr. A. M'Leod, Superintendent of the Edinburgh Public Gardens, seconded by Mr. W. M. Welsh, nurseryman, the report was adopted. The Chairman moved, and Mr. A. D. Makenzie seconded, the voting of an honorarium of £10 10*s.* to the Secretary for his past services to the Association, which was agreed to by acclamation. Mr. D. P. Laird, Treasurer, reported that the income for the year, including a balance from the previous account of £21 7*s.* 1*d.*, had been £61 4*s.* 6*d.*, and the expenditure £38 15*s.* 11*d.*, leaving a balance at the credit of the Association of £22 8*s.* 7*d.* The report was approved of on the motion of Mr. A. D. Makenzie, seconded by Mr. Hugh Fraser.

The President afterwards delivered a valedictory address, in the course of which he congratulated the members upon the success that had hitherto attended the Association, and pointed out the benefits which might be derived from it by young gardeners, upon whom he also impressed the importance of studying botany, chemistry, and geology. He also referred to the many able papers which had been read during the year, attaching considerable value to the proper selections of the kinds of vegetables, plants, and fruit to grow. To the practical man this department of knowledge could not be over-estimated. The life-history of a plant was a subject in these days becoming of great practical utility to the horticulturist.

On the conclusion of his address, the best thanks of the meeting were awarded to him for his great services to the Association.

The election of office-bearers was next proceeded with. W. H. Maxwell, Esq., of Munches, was re-elected Honorary President; Mr. Malcolm Dunn, Dalkeith Park Gardens, was re-elected President; Mr. Hugh Fraser, Leith Walk Nursery, was re-elected Vice-President. The following were also elected Vice-Presidents:—Messrs. A. McLeod, John Sadler, John Downie, and Robertson Munro. Mr. Alexander Milne and David P. Laird were re-elected Secretary and Treasurer respectively. After a vote the following were elected to fill six vacancies on the Council:—Messrs. David W. Thomson, Matthew Todd, W. W. Johnstone, George Simpson, George Goodall, and John McKinnon.

It was announced that the successful competitors for the prizes offered for the herbaria were George Oliver, Royal Botanic Gardens; John Craig, Kew Gardens; and W. H. Divers, Burghley Park, in the order named. The judges were Messrs Robertson Munro, Hugh Fraser, and John Sadler. The following exhibits were placed on the table:—A box of cut Roses and flowers of Cattleya Symei and Odontoglossum cordatum, of great beauty and interest, from Dr. Paterson, Bridge of Allan; two Tropæolums in flowers, named Mrs. Shand, from Mr. Andrew Hunter, Newhailes; an antipodal Hyacinth growing in water, with head downwards, by Mr. Robert Laird, Jun., 17, Frederick Street; Polyanthus and an Orchid bloom, from Mr. D. Henderson, Gracemount; a collection of cut Camellia blooms from Messrs. Thomas Methven & Sons; a collection of Rhododendron trusses and Pyrus japonica and Garrya elliptica flowers from Mr. George McKinlay, Tulloch Castle Gardens.

Edinburgh Botanical: *March* 11.—The Society met at 5, St. Andrew's Square, the President, Mr. William Gorrie, of Rait Lodge, in the chair. Before the usual routine business commenced the proceedings were diversified by the presentation by the President of a testimonial subscribed by a large proportion of the members, and presented in the name of the Society to Mr. Sadler in appreciation of his long service of Assistant-Secretary, from which office he has just retired.

The following papers were read:—

I. "On the British American Violaceæ," by Professor George Lawson, of Halifax, N.S. (see p. 364).

II. A gift of twenty-one microscopic slides illustrative of the growth of the fungus Saprolegnia ferax on salmon and other river fish, and held by Mr. Sturling of the Anatomical Museum to be the cause of the recent salmon epidemics, was presented by him to the Museum of the Royal Botanic Garden. At the same time large jar specimens of fish affected by this fungus in an unmistakable way, even by the naked eye, were exhibited. The various specimens had been taken from the Tweed, from the Eden 12 miles above Carlisle, and from Ightham Moat in Kent, in localities thoroughly isolated from the sources of ordinary river pollution. The further consideration of Mr. Stirling's paper was deferred till the May meeting.

III. Mr. A. Brotherston, of Kelso, made a communication "On the Pasturage of Wester Teviotdale in Connection with the 'Louping-ill' of Sheep." At the request of the local Farmers' Club the author made a botanical examination of the pasturage of a number of sheep farms in this high-lying district. On a spring visit he could not trace any poisonous plants to which to attribute this disease. On the other hand, when making another botanical inspection in autumn he found ergot very abundant. He detailed in the communication no fewer than twenty-three species of grasses which were ergotised. The Juncaceæ and Cyperaceæ, which form a great proportion of this hill pasturage, were free from ergot, Claviceps purpurea; but some of the Cyperaceæ were very subject to smut. Mr. Brotherston suggested the eating of ergotised grasses as a probable cause of the disease, which in this district is a spring one. He emphasised the following in this connection: No different species of plants characterise the isolated localities infected with the disease, but much ergotised grass was found there: the toxological effects of ergot were similar to those physiological ones characteristic of the disease. In Teviotdale spring is the only time when sheep may perchance eat ergot in quantity. To eat the pastures bare appeared to be the most feasible remedy for this disease.

Miscellaneous Communications.—Dr. Wm. Craig exhibited a specimen of Botrychium Lunaria, taken the previous week from a hill in the upper ward of Lanarkshire, 900 feet above the sea level. Mr. Sadler read a note from Mr. John Campbell, Ledaig, Oban, noticing the remarkable progress of spring vegetation. The storm of December 28 had done more damage to half-hardy shrubs, such as Myrtles, Veronica Andersoni, Aster argophyllus than all the winter's frosts. Mr. Peach read part of a private letter from Unst, Shetland, in which it was stated that on February 24 Crocuses, Snowdrops, and Polyanthus were in bloom, and that the Rose bushes were unfolding their leaves in the gardens. Mr. Buchan remarked that such summer-like weather had prevailed as far north as Iceland throughout this winter.

On the table were exhibited in bloom Saxifraga Stracheyi, a hardy plant, and Soldanella montana, a large seedling hardy form, from the forcing department of the Royal Botanic Garden. A fine stove plant from the same establishment, of a white texture and a pleasant perfume, Posoqueria multiflora, also excited much attention. Sir Robert Christison had presented, in illustration of a previous paper, a prismatic section from the diameter of a Yew 237 years old from Inch Lonaig, Loch Lomond. Lord Strathmore also sent a section at 2 feet 6 inches from the roots of a Larch blown down at Glamis Castle in the Tay Bridge storm on December 28, 1879. The tree was 109 feet high. Its trunk measured 12 feet 5 inches in girth at 5 feet above roots. This section measured 12 feet 10 inches over bark, and 12 feet 4 inches round the wood. It shows 107 annual rings of wood, indicating 110 to 112 years for the age of the tree.

A section taken 3 feet from the roots, of Arenga saccharifera, cut down in the Palm-house of the Royal Botanic Garden when 60 feet in height. Owing to the quantity of starchy matters and other vegetable juices in the stem of this Palm, such a section is very difficult to make, this being the only successful one of many attempted.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, March 17, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 20 years.	Temperature of the Air: Highest.	Lowest.	Range.	Mean for Day.	Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Degree of Humidity Sat. = 100.	Wind: Average Direction.	Rainfall.
Mar.	In.	In.	°	°	°	°	°	°	°		In.
11	30.24	+0.32	55.3	33.1	22.2	42.2	+ 1.5	41.3	97	N.E.: E.S.E.	0.00
12	30.14	+0.23	54.1	38.2	16.2	44.3	+ 4.0	42.2	91	E.S.E.: E.	0.00
13	30.14	+0.24	59.5	38.5	21.0	48.1	+ 7.1	39.5	72	N.N.E.: S.E.	0.00
14	30.10	+0.21	45.7	38.3	7.4	41.3	+ 0.1	39.7	95	N.N.E.: N.E.	0.00
15	30.05	+0.18	46.2	37.2	9.0	41.7	+ 0.3	37.2	85	N.E.: E.	0.00
16	29.83	+0.03	50.1	32.9	17.2	40.0	+ 1.5	37.0	90	E.N.E.: E.	0.00
17	[illegible]	+0.15	53.0	35.4	17.6	43.1	+ 1.3	36.5	79	S.E.	0.00
Mean	30.08	+0.19	52.0	36.2	15.8	43.0	+ 1.9	39.1	87	S.E.: N.E.	sum 0.00

March 11.—A fine bright day. Cloudy at times. Overcast at night.
— 12.—Dull early part of day, fine and bright afterwards. Overcast at night.
— 13.—A very fine clear day. Cold in morning, quite warm and summerlike in afternoon. Cloudless at night.
— 14.—A dull day, but fine and quiet. Rather cold. Little mist in morning.
— 15.—Dull and cloudy till 3 P.M., very fine and bright afterwards. Cool.
— 16.—A dull, overcast, cold morning, fine rest of day. Overcast at midnight.
— 17.—A very fine bright day. Sky clear throughout. Cloudless at night, but very cold.

London: *Barometer.*—During the week ending Saturday, March 13, in the vicinity of London the reading of the barometer at the level of the sea increased from 30.08 inches at the beginning of the week to 30.50 inches by the morning of the 8th, decreased to 30.16 inches by the morning of the 10th, increased to 30.44 inches by the evening of the 11th, decreased to 30.30 inches by the afternoon of the 13th, and was 30.32 inches at the end of the week. The mean reading for the week at sea level

was 30.32 inches, being 0.60 inch above that of the preceding week, and 0.21 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 60½° on the 9th to 49° on the 8th; the mean value for the week was 55½°. The lowest temperatures of the air observed by night varied from 33° on the 11th to 44° on the 7th; the mean value for the week was 38½°. The mean daily range of temperature in the week was 17°, the greatest range in the day being 22½°, on the 9th, and the least 8°, on the 7th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—March 7, 48°, + 7°.5; 8th, 42°.7, + 2°.2; 9th, 48°, + 7°.5; 10th, 48°.3, + 7°.7; 11th, 42°.2, + 1°.5; 12th, 44°.8, + 4°; 13th, 48°.1, + 7°.1. The mean temperature of the air for the week was 46°, being 5°.4 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 127¾° on the 13th, 123¾° on the 12th, and 120¼° on the 10th; on the 7th the reading did not rise above 53°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 27¼° on the 11th, 31° on the 13th, and 31¾° on the 10th; the mean of the seven lowest readings was 34¾°.

Wind.—The direction of the wind was variable, and its strength moderately strong.

The weather during the week was fine and dry, except on Sunday, the 7th inst., when it was dull and gloomy, with occasional rain.

Rain fell on the 7th, to the amount of 0.08 inch.

England: *Temperature.*—During the week ending Saturday, March 13, the highest temperatures of the air observed by day were above 60° at Blackheath (London), Bristol, Cambridge, and Sunderland, and below 52° at Wolverhampton, Sheffield and Liverpool; the mean value from all stations was 57°. The lowest temperatures of the air observed by night were below 32° at Cambridge, Wolverhampton, Nottingham, Sheffield, and Hull, and above 39° at Plymouth and Brighton; the mean value from all places was 34¼°. The extreme range of temperature in the week was above 27° at Blackheath, Nottingham and Hull, and below 18° at Plymouth and Liverpool; the mean range of temperature from all stations was 22¾°.

The mean of the seven high day temperatures was above 54° at Truro, Brighton, Blackheath, and Cambridge, and below 49° at Wolverhampton, Sheffield, Liverpool, Bradford, and Leeds; the general mean from all places was 51½°. The mean of the seven low night temperatures was below 38° at Cambridge, Wolverhampton, Nottingham, Sheffield, Liverpool, and Hull, and above 43½° at both Truro and Plymouth; the mean from all stations was 39°.

The mean daily range of temperature in the week was above 17° at both Blackheath and Cambridge; and below 10° at Plymouth, Sheffield, Bradford, Leeds, and Sunderland; the mean daily range from all places was 12½°.

The mean temperature of the air for the week from all stations was 44¼°, being 3¼° higher than the value for the corresponding week in 1879. The mean temperature was above 46° at Truro, Plymouth, Brighton, and Blackheath, and below 42° at Wolverhampton, Sheffield, Liverpool, and Hull.

Rain.—The amounts of rain measured during the week were small everywhere. At Truro the total fall was 0.43 inch, and at Hull 0.33 inch, at Cambridge, Norwich, and Wolverhampton 0.04 inch only was measured; the average fall over the country was 0.20 inch.

The weather during the week was generally fine and dry, though the sky was very cloudy at times. *Fog* was prevalent at some places.

Scotland: *Temperature.*—During the week ending Saturday, March 13, the highest temperatures of the air observed by day varied from 59° at Dundee, to 51½° at Aberdeen; the mean value from all places was 55½°. The lowest temperatures of the air observed by night varied from 29° at both Paisley and Perth, to 33½° at Greenock; the mean value from all stations was 31¾°. The mean range of temperature in the week from all places was 23¾°.

The mean temperature of the air for the week from all stations was 42½°, being 5¼° higher than the value for the corresponding week in 1879. The mean temperature was above 43° at Glasgow and Leith, and below 42° at Paisley and Perth.

Rain.—The heaviest falls of rain were at Paisley, 1.36 inch, Greenock, 1.25 inch, and Dundee, 1.05 inch; and the least falls were at Aberdeen, 0.43 inch, and Edinburgh, 0.55 inch; the average fall over the country was 0.90 inch.

Dublin.—The highest temperature of the air was 57¼°, the lowest 30¾°, the extreme range 26½°, the mean 42½°; and the fall of rain 0.98 inch.

JAMES GLAISHER, F.R.S.

Variorum.

Cleverness of a Soldier-Ant.—One cannot walk anywhere in the neighbourhood of Bahia without seeing these leaf-cutting ants (Ecodoma) at work. Their habits have been described by many observers, and recently by Mr. Belt* at great length. One soldier-ant was carrying a piece of young Cassava root, 2 inches in length. It held the stick by one end thrown over its back, but not touching it, the other end projecting far behind the insect. There was just a balance. The slightest extra weight on the hinder tip of the stick would have upset the bearer backwards. The ant staggered from side to side under its burden, like a heavily laden porter, and got along very slowly. I pulled the burden away and then put it back again. The ant struggled a long while to get it back into its old position, but could not. Then it tried to balance it crossways by the middle, but one end always tilted up, and the other stuck against the ground, so at last the ant cut the stick in two, and carried off one half, a worker hoisting the other. *Notes of a Naturalist on the "Challenger."*

Vegetables Preserved by Drying.—A convenient method of preparing desiccated vegetables, as practised largely in some countries, consists in drying them for a short time, and then exposing them to a slow heat in ovens. When soaked for cooking, Peas, Roots, Potatos, Beets, corn, and other substances swell out and show very little change in their esculent properties. A modification of this process consists in placing the substances, after being sun-dried, in paper bags, which are pasted up at the mouth, and then covered with sand, and heated till perfectly crisp, but not burned or materially altered in colour. *Cassell's Dictionary of Cookery.*

Enquiries.

He that questioneth much shall learn much.—Bacon.

Bird Scarer.—*J. J.* would be much obliged if any one who has tried the "Infallible Bird-Scarer," sold by Messrs. Hill & Son, 4, Haymarket, W., and illustrated in the *Gardeners' Chronicle* for February 1, 1879, p. 149, would give their experience as to its effectiveness.

Answers to Correspondents.

Carpet Bedding Plants: *E. T. R.* The only dark or purplish-brown coloured hardy dwarf "carpeting" plants are Ajuga reptans purpurea and Oxalis corniculata rubra, both excellent for the purpose; the former increase by division, and the latter from seed, which, if sown now on a warm border, will be ready to plant out by bedding time. The only other dwarf plants suitable for carpet bedding that can be raised from seed in time for the present season's planting, are the well-known Pyrethrum Golden Feather and Tagetes signata pumila; the last has beautiful green foliage, and can be kept as dwarf as may be desired by repeated trimming; Iresine acuminata is probably the kind you mean; it is of more compact growth than Lindeni, but not so bright. Alternantheras will not survive the winter with a less temperature than 55°. In such a temperature, and kept on the dry side as to atmospheric moisture, they are sure to winter safely.

Cinerarias: *Kelway & Son.* A good showy decorative strain, mostly with a black disc, but not sufficiently refined to take position as florists' flowers.

Fungus: *J. F., Hill Court.* The name of the fungus is Hypoxylon fuscum.

Liquid Manure: *C. W. D.* A safe rule for the guidance of those who are inexperienced in the use of liquid manures is to apply whatever kind of fertiliser may be used "weak and often." If it be guano, half an ounce to 1 gallon of water will be found a safe proportion. The urine of horses and cows should be diluted heavily—say 1 pint to about 2 gallons of water. One peck of sheeps' droppings, and a handful or two of soot, well mixed in 30 gallons of water, and used when clear, would prove a useful manure.

Measuring the Height of Trees. *E. J. S., Taunton.* You will find some details for making a very simple and useful instrument for this purpose in our number for August 2, 1879, p. 156.

Names of Plants: *W. Powell.* Helleborus viridis—the wild native species, generally found in limestone districts.—*R. Andrews.* Rhododendron arboreum, and Sparmannia africana.—*A. Daniels.* 1, Iris japonica, commonly known as I. chinensis; 2, Isolepis gracilis; 3 and 4, Libonia floribunda; 5, Habrothamnus fasciculatus; 6, Pteris cretica, var. albolineata.—*J. G.* 1, Saccolabium calceolare; 2, Erica lanata; 3, Dendrobium primulinum.—*Mrs. N.* One of the forms of Asphodelus albus.—*C. W. D.* 1, Pulmonaria officinalis; 2, P. angustifolia.—*P. N. F.* Scilla bifolia (true).—*H. C.* 1, Polypodium serpens; 2, Hydrocotyle elongata; 3, Piper excelsum; 4, materials insufficient; 5, Dodonæa viscosa; 6, Myoporum lætum. The name "Tutu" is given to the various species of Coriaria; but probably the species you mean is C. ruscifolia.—*Pentreffynnon.* Probably Dendrobium fimbriatum oculatum; but you do not give any particulars as to its habit.

Pear Glou Morçeau: *P. N. F.* The name is spelt in this way by all the best English authorities, so that the fruit-sellers are only following a well set precedent. In France there are at least half a dozen different ways of spelling the word.

Recovering a Debt: *R. Nisbet.* We presume the debt is recoverable through the county court; but you had better get the advice of a solicitor upon the matter.

Vines: *W. B. H.* The roots have perished through the border being constantly saturated with moisture, not from any deleterious properties in the cold tea, or tea-leaves. Discontinue the practice described, and replace the soil with some fresh loam.—*A Contributor.* To ripen the wood of Vines, the more air and heat you give them the better. If your Vines grow well, these are the elements to produce "plump eyes close to the Vines." It matters not about their exposure in winter if the wood is ripened properly. We suspect your Vines ripened badly last autumn.—*R. P. Wright.* The cause of your Vines breaking so badly is owing to their being improperly ripened last autumn.

Worms on Lawns: *Lexham.* The corrosive sublimate should have been effectual. Another plan is to water with a saturated solution of caustic lime. We have also used with good effect a solution made from a worm soap sold by Messrs. Rutley & Co., of the Strand. Possibly your garden, like many others manufactured by speculative builders, is made up of all sorts of crudities and ineffectually drained. If so, the first step towards improving your lawn would be to drain the plot well, then to have the soil thoroughly broken up, keeping the best near the top, some good earth if necessary being spread on the surface, and then to have it returfed, but this should be done at once, or deferred till next season.

Catalogues Received:—Cranston's Nursery and Seed Company, Limited (Hereford), Trade List of New Roses for 1880.—William Paul (Paisley), General Spring Catalogue of Plants.—Samuel Yates (16 and 18, Old Millgate, Manchester), Descriptive Catalogue of Vegetable and Flower Seeds.—B. K. Bliss & Sons (34, Barclay Street, New York), Illustrated and Descriptive Catalogue of Potatos for Seed.—Thibaut & Keteleer (Sceaux, Seine, France), General Spring Catalogue of Plants.

Communications Received.—W. B.—J. S.—D. T. F.—W. M.—G. S.—W. C. S.—M. S. C.—A. S C.—O.—Ch. J.—W. T. D.—A. M.—T. L.—A. H.—J. R. J.—G. Lee.—P. F. Keir.—Subscriber.—O. & S.

Markets.

COVENT GARDEN, March 18.

The recent fine weather has brought a large supply of forced goods into the market, and with short demand, owing to the coming elections, prices have fallen considerably, late Grapes alone maintaining their value. Outdoor vegetables are more plentiful. *James Webber, Wholesale Apple Market.*

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Oranges, per 100	6 0–12 0
— American, barrl.	18 0–30 0	Pears, per dozen	4 0– 8 0
Cob Nuts, per lb.	1 0– 1 6	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb.	10 0–15 0	Strawberries, per oz.	0 6– 1 0
Lemons, per 100	6 0–10 0		

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	10 0–14 0	Herbs, per bunch	0 2– 0 4
Asparagus, Sprue, per bundle	1 0– ..	Horse Radish, p. bun.	4 0– ..
— English, p. 100	12 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— French, per bun.	7 0–25 0	Mint, green, bunch	1 6– ..
— French natural, per bundle	3 6– ..	Mushrooms, p. baskt.	1 6– 2 0
Beet, per doz.	1 0– 2 0	Onions, per bushel	8 0– ..
Brussels Sprouts, lb.	0 6– ..	— Spring, per bun.	0 6– ..
Cabbages, per doz.	1 0– 2 0	Parsley, per lb.	1 6– ..
Carrots, per bunch	0 8– ..	Peas, per lb.	1 0– ..
— French, per lb.	0 6– ..	Potatos (new), per lb.	0 3– 0 9
Cauliflowers, per doz.	2 0– 5 0	Rhubarb (Leeds), per bundle	0 9– ..
Celery, per bundle	1 6– 4 0	Seakale, per punnet	3 0– ..
Chilis, per 100	3 0– ..	Shallots, per lb	0 6– ..
Cucumbers, each	1 0– 2 0	Spinach, per bushel	5 0– 6 0
Endive, per score	4 6– ..	Tomatos, per dozen	3 0– ..
Garlic, per lb.	0 6– ..	Turnips, new, bunch	0 6– ..

Potatos:—Regents, 100s. to 140s.; Flukes, 120s. to 160s.; and Champions, 150s. to 190s. per ton. German, 6s. to 7s. 6d. per bag; new English, 2s. per lb.

Plants in Pots.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ficus elastica, each	1 6– 7 6
Azaleas, per dozen	18 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–18 0	Fuchsias, per dozen	9 0–15 0
Bouvardias, per doz.	12 0–24 0	Genista, per dozen	9 0–18 0
Cinerarias, per doz.	6 0–12 0	Hyacinths, per doz.	4 0– 9 0
Cyclamen, per dozen	9 0 24 0	Myrtles, per doz.	6 0–12 0
Cyperus, per dozen	4 0– 9 0	Palms in variety, each	2 6–21 0
Dielytra, per doz.	9 0–15 0	Pelargoniums, scarlet zonal, per doz.	6 0– 9 0
Dracæna terminalis	30 0–60 0	Primula, single, per dozen	4 0– 6 0
— viridis, per doz.	12 0–24 0	Solanum, per dozen	6 0–12 0
Erica gracilis, per dozen	9 0–18 0	Tulips, 12 pots	6 0–12 0
— hyemalis, p. doz.	6 0–24 0		
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

* *The Naturalist in Nicaragua*, by Thos. Belt, p. 471 *et seq.* London: John Murray, 1874.

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Narcissus, Paper-white, 12 spikes ..	1 0– 1 6
Arum Lilies, per dozen	4 0– 9 0	Pelargoniums, 12 spr.	1 6– 3 0
Azalea, 12 sprays ..	0 6– 1 0	— zonal, 12 sprays	0 6– 1 0
Bouvardias, per bun.	1 0– 4 0	Primroses, 12 bunch.	1 0– 1 6
Camellias, per doz...	1 0– 6 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	— single, per bunch	0 6– ..
Cyclamen, 12 blms..	0 4– 1 0	Roses (indoor), doz.	1 6– 9 0
Epiphyllum, 12 blms.	0 6– 1 0	— Roses, Fr., doz.	2 0– 6 0
Eucharis, per doz. ..	4 0– 9 0	Snowdrops, 12 bunch	1 6– 3 0
Euphorbia, 12 sprays	3 0– 6 0	Spiræa, 12 sprays ..	1 0– 2 0
Gardenias, 12 blms..	3 0–12 0	Tropæolum, 12 bun.	1 0– 3 0
Heliotropes, 12 sp. ..	0 6– 1 0	Tuberoses, per dozen	4 0– 6 0
Hyacinths, 12 spikes	4 0– 9 0	Tulips, 12 blooms ..	1 0– 1 6
— small	1 6– 4 0	Violets, Fr., per bun.	1 6– 2 6
— Roman, 12 spikes	1 0– 2 0	— English, p. bun.	1 0– 2 0
Lily of Val., 12 spr.	0 9– 2 0	White Lilac, Fr., per bundle	4 0– 8 0
Mignonette, 12 bun.	6 0– 0 0		

SEEDS.

LONDON: *March* 16.—Messrs. John Shaw & Sons, of 37, Mark Lane, state that owing to the favourable weather a daily increasing activity now prevails on the seed market, and for all the leading varieties there is naturally a heavy consumptive demand. American red Clover can now be bought on Mark Lane at unusually moderate prices. The quality of the seed this season proves highly satisfactory. From Chicago the shipments of grass seeds during 1879 were 47,361,744 lb. White Clover is rather dearer. Fine qualities are not over plentiful. There is also a somewhat better feeling for Trefoil. Italian and perennial Rye-grasses are unchanged. There is more inquiry for Lucerne. Sanfoin continues scarce. Spring Tares, being in short supply, have advanced 2*s*. per quarter. As regards Canary, Hemp, Millet, Haricots, Lentils, and Peas, the business doing therein is too limited to call for remark.

CORN.

At Mark Lane on Monday trade was rather firm, but there was not much business in progress. Wheat was held for 1*s*. per quarter advance, but the improvement was realised in only a few instances. Barley moved off slowly on former terms. Maize was steady, without much sale. Oats were firm: Russian fetched about 3*d*. per quarter more money, and Swedish (which were especially scarce) from 6*d*. to 1*s*. per quarter. Maize supported the full prices of last week, but the demand was quiet. Beans and Peas were steady, while no change was reported in flour.—There was no material change in the position of the market on Wednesday, but the tone was perhaps a trifle weaker. As regards Wheat, in the few sales concluded the rates of Monday were about maintained. For Barley prices were unaltered. Oats were steady, good Swedes being again scarce and quite as dear. Maize was rather dull, and very little demand for Beans, Peas, or flour.—Average prices of corn for the week ending March 13:—Wheat, 44*s*. 8*d*.; Barley, 34*s*. 10*d*.; Oats, 22*s*. 3*d*. For the corresponding period last year:—Wheat, 39*s*. 7*d*.; Barley, 34*s*. 1*d*.; Oats, 20*s*. 9*d*.

CATTLE.

At the Metropolitan Market on Monday the quotations of that day se'nnight for beasts were well supported, and some choicest qualities reached 6*s*. For sheep the demand was good, prices were therefore higher. A considerable number of shorn were pretty readily disposed of at about 1*s*. per 8 lb. less than those in the wool. Some choice lambs on offer made over 1*s*. per pound. Choice calves were scarce.—Quotations:—Beasts, 4*s*. 6*d*. to 5*s*. 2*d*., and 5*s*. 6*d*. to 5*s*. 10*d*.; calves, 5*s*. 4*d*. to 6*s*. 8*d*.; sheep, 5*s*. 2*d*. to 5*s*. 8*d*., and 6*s*. 4*d*. to 7*s*.; pigs, 3*s*. 6*d*. to 5*s*.—Thursday's market was in a quiet state. Supplies were short, and were entirely composed of home-bred stock. Both beasts and sheep sold slowly at about late rates. Calves were quiet.

HAY.

Tuesday's Whitechapel Market report states that there was a steady demand for fodder, and the better qualities of Clover, which were scarce, realised somewhat higher prices.—Prime Clover, 100*s*. to 132*s*.; inferior, 60*s*. to 95*s*.; prime meadow hay, 83*s*. to 100*s*.; inferior, 30*s*. to 70*s*.; and straw, 30*s*. to 38*s*. per load.—On Thursday there was a fair supply on sale. The trade was dull for low sorts, but for the best prices were firm.—Cumberland Market quotations:—Superior meadow hay, 100*s*. to 110*s*.; inferior, 40*s*. to 75*s*.; superior Clover, 120*s*. to 130*s*.; inferior, 84*s*. to 108*s*.; and straw, 36*s*. to 40*s*. per load.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that trade has been steady. Good descriptions have been in moderate demand, and prices have been maintained. Scotch Regents, 140*s*. to 160*s*.; Champions, 175*s*. to 185*s*.; Lincolns, 170*s*. to 180*s*.; Victorias, 160*s*. to 180*s*. per ton. German reds, 6*s*. 6*d*. to 8*s*. 6*d*., and Dutch rocks, 5*s*. 6*d*. per bag.

COALS.

The following are the quotations current at market during the week:—East Wylam, 15*s*.; Bebside West Hartley, 14*s*. 3*d*.; Walls End—Hetton, 14*s*. 6*d*. and 15*s*.; Hetton Lyons, 13*s*. and 13*s*. 6*d*.; Hawthorns, 13*s*. 3*d*.; Lambton, 14*s*. and 14*s*. 6*d*.; Original Hartlepool, 15*s*.; Wear, 13*s*. and 13*s*. 6*d*.; South Hetton, 14*s*. 6*d*.; Vanes, 13*s*.; Chilton Tees, 13*s*. 6*d*. and 14*s*.; Radford Navigation, 15*s*. 9*d*.; Caradoc, 14*s*. 9*d*.; Tees, 14*s*. 9*d*.

Lawn Mowers — Lawn Mowers.

THE GREAT SUPERIORITY OF

GREEN'S

PATENT "SILENS MESSOR"

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"MONARCH" LAWN MOWERS

Over those of all other Markers is universally acknowledged.

They will Cut

Either Short or Long Grass, Bents, &c., Wet or Dry.

These advantages no other Lawn Mowers possess.

They have been in constant use for upwards of twenty years in

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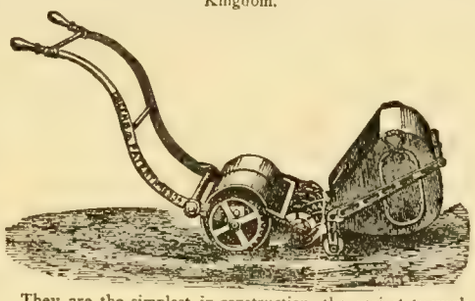
Marlborough House Gardens
Royal Horticultural Society's Gardens, South Kensington
The Royal Botanic Gardens, Regent's Park
The Crystal Palace Company's Gardens, Sydenham
The Winter Palace Gardens, Dublin
The Hyde Park Gardens
Hampton Court Gardens
The Zoological Gardens, Regent's Park
The Dublin Botanic Gardens
The Liverpool Botanic Gardens
The Botanic Gardens, Brussels
The Hull Botanic Gardens
The Leeds Horticultural Gardens

And in most of the Principal Parks and Squares in the United Kingdom.



They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

The above machines have proved to be the best, and have carried off Every Prize in all cases of Competition.

Every Lawn Mower is guaranteed to give entire satisfaction, otherwise it may be returned at once, free of cost to the purchaser.

The largest stock of Mowers kept in London, and including all sizes from 6 inches to 48 inches, is to be seen at our London establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, and have their orders executed the same day they are received.

			£ s. d.
To cut	6 inches.	Can be worked by a lady	1 15 0
,,	8 ,,	,, ,, ...	2 10 0
,,	10 ,,	,, ,, ...	3 10 0
,,	12 ,,	Can be worked by one person ..	4 10 0
,,	14 ,,	,, ,, ...	5 10 0
,,	16 ,,	This can be worked by one man on an even lawn	6 10 0
,,	18 ,,	By man and boy	7 10 0
,,	20 ,,	,, ,, ...	8 0 0
,,	22 ,,	,, ,, ...	8 10 0
,,	24 ,,	,, ,, ...	9 0 0

Prices of Horse, Pony, and Donkey Machines, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.

Carriage paid to all the Principal Railway Stations in the United Kingdom.

Illustrated Price LISTS free on application.

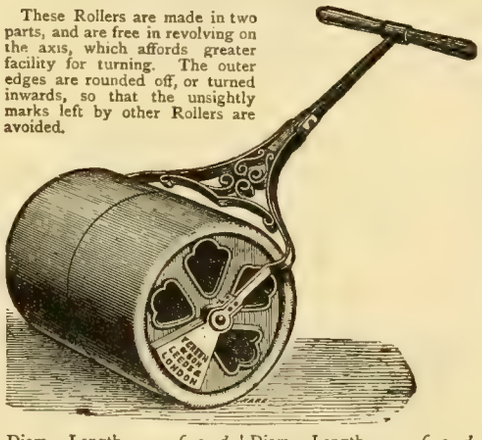
N.B.—Those who have Lawn Mowers to Repair will do well to send them either to our Leeds or London Establishments, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

GREEN'S PATENT ROLLERS

For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.

SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks left by other Rollers are avoided.



Diam.	Length	£ s. d.	Diam.	Length	£ s. d.
16 in. by	17 in. ..	2 15 0	24 in. by	26 in. ..	5 0 0
20 in. by	22 in. ..	4 0 0	30 in. by	32 in. ..	9 0 0

Prices of Rollers fitted with Shafts, suitable for Horse and Pony, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

THOMAS GREEN AND SON (Limited),

SMITHFIELD IRONWORKS, LEEDS.

And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

Carriage of Rollers Paid to all the Principal Railway Stations in Great Britain.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,

3*d*. per bushel; 100 for 20*s*.; truck (loose, 250 bushels), 30*s*.; 4-bushel bags, 4*d*. each.

LIGHT BROWN FIBROUS PEAT, 5*s*. 6*d*. per sack; 5 sacks, 25*s*.; 12 for 45*s*., or 36*s*. per ton.

BLACK FIBROUS PEAT, 5*s*. per sack, 5 sacks 22*s*.; 12 for 40*s*., or 34*s*. per ton; sacks, 4*d*. each.

COARSE SILVER SAND, 1*s*. 9*d*. per bushel; 15*s*. half ton, 26*s*. per ton; in 1 cwt. bags, 4*d*. each.

YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s*. per bushel.

SPHAGNUM MOSS, 8*s*. 6*d*. per sack.

Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH,

10, Castle Street, Endell Street, Long Acre, London, W.C.

PEAT.—Superior Black or Brown Fibrous Peat, for Rhododendrons, Azaleas, Orchids, &c., as used by all the noted Growers. Trucks containing 6 tons loaded at Bagshot or Camberley Stations, S. W. R., £4 4*s*. Address, W. TARRY, Bailiff, Golden Farmer, Farnborough Station.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s*. per truck.

BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s*. per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4*s*.; 5 bags, 20*s*.; 10 bags, 36*s*. Bags, 4*d*. each.

Fresh SPHAGNUM, 10*s*. 6*d*. per bag.

WALKER AND CO., Farnborough Station, Hants.

EXCELLENT PEAT FOR SALE, on the Mount Mascal Estate, within a mile and a half of the Bexley Station of the South-Eastern Railway. The Peat stands within a few hundred yards of the road, and there is a cart track to it in good order. Price per cubic yard, as it stands ready dug, 7*s*.; or contracts will be entered into to deliver it at Bexley Station, or other places, at special rates. For particulars apply to Mr. C. BOXALL, North Cray, Kent.

ESTABLISHED 1839.

POTATO DISEASE—POTATO DISEASE.

GYDE'S AMAZONAS SANA COPIA, or DISEASE-RESISTING POTATO MANURE.

The very best Manure ever manufactured for the Potato.

See *Farm Journal*, February 17, 1880.

"Brockley, Kent, September 15, 1879.

"Dear Sir,—We have tried the Amazonas Sana Copia Potato Manure supplied by you, and have much pleasure in stating that the produce of Potatos was three times the quantity to those grown with the aid of stable manure. The tubers are much larger in size, of fine quality, and little affected by disease.—Yours faithfully, "BANTIN BROTHERS.

"To Mr. Trinder."

For prices and particulars apply to W. TRINDER, Manager, Stroud Chemical Manure Works, Stroud, Gloucestershire.

COCOA-NUT FIBRE REFUSE.—Useful at all seasons. Largest makers in the Kingdom. 1*s*. per bag, 30 bags £1 (bags included), truck 25*s*. free to rail; 5*s*. van-load, at Works, Janet Street, Millwall, E. P.O.O. payable at General Post Office, London. Orders to be addressed to A. FOULON, Fibre Merchant, 32, St. Mary Axe, London, E.C.

COCOA-NUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1*s*.; 30 bags (bags included), 20*s*.; truck free to rail, 25*s*.

T. RICH (late Finlayson & Hector), Cocoa-Nut Fibre Works, 24 and 25, Redman's Row, Mile End Road, London, E.

COCOA-NUT FIBRE REFUSE at Reduced Prices, as supplied to Messrs. J. Carter & Co., High Holborn, W.C.; at the International Agricultural Exhibition, Kilburn; and all the Principal Nurserymen and Seedsmen in England:—In 4 bushel bags at 1*s*., bags included: 30 bags, bags included, 20*s*.; or truckload of about 250 bushels, 25*s*. (truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE WASTE, 1*s*. per bag, 30 bags for 20*s*. No charge for bags. Truck-load (loose), free to rail, 25*s*.—BULBECK AND SON, Suffolk Place, Snow's Fields, Bermondsey, S.E.

An Important Discovery.

SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1*s*. 6*d*., 2*s*. 6*d*. and 12*s*. 6*d*. each. Special quotations for large quantities.

London Agents: HOOPER AND SONS, Covent Garden, and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

TO Gardeners.

TOBACCO CLOTH and PAPER may be had of

JAMES AND CLAUSSON, 44, Hampton Street, Walworth, London, S.E.

NOTICE.

Remarkable Success for Many Years.

AMIES' MANURE

IS THE CHEAPEST AND BEST FOR

ALL HORTICULTURAL PURPOSES.

Amies' Anti-fungoid Potato Manure

Is a great Preventive of the Potato Disease.

For prices and particulars

Write for our NEW PAMPHLET, post-free.

AMIES' CHEMICAL MANURE COMPANY, LIMITED,

79, MARK LANE, LONDON, E.C.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

THE "ACMÉ" LABELS
(*REGISTERED*).

Highly commended by all the Gardening Papers.
Specimens and Price List on application.
SOLE MANUFACTURERS,
STEVENS & PINCHES,
48, LEICESTER SQUARE, W.C., and 27, OXENDON STREET, S.W.

Under the Patronage of the Queen.
J. SMITH'S IMPERISHABLE STRATFORD LABELS.

The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

GARDEN STAKES, LABELS, VIRGIN CORK, MATS, RAFFIA, &c. None cheaper. Prices of WATSON AND SCULL, 90, Lower Thames St., London, E.C.

GARDEN BROOMS, handles included, 3s., 4s., and 5s. per dozen; STABLE BROOMS, 4s. and 6s. per dozen; and all kinds of BROOMS and BRUSHES at low prices Special terms to the Trade and large cash buyers.
MANLEY AND CO., Long Lane, London, S.E.

ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.
ALFRED GRANT AND CO., Steam Works, 39½, Leather Lane, London, E.C.

WHOLESALE RUSSIA MAT WAREHOUSE. Importers of RAFFIA FIBRE, TANNED NETTING, 1, 2, and 4 yards wide.—MARENDAZ AND FISHER, James Street, Covent Garden, W.C.

ANDERSON'S RUSSIA MATS,
For COVERING, TYING, and PACKING,
are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T ANDERSON, 149, Commercial Street, Shoreditch, London, E.

MATS, RAFFIA for TYING,
TRAINING STICKS and LABELS,
Bamboo Canes, Virgin Cork, &c.
C. J. BLACKITH AND CO.,
COX'S QUAY, LOWER THAMES STREET, LONDON.

ARCHANGEL AND PETERSBURG
MAT MERCHANTS and IMPORTERS.
All the usual kinds at reduced rates. SACKS and SEED BAGS, new and second-hand, of every description, RAFFIA FIBRE, NETTING and TIFFANY, TARPAULINS, RICK COVERS, HORSE-CLOTHS, ROPES, LINES and TWINES. Price LIST on application to
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

WM. PETERS has still some good colour Soft ARCHANGEL MATS, very suitable for tying purposes, also ARCHANGEL and ST. PETERSBURG MATS, for covering.
JUST TO HAND, *ex Duart Castle*, a parcel of RAFFIA, fine quality, good colour, and extra strong.
SEED BAGS and SACKS. Specially prepared Sewing or Tying, White or Tarred TWINE, ROPES, LINES, &c. NETTING and SHADING CANVAS. RICK CLOTHS and WATERPROOF COVERS of all descriptions.
Prices on application to
44, Tenter Street South, Goodman's Fields, E., and Well Street Warehouses, London Docks, E.

BELGIAN GLASS for GREENHOUSES, &c.,
Can be obtained in all sizes and qualities, of
BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C.
B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

HORTICULTURAL WINDOW GLASS,
15-oz. and 21-oz., in Boxes containing 200 feet,
Carriage Paid to any Railway Station in England.
Price Lists on application.
ALFRED SYER, Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

BOOTE AND MILLSON, LEAD and GLASS MERCHANTS, 64, City Road, E.C., have always ON THE PREMISES a large Stock of all kinds of Horticultural Glass, at lowest market rates.

Established 150 years.
WINDOW GLASS, SHEET LEAD, PAINTS, &c.
THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses :—

	Inches.	Inches.		
15-oz.,	6 × 4 to 8 × 6,	11s., 12s., 13s., 14s.		Per 100 ft. Box.
	9 × 7 to 12 × 9,	12s., 14s.9d., 15s.3d., 16s. 3d.		
	13 × 9 to 18 × 12,	12s. 6d., 15s., 16s., 17s.		
	20 × 12 to 24 × 16,	12s.9d., 15s., 16s.6d., 17s.9d.		
	20 × 17 to 24 × 18,	12s.9d., 15s., 16s 6d., 17s.9d.		
	Inches.	Inches.		
21-oz., Orchard House,	20 × 12,	20 × 13,	16s. 6d., 19s. 3d., 20s., 21s.	
	20 × 14,	20 × 15,		
	20 × 16,	20 × 17,		

15-oz., for Cutting up, 35s., 39s., 46s., 50s. per 300 feet case.
21-oz., for Cutting up, 35s., 39s., 46s., 55s. 6d. per 200 feet case.
LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.
Lists on application.
REMOVED to 43, Commercial Street, London, E.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.
F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.
Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.
Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.
WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.
T. ROSHER AND CO., Brick and Tile Merchants.
See Addresses above.

SILVER SAND, fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.
FLINTS and BRICK BURRS for Rockeries or Ferneries.
KENT PEATS or LOAM supplied at lowest rates in any quantities.
F. ROSHER AND CO.—Addresses see above.
N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

"THE GARDEN" POTTERY.—"Your pots are the best."—Mr. PAYNE, *Gr. to the* Rt. Hon. and Rt. Rev. the Lord Bishop of Bath and Wells.
Works :—Chilcompton and Evercreech Junction Stations.
Address :—T. J. HICKES, Shepton Malet.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality,
are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

Geometrical Mosaic and Encaustic
TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.
MAW AND CO., Benthall Works, Broseley, Shropshire.

DOULTON & CO.,
LAMBETH POTTERY, LONDON, S.E.
VASES, PEDESTALS, FOUNTAINS, GARDEN EDGINGS, &c.,
IN
IMPERISHABLE TERRA COTTA,

PLAIN
AND
ORNAMENTAL
PAVINGS.
TILES
FOR
LINING WALLS
OF
Conservatories.

NEW and EXTENSIVE SHOW ROOMS,
ALBERT EMBANKMENT, LONDON, S.E.
A LARGE STOCK OF GOODS ALWAYS ON HAND.
PRICE LISTS FORWARDED on APPLICATION.
DOULTON & CO., LONDON, S.E.

Hurry's Daisy and Weed Extractor,
FOR LAWNS.

No one possessing a Lawn should be without this wonderfully useful little Invention.

The following particulars, from the *Gardeners' Chronicle* of August 2, 1879, will at once show the value of this useful, and comparatively costless, little invention, which can be used by ladies or children :—

"How to Extract Weeds from Lawns.—A short time since, when at Pampesford, we had an opportunity of seeing used and of using a gouge, which was very effectual in removing Plantains and similar weeds from lawns. By a slight twisting movement the gouge was inserted over the crown of the plant, which was quickly extracted. The soil, removed as cheese would be by a cheese-taster, is readily re-inserted in the hole, a little fresh soil being added, if need be, to keep up the level. By the use of this instrument a lad was enabled to clear a lawn very rapidly. It is the invention of Mr. ALFRED F. O'C. HURRY, of Pampesford, who has registered it."

Another great advantage of this tool is that the plugs of earth extracted can be re-inserted upside down, which not only fills up the hole, but destroys the weed effectually; the plugs discharge themselves, the second pushing out the first, and so on.

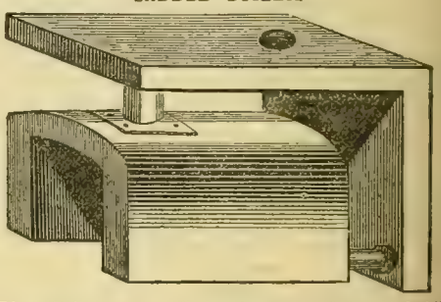
To be obtained of all Ironmongers and Florists. Price 3s. 9d. only. In Polished Wood, fancy handle, 4s. 6d.

Wholesale Agent: THOMAS TILLEY, 12, Walbrook, London, E.C. Cambridge Agents: G. BEALES & CO.;
Or Carriage Free of the Inventor on receipt of P.O.O. for 4s. 3d. and 5s. 3d., payable at Cambridge or Sawston.

ALFRED F. O'C. HURRY,
PATENTEE, PAMPESFORD, CAMBRIDGESHIRE.

X PIPES.—PIPES.—PIPES. X
The Cheapest House in the Trade for
HOT-WATER PIPES and CONNECTIONS.
F. AND J. SILVESTER, Castle Hill Foundry, Engineering and Boiler Works, Newcastle, Staffordshire.

JONES'S PATENT "DOUBLE L"
SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes :—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1000	16	0	0
24 ,,	24 ,,	48 ,,	1400	20	0	0
28 ,,	28 ,,	60 ,,	1800	25	0	0

Larger sizes if required.

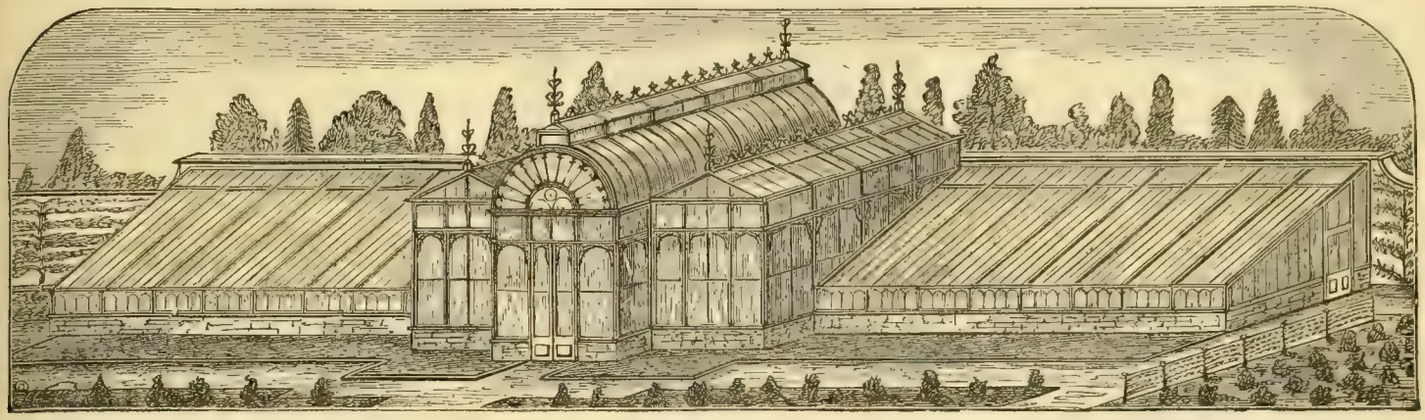
From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.
"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement.

HENRY ORMSON,

HORTICULTURAL BUILDER AND HOT-WATER APPARATUS ENGINEER,

STANLEY BRIDGE, KING'S ROAD, CHELSEA, LONDON, S.W.



THE BEST BUILT HOTHOUSES AND CONSERVATORIES.

Surveys made and Gentlemen waited on in any part of the Country. Catalogues, Plans, and Estimates supplied gratis on application.

UNSURPASSED BOILERS AND HEATING APPARATUS.

RANSOMES' LAWN MOWERS ARE THE BEST.

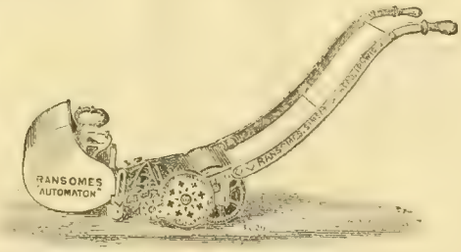
ARE SUITABLE FOR ALL GARDENS.

WILL CUT LONG GRASS WET OR DRY.

All Sizes from 27s.

A MONTH'S FREE TRIAL ALLOWED.

Sent Carriage Paid.



THE "AUTOMATON."
The best general purpose machine.

THE "REVERSIBLE,"
For Small Gardens and Borders.

THE "AUTOMATON,"
For General Purposes.

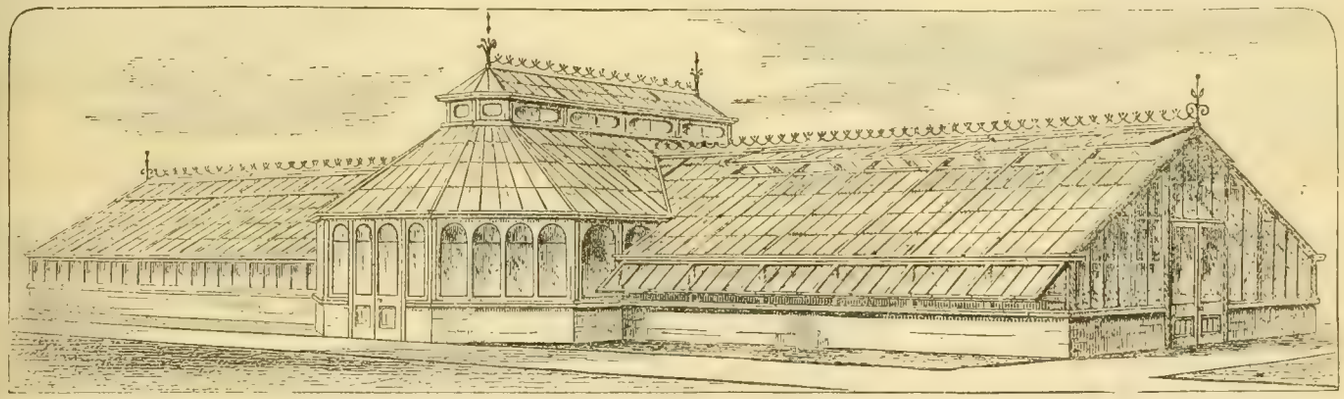
THE "GLOBE,"
An Anglo-American Machine.

THE "HORSE-POWER,"
For Large Lawns, Cricket Grounds, Parks, &c.

Illustrated Price Lists free by post on application to

RANSOMES, SIMS & HEAD, ORWELL WORKS, IPSWICH.

TWO GOLD MEDALS
Awarded to us by
Royal Horticultural Society,



At the Grand Show at Preston July, 1878, Out of Fourteen Competitors.

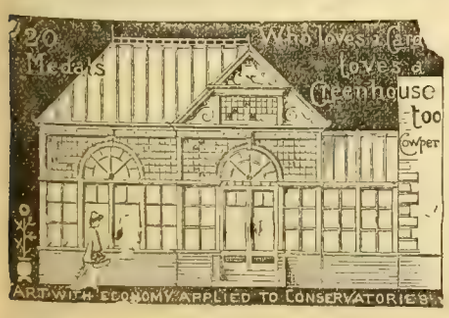
Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very *best class of buildings* at an extremely *low price*. As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions.

Our buildings are constructed so as to combine great strength, simplicity, and durability, with extreme lightness, and being made of the very best materials, will, with ordinary care, *last a lifetime*. The ventilators at top and bottom open the whole length with one handle to each series. The glass used is 21-oz. British sheet, and the paint the best *genuine* white lead and oil.

HEATING APPARATUS, with thoroughly *reliable Boilers* supplied and fixed in the most practical and efficient manner, and guaranteed to work economically and answer its purpose in all seasons. We devote special personal attention to this branch of our business, and have *never* had a *failure*.

Plans, Estimates, and Catalogues free. Customers waited on in any part of the Kingdom.

R. HALLIDAY & CO., Royal Horticultural Works, MIDDLETON, MANCHESTER.



"ART WITH ECONOMY,"

Applied to Conservatories and Greenhouses.
With Illustrations, Prices, &c.
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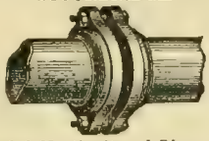

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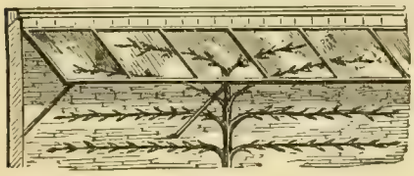

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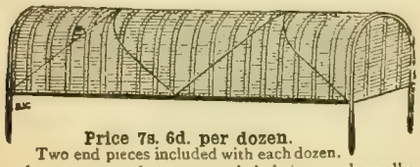

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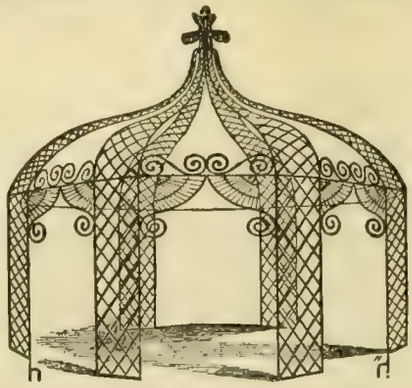

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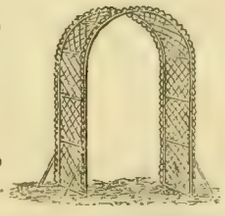

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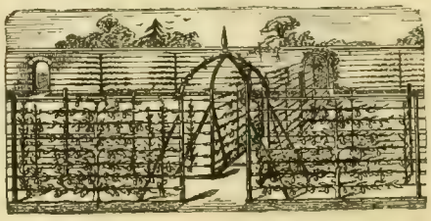

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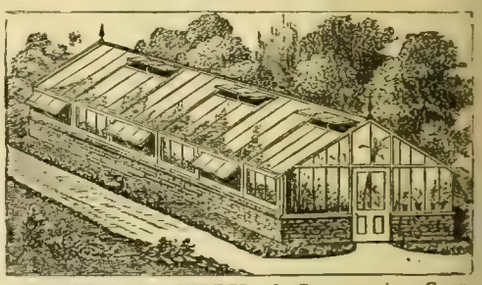

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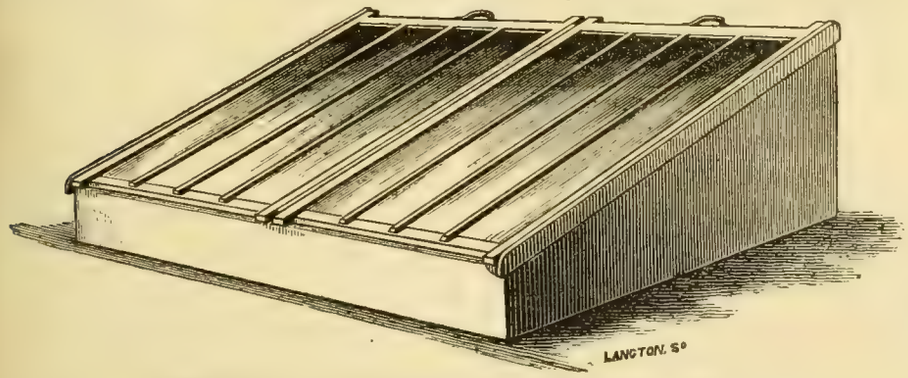

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GARDENER (HEAD), where two or more are kept.—Age 45 no encumbrance; thorough practical experience. Total abstainer. Eight years' good character from last situation. T. K., 31, Park Place, Clapham Park Road, London, S.W.

GARDENER (HEAD), where two or three are kept.—Thoroughly understands Vines, Melons, Cucumbers, and the General Routine of Gardening. Three years in last situation.—T. RIDGE, Stawstock Court, near Barnstaple, North Devon.

GARDENER (HEAD), where a thorough practical energetic man is required.—Age 32, married; twenty years' experience in all branches of the profession; also Land and Stock if required. Four and a half years with present employer, by whom he is highly recommended. Near London preferred.—H. PESTRIDGE, Shireoaks, Worksop.

To Noblemen and Gentlemen.

GARDENER (HEAD).—Age 29, married, no children; has been Head Gardener to W. Vavasour, Esq., Hazlewood Castle, near Tadcaster, Yorkshire, for the past three and a half years, by whom he can be well recommended. Has a sound knowledge of the profession, both Indoors and Out.—J. STEVENS, Hazlewood, near Tadcaster, Yorkshire.

GARDENER (HEAD), where more are kept. —Age 32, single; thoroughly experienced in all branches of the profession. Good character.—T. FUNNELL, 71, Warden Road, Kentish Town, N.W.

GARDENER (HEAD).—Age 34, married; no family; twenty years' practical experience, five with last employer. Good reference. No Single-handed place accepted.—R. F. PENFOLD, 6, Adelaide Terrace, Thames Ditton.

GARDENER (HEAD).—Age 35, married, no family; thoroughly experienced. Satisfactory references from present employer. No Single-handed place accepted.—R. H. TAYLOR, Kingwell Hall Gardens, Bath.

GARDENER (HEAD), where four or more are kept.—Age 28; thoroughly competent in every branch. Three and a half years in last situation. Excellent character.—G SPRINGTHORPE, 21, Bramerton Street, King's Road, Chealsea, S.W.

GARDENER (HEAD).—RICHARD TAYLOR, The Gardens, Byram, Ferrybridge, Yorks, can with every confidence recommend his Foreman to any Lady or Gentleman requiring a thorough practical man. Four years in present situation, and eight years' excellent character from other first-class places.

GARDENER (HEAD), to any Lady or Gentleman.—Age 40, married, no family (Scotch); experienced in all branches. Good references.—A. T., 18, Lansdowne Terrace, Woolcot Park, Redland, Bristol.

GARDENER (HEAD).—Married, no family; thoroughly experienced, and takes great pride in his profession. None need apply but those who wish their garden kept in the highest order. Wife can see to a Lodge, Poultry, or Dairy.—J. C., The Home for Flowers, Swanley, Kent

GARDENER (HEAD); age 38.—A GENTLEMAN wishes to recommend a thorough good practical man, with good character. Satisfactory reason for leaving.—J. S., 121, High Street, Crediton, Devonshire.

GARDENER (HEAD).—Married; three years Gardener to the Earl of Rosslyn, formerly four and a half years General Foreman at Somerleyton Hall; eighteen years' practical experience in all branches. Excellent character from previous employers.—J. KNIGHT, Royal Botanic Gardens, Regent's Park, N.W.

GARDENER (HEAD, WORKING), where three or more are kept.—Age 29, single until suited; experienced in general routine of gardening, especially in Grape, Melon, and Cucumber culture. Four and a half years as Foreman in present situation. Good recommendations. —J. FRY, Leybourne Grange, Maidstone.

GARDENER (HEAD, WORKING).—Age 26; twelve years' experience. Two and a half years' excellent character as Foreman in present situation.—X. Y., Head Gardener, Shabden, Merstham, Surrey.

GARDENER (HEAD, WORKING), to any Lady or Gentleman requiring the services of a thorough practical and energetic man.—Age 29; fourteen years' experience in all branches of the profession. Highest testimonials. Please state wages —W., 5, Hanover Street, Leicester.

GARDENER (HEAD, WORKING), where more are kept.—Married, no family; many years' good practical experience in all branches. Now disengaged. Good character.—R. WALKLING, 7, Gardnor Road, Hampstead, London, N.W.

GARDENER (HEAD, WORKING).—Age 27, married; twelve years practical experience in the cultivation of Fruits, Flowers, and Plants under Glass, Early and Late Forcing, and the general routine of Gardening. Excellent testimonials. Now disengaged. Please state wages.—CURTIS, Thornham, Lynn.

GARDENER (HEAD, WORKING).—Age 31, two children; thoroughly competent. Fourteen years' experience in all branches of the profession.—H. A., Feltham Hill Road, Hounslow, W.

GARDENER (HEAD, WORKING).—Married, no family; has had several years' practical experience in every branch of the profession. — GARDENER, 3, Park Cottages, Aubury Road, Walthamstow, Essex.

GARDENER (HEAD, WORKING), where two or more are kept.—Age 27, single until suited. Twelve years' practical experience in all branches of the profession. Good references.—Apply, stating particulars, to C. CANDLER, The Gardens, Crowe Hall, Bath.

GARDENER (HEAD, WORKING), where one or two others are kept. — Age 38, married; several years' experience. Good single-handed place not objected to. References good.—HEAD GARDENER, Sudbury Lodge, Sudbury, Middlesex.

GARDENER (HEAD, WORKING).—Married, one child; good practical knowledge of Early and Late Forcing of Stove and Greenhouse Plants, Fruit, and Vegetables. Good character. Highly recommended.—G. J., Newlands, North Park, Eltham, Kent.

GARDENER (HEAD, WORKING).—Age 33, married; thoroughly experienced in all branches. Highly recommended.—J. BRISTOW, Perranarwarthal, Cornwall.

GARDENER (HEAD, WORKING).—Age 27, married, two children.—A GENTLEMAN, giving up his Estate, wishes to recommend the above; thoroughly practical. —T. J., Sulhamstead Cottage, Chiswick.

GARDENER (HEAD, WORKING), where two or three are kept.—Age 29, married, no family; understands Early and Late Forcing, Flower and Kitchen Gardening. Good references.—THE GARDENER, 3, Lennard Place, Circus Road, St. John's Wood, N.W.

GARDENER (HEAD, WORKING).—Age 28, married; has a practical knowledge of Early and Late Forcing, Stove and Greenhouse Plants, and general routine of Gardening. Total abstainer.—A. B., Mr. W. Hardy, Byfleet, Weybridge Station, Surrey.

GARDENER (HEAD, WORKING), where three or more are kept.—Age 37; thoroughly understands Early and Late Forcing, Flower and Kitchen Gardening. Five and a half years' good character.—J. C., G. Willer's Nurseries, Trumpington Road, Cambridge.

GARDENER (HEAD, WORKING).—Many years' practical experience in all branches of Gardening, in both England and Scotland. Six years in present situation. Satisfactory reason for leaving. — MACDOUGALL, St. Michael's, Bognor, Sussex.

GARDENER (HEAD, WORKING).—Age 34, married, two children; understands the Forcing of Early and Late Vines, Peaches, Melons, Cucumbers, Stove and Greenhouse Plants, Flower and Kitchen Gardening. Over three years' good character.—F. M., Garden Cottage, Gaol Lane, Wisbech.

GARDENER (HEAD, WORKING).—Age 30, married when suited; thoroughly acquainted with Forcing and General Management of Flowers, Fruits and Vegetables, Pleasure Grounds, &c. Excellent character.—GARDENER, W. G. Smith, 38, Birkbeck Road, Upper Holloway, N.

GARDENER (HEAD, WORKING), where two or more are kept.—Age 26, married; has a thorough knowledge of Vines, Orchids, Stove and Greenhouse Plants, Flower and Kitchen Gardening. Can be well recommended. Five years' good character.—JAMES PARKER, The Holme, Inner Circle, Regent's Park, N.W.

GARDENER (HEAD, WORKING); age 29. —Mr TUDGEY, Henwick Grange, Worcester, wishes to recommend his Foreman, Joseph Tucker, to any Nobleman or Gentleman requiring the services of a thorough practical and energetic man, who has had twelve years' experience in all branches of the profession, and three years' excellent character from present situation.

GARDENER (HEAD, WORKING); age 29.—F. FAULKNER, Head Gardener to F. R. Leyland, Esq., Woolton Hall, Woolton, can highly recommend his Foreman, C. Young, to any Lady or Gentleman requiring a thorough practical and trustworthy man, and well up in the routine of a large establishment. Was three and a half years General Foreman under W. Tunnington, The Gardens, Calderstone. Can produce good estimonials.

GARDENER (HEAD, SINGLE-HANDED, or where another is kept).—Age 25; ten years' experience in all branches. Good references.—H. A., Mr. Lambert High Street, Bexley, Kent.

GARDENER (HEAD, WORKING, or SINGLE-HANDED).—Age 32, married; thoroughly understands his duties. Nearly three years' good character from situation now leaving.—WM. GURMAN, The Gardens, Spinfield, Great Marlow, Bucks.

GARDENER (HEAD, or SINGLE-HANDED); age 40, married, no family.—Mr. J. CATTELL, Westerham, can highly recommend a thorough practical man as good Working Gardener. Twenty years in last situation.—W. COOPER, Brasted Chart, Sevenoaks, Kent.

GARDENER (HEAD), GARDENER and BAILIFF, or FOREMAN in a General Nursery, or MANAGER of a Branch Seed and Nursery Business.—Age 43, three children (youngest fifteen years); well acquainted with every branch of the profession. Advertiser is a total abstainer. Five years in present place.—H. W. W., 4, Home Place, Eastgate, Peterborough.

GARDENER.—A GENTLEMAN, removing, is desirous of recommending his Gardener as a respectable, trustworthy, and very efficient man.—Address, Mr. COOPER, Summerfield, Reading, Berks.

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GARDENER (good SINGLE-HANDED).—Aged 43, married; understands Vines, Cucumbers, Melons, Stove and Greenhouse Plants, Flower and Kitchen Gardening. Good character. S.E. or S.W. suburbs preferred. —GARDENER, 19, Naylor Road, Peckham, S.E.

GARDENER (SINGLE-HANDED), or where help is given.—Age 29, married; three years' good character in present situation.—T. SCUTT, Elmore, Chipstead near Redhill, Surrey.

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GARDENER (SECOND), or under a good Foreman, in the Houses.—Age 20; three years' character.—C. CANT, Chantry Gardens, Ipswich.

GARDENER (SECOND), under a working Head, in the Houses.—Age 20; three and a half years' good character.—Address, stating particulars, to G. R., 23, New Park Road, Brixton Hill, Surrey, S.W.

GARDENER (SECOND), in a Gentleman's Garden, where four or five are kept.—Age 22; three years' character and other references.—W. PUTTICK, Ranger's Lodge, Greenwich Park, Kent.

GARDENER (SECOND), in a Nobleman's or Gentleman's establishment.—Age 20; thoroughly understands the Management of Early and Late Forcing of Vines, Peaches, &c. Four years' excellent reference.—H., Mr. Sargent, Grocer, South Park, Reigate.

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GARDENER (UNDER), or JOURNEYMAN.—Age 26; accustomed to both Indoor and Outdoor Work. Three years' good character.—J. W., Stanage Park Gardens, Brampton Brian, Herefordshire.

GARDENER (UNDER), in the Houses.—Age 21; four years' experience inside and out. Good character.—S. W., Mr. Evans, London Road, Crayford, Kent.

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FOREMAN, in a Nobleman's or Gentleman's establishment; age 25.—Mr. WARD, Gardener to the Right Hon. Lord Windsor, Hewell Grange, Bromsgrove, Worcestershire, can recommend to any Gardener an industrious and experienced man, as above.

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JOURNEYMAN, in the Houses, in a Gentleman's establishment.—Age 21; four years' experience. Good references.—H. E. BENNETT, School House, Enville, Stourbridge.

JOURNEYMAN, in the Houses, in a private establishment.—Age 22; five years' experience.—For character apply, stating full particulars, Mr. FRASER, Head Gardener, Charlton Park, Malmesbury, Wilts.

JOURNEYMAN, or SECOND, in the Houses, in a Gentleman's establishment.—Age 23; seven years' experience. Good references.—E. A., The Gardens, Norman Court Dean, Salisbury.

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"Your 'Archimedean' Lawn Mowers have been used for some time past at the Imperial Gardens, and I have great pleasure in stating that they have given perfect satisfaction. Their quick and good work prove them to be the best and most efficient machines of the kind."

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THE

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Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of those already published:—

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"	25.	"	24.
November	8	February	7.
"	15.	"	21.
"	29.	March	20.
December	13.	"	27.

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LEEDS FLOWER SHOW, JUNE 23, 24, and 25, 1880. The Schedule of Prizes is now ready, and may be had of the Secretary,

J. H. CLARK, Printer, Briggate, Leeds.

WEST OF ENGLAND ROSE SHOW.—This EXHIBITION is fixed to take place on WEDNESDAY, July 7.

Rev. C. H. BULMER, Hon. Sec.

Credenhill Rectory, Hereford.

ISLE OF THANET FLORAL AND HORTICULTURAL ASSOCIATION AND COTTAGERS' GARDENING SOCIETY.—The Twenty fifth Annual EXHIBITION of this Society will be held in Dane Court, St. Peters, Thanet, by the kind permission of Latham Tomlin, Esq., on WEDNESDAY, August 25. Schedules now ready. Apply to

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To the Trade.

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Frost-proof Ornamental Trees and Shrubs.

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The stock may be viewed any day prior to the Sale. Catalogues may be had (price 6*d*. each, returnable to purchasers) of Mr. HAMLET, Head Gardener, Fern Lawn, Pittville, Cheltenham; and of the Auctioneers, Estate Agents, and Valuers, 98, Gracechurch Street, London, E.C., and Leytonstone, E.

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MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION the above, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on THURSDAY, April 1, at 12 o'Clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Important Sale of Orchids.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, April 5, 400 lots of ESTABLISHED ORCHIDS, mostly from private Collections, for Sale without reserve; also several very fine DRACÆNA GOLDIEANA, and other PLANTS.

Further particulars next week. Catalogues of the Auctioneers, at the Mart, or 98, Gracechurch Street, E.C.

Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 8, at half-past 12 o'Clock precisely, a choice COLLECTION of ORCHIDS, the property of a Gentleman, in excellent health, comprising many fine Plants of the best species and varieties in cultivation, many of which will be in or showing flower.

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SPRUCE FIRS.—Many thousands, 2, 3, 4 and 5 feet. Stout, well furnished, and good rooted.

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ALDER, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.

The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to

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ALDER, 4 to 5, 5 to 6, 6 to 7 feet.	HAZEL, 2 to 3 feet.
ASH, 3 to 4, 4 to 5 feet.	BIRCH, 3 to 4 feet.

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Patron: H.R.H. the PRINCE of WALES, K.G.

President (1879-80): The EARL of COVENTRY.

WORCESTER MEETING, 1880. Commencing WEDNESDAY, June 2; terminating MONDAY, June 7.

Horticultural Department.

In requesting your assistance for the Horticultural Exhibition at the forthcoming Meeting of Worcester, by the LOAN of PLANTS, &c., the Steward of that Department begs to state that, in order to obviate the objections so often made against the system of Exhibiting Plants in competition for Money Prizes, it has been determined to give sums of Money, in proportion to the importance and value of the Plants exhibited, as gratuities to Exhibitors' Gardeners.

All Plants must be staged in their allotted places on TUESDAY, June 1, or not later than 10 A.M. on WEDNESDAY, June 2.

The Tent in which the Plants will be exhibited is closed with glass ends and well ventilated, so as to afford perfect security to the most delicate flowers.

Any further information may be obtained on application to the Steward,

The Hon. and Rev. J. T. BOSCAWEN, Lamorran, Probus, Cornwall.

SEED POTATOS.

Plant the Great Disease Resisting "CHAMPION."

MR. R. BATH has 60 Tons for disposal, 12*s*. per cwt., 7*s*. per bushel, 3*s*. per peck; well sorted ware at the same prices, bags included.

Cheque or Post-office Order in each instance with order. No deliveries are made without prior remittance.

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The magnificent new Silver-edged Geraniums, with grand flowers of all colours, strong plants 4*s*. 6*d*. per dozen, 25*s*. per 100, packed and put on rail. Strong rooted cuttings of all the best sorts 3*s*. per dozen, or 18*s*. per 100, by post. Cuttings 10*s*. 6*d*. per 100, post-free.

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WALNUT TREES.—For Sale, some unusually fine trees, from 6 to 10 feet; will shift well. Apply, Mr. COOPER, Calcot Gardens, Reading.

Webb's Prize Cob Nut Trees.

CALCOT GARDENS, NEAR READING, BERKS.

MR. COOPER, having succeeded to these Gardens, and being about to make considerable alterations, is desirous of reducing the valuable stock of PRIZE COB FILBERT TREES, for the cultivation of which the late Mr. Webb was so justly celebrated.

Mr. COOPER desires to inform the public that his Trees are the

GENUINE WEBB'S PRIZE COB FILBERT TREES, and all Orders should be addressed

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BENJAMIN REID AND CO., NURSERYMEN, Aberdeen, N.B., beg to offer at reduced rates the following extra stocks of transplanted TREES and SHRUBS, all clean and well rooted. Early orders solicited:—

ALDER, 4 to 5 feet.
ASH, Mountain, 3 to 4 feet, and 8 to 10 feet.
CHESTNUT, Horse, 5 to 6 feet, and 7 to 9 feet.
LIME, 4 to 5 feet, and 6 to 8 feet.
MAPLE, Norway, 8 to 10 feet.
POPLAR, Black Italian, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
SERVICE, 5 to 6 feet.
SLOE THORN, 1½ to 2 feet, and 2 to 3 feet.
THORN, 1½ to 2 feet, and 2 to 2½ feet.
ABIES DOUGLASII, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
" ORIENTALIS, 1 to 1½ foot.
CEDRUS ATLANTICA, 1 to 1½ foot, 1½ to 2 feet, 2 to 3 feet, and 3 to 4 feet.
" DEODARA, 1½ to 2 feet, and 2 to 3 feet.
CUPRESSUS LAWSONIANA, 1½ to 2 feet, 2 to 3 feet, 3 to 4 feet, and 4 to 5 feet.
" NUTKAENSIS, 2 to 3 feet.
THUJA GIGANTEA, 2 to 3 feet.
AZALEA PONTICA, 1½ to 2 feet, and 2 to 3 feet.
LAUREL, Bay, 1½ to 2 feet, and 2 to 2½ feet.
" Portugal, 1 to 1½ foot.
BERBERIS DARWINII, 2 to 3 feet.
" VULGARIS, 1½ to 2 feet, and 2 to 3 feet.

Prices on application.

VIOLAS, 20,000 fine strong plants:—

" cornuta, white, " " Queen of Blues, } 5*s*. per 100, 45*s*. per 1000.

LETTUCE, strong autumn sown:—

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Special LISTS on application to

Messrs. R. AND G. NEAL, Nurserymen, Wandsworth Common, S.W.

Special Offer of Hardy Conifers.

MORRISON BROTHERS, Aberdeen, having a large stock of the above, will be glad to send, carriage paid to any address, 6 1-yr. transplanted Plants of each of the following fine sorts for £4 10*s*., or 12 of each for £8:—

ABIES Douglasii	PINUS contorta
" Douglasii glauca	" Coulterii
" Engelmanni	" deflexa
" Hookeriana	" flexilis
" Menziesii	" insignis
" Mertensiana	" Jeffreyii
" orientalis	" Lambertiana
" Schrenckiana	" monticola
CEDRUS atlantica	" muricata
" Deodara	" parviflora
" Libani	" ponderosa
CRYPTOMERIA elegans	" tuberculata
CUPRESSUS Lawsoniana	RETINOSPORA filifera
" " erecta viridis	" obtusa
" " lutea	" pisifera
" macrocarpa	" plumosa aurea
PICEA bifolia	" squarosa
" concolor violacea	THUJA gigantea
" magnifica	" Lobbii
" nobilis	" orientalis
" Nordmanniana	" Vervaeniana
PINUS aristata	THUJOPSIS dolabrata
" Benthamiana	" lætevirens
" Bolanderii	" Standishii
" Cembra	WELLINGTONIA gigantea

Being able to offer most of the above varieties by the 1000, will be glad to make special offers to large buyers.

Also a large stock of Seedling and Transplanted FOREST TREES.

Priced CATALOGUES may be had on application.

Forbesfield Nurseries, Aberdeen.

Limes, Limes, Limes.—For Avenue Planting.

MORRISON BROTHERS, Aberdeen, having an overstock of the above, can supply fine healthy, well rooted trees:—

7 to 8 feet high, at 6*s*. per dozen, 40*s*. per 100.
8 to 10 feet high, at 9*s*. per dozen, 60*s*. per 100.

To the Trade.

MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.

Seed Growing Establishment, Wisbech.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2*s*. 6*d*. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1880.

RICHARD SMITH AND CO., Nurserymen, Worcester.

SEED POTATOS.—

Snowflake	Paterson's Victoria
Early Rose	Regent
Myatt's Prolific	Dalmahoy
Fortyfold	Fluke
Bresee's Prolific	Champion (Scotch)
Early Shaw	Redskin Flourball

And other leading varieties. Prices on application to

JOSIAH H. BATH, York Street, Borough Market, S.E.

TREE SEEDS.—

ABIES DOUGLASII, post-free, 2*s*. 6*d*. per ounce.
" MENZIESII, post-free, 4*s*. per ounce.
PICEA NOBILIS, post-free, 4*s*. per ounce.
PINUS MONTICOLA, post-free, 3*s*. per ounce.
LARCH, Native, 2*s*. per pound.

The above are all of crop 1879, and collected from Trees grown in Scotland, and may be fully relied on for purity and hardiness.

Special prices for large quantities, and to the Trade, on application.

BEN. REID AND CO., Nurserymen and Seedsmen, Aberdeen.

To the Trade.

HOME-GROWN MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE will be pleased to give special quotations for their fine selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS.

Seed Growing Establishment, Wisbech.

SEED POTATOS FOR SALE.

MYATT'S PROLIFIC ASHLEAF KIDNEY.
AMERICAN EARLY ROSE.
SNOWFLAKE.
MAGNUM BONUM.
SCOTCH REGENT.
CHAMPION.
FORTYFOLD.
PATERSON'S VICTORIA.

Lowest cash prices on application to

JOHN BATH, 32 & 34, Wellington Street, Covent Garden, W.C.

MAGNUM BONUM and CHAMPION.—The two best disease-resisting Potatos in cultivation. Stock of the former, from Messrs. Sutton, 1878; latter from Scotland last spring. Sample hundredweight bags of Magnum Bonums, 14*s*.; and Champions 10*s*.; also, Early Rose, at 7*s*. Will be put on rail on receipt of Post-office Order and address.

J. T. SMITH, Potato Merchant, Wisbech, Cambridgeshire.

SEEDLINGS.—
2-yr. SCOTCH FIR.
2-yr. AUSTRIAN PINE.
2-yr. ALDER.
2-yr. LARCH.
2-yr. ASH.
2-yr. SILVER FIR.
Special low prices on application.
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

Trade Offer.

RODGER, McCLELLAND, AND CO, 64, Hill Street, Newry, have to offer as noted below—prices on application :—
PRIVET, Oval-leaved, 1½ to 2 feet, and 2½ to 3½ feet.
THORN QUICKS, all sizes up to 2½ feet.
MAHONIA AQUIFOLIA, 1 to 2 feet.
PINE, Austrian, very fine, all sizes up to 1½ foot.
COTONEASTER SIMMONDSII, 2 to 3 feet.
POPLAR, Canadian, 4 to 10 feet.
LAUREL, Portugal, 1½ to 2 feet.
,, Colchic, 1½ to 3 feet.

Tricolor Geraniums.

ALFRED FRYER offers the following, in Autumn-struck Plants, at per dozen for cash :—Golden Tricolors: Isle of Beauty, 4*s.* 6*d.*; Lady Cullum, 3*s.* 6*d.*; Macbeth, 4*s.* 6*d.*; Mrs. Pollock, 3*s.* 6*d.*; Peter Grieve, 6*s.*; Sir C. Napier, 3*s.* 6*d.*; S. Dumaresque, 3*s.* 6*d.* Silver Tricolors: Lass o' Gowrie, 3*s.* 6*d.*; Mrs. John Clutton, 3*s.*; Queen of Hearts, 3*s.* 6*d.*; Prince Silverwings, 3*s.*: A Happy Thought, 3*s.* Package free for cash with order. Post-free for 6*d.* per dozen extra.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Immense Quantities of Young

FOREST TREES, CONIFEROUS, ORNAMENTAL TREES and SHRUBS, ROSES, FRUIT TREES, and 3-yr. QUICKS, very cheap.
CATALOGUES will be sent free on application.
LEVAVASSEUR AND SON, Nurserymen, Ussy, Calvados, France.
Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, London, E.C.

Wandsworth Common and Garret Lane Nurseries.

R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.
All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
CATALOGUES free by post on application.

REMARKABLE CLEARANCE BUNDLE OF FLOWER SEEDS (containing 100 separate packets), 2*s.*, carriage paid; half, 1*s.* 3*d.* If not worth six times the amount, or if unsatisfactory, money returned.
AGENTS WANTED everywhere immediately, to fill up spare time.
W. H. HOWELL, Seed Merchant, Hackwell, High Wycombe.

Choice Coniferæ, Evergreen Shrubs, &c.

March and April are the best months for transplanting all Evergreen and Coniferous Trees for Ornamental Planting, Coverts, or Fencing.

HAVING A VERY LARGE STOCK of well transplanted Trees, we are induced to offer the following, for present delivery, at considerably reduced prices, viz.:—
ABIES DOUGLASII, 2 to 3 feet, 9*s.* per dozen, 50*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100.
,, ,, specimens, 18*s.* to 24*s.* per dozen.
CEDRUS ATLANTICA, 2 to 3 feet, 9*s.* per dozen, 50*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100; 4 to 5 feet, 18*s.* to 24*s.* per dozen.
CEDRUS DEODARA, very fine, 2 to 3 feet, 24*s.* per dozen, 150*s.* per 100; 3 to 4 feet, 36*s.* per dozen.
CRYPTOMERIA ELEGANS, perfectly hardy, 1 to 2 feet, 6*s.* per dozen, 40*s.* per 100; 2 to 3 feet, 9*s.* per dozen, 60*s.* per 100.
CUPRESSUS LAWSONIANA, 2 to 3 feet, 9*s.* per dozen, 60*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100; 4 to 5 feet 18*s.* per dozen.
PICEA LASIOCARPA, splendid plants, 1 to 2 feet, 24*s.* per dozen; 2 to 2½ feet, 36*s.* per dozen; 2½ to 3 feet, 48*s.* per dozen.
PICEA NORDMANNIANA, 2 to 3 feet, 24*s.* per dozen; 3 to 4 feet, 30*s.* per dozen; 4 to 5 feet, 42*s.* per dozen.
PINUS AUSTRIACA, 2 to 3 feet, 20*s.* per 100; 3 to 4 feet, 40*s.* per 100; 4 to 5 feet, 60*s.* per 100.
PINUS LARICIO, 1½ to 2 feet, 20*s.* per 100; 2 to 3 feet, 25*s.* per 100.
PINUS EXCELSA, 2 to 3 feet, 9*s.* per dozen, 60*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100; 4 to 5 feet, 18*s.* per dozen.
THUJA LOBBII, 2 to 3 feet, 8*s.* per dozen, 50*s.* per 100; 3 to 4 feet, 10*s.* per dozen, 75*s.* per 100; 4 to 5 feet, 12*s.* per dozen; 5 to 6 feet, 18*s.* per dozen.
,, SIBIRICA, 2 to 3 feet, 8*s.* per dozen, 50*s.* per 100; 3 to 4 feet, 12*s.* per dozen, 75*s.* per 100.
THUJOPSIS BOREALIS, 2 to 3 feet, 12*s.* per dozen, 75*s.* per 100; 3 to 4 feet, 18*s.* per dozen, 120*s.* per 100.
WELLINGTONIA GIGANTEA, 1 to 2 feet, 18*s.* per dozen; 2 to 3 feet, 24*s.* per dozen; 3 to 4 feet, 30*s.* per dozen.
YEW, English, 1 to 2 feet, 25*s.* per 100; 2 to 2½ feet, 35*s.* per 100; 2½ to 3 feet, 50*s.* per 100; 3 to 4 feet, 9*s.* per dozen, 60*s.* per 100.
LAUREL, Common, perfectly green and untouched by frost, 1½ to 2 feet, 16*s.* per 100; 2 to 2½ feet, 20*s.* per 100; 2½ to 3 feet, 25*s.* per 100.
,, colchica, 1 to 1½ foot, 20*s.* per 100; 1½ to 2 feet, 25*s.* per 100; 2 to 2½ feet, 30*s.* per 100.
,, Portugal, 1 to 1½ foot, 20*s.* per 100; 1½ to 2 feet, 30*s.* per 100.
RHODODENDRON PONTICUM, 1 to 1½ foot, 30*s.* per 100; 1½ to 2 feet, 40*s.* per 100.
BOX, broad-leaved, 1 to 1½ foot, 10*s.* 6*d.* per 100; 1½ to 2 feet, 20*s.* per 100; 2 to 2½ feet, 30*s.* per 100.
FIR, Spruce, 1½ to 2 feet, 40*s.* per 1000; 2 to 2½ feet, 50*s.* per 1000.
LIMES, fine straight stems, 9 to 10 feet, 18*s.* per dozen; 10 to 12 feet, 24*s.* per dozen.
,, Weeping, new broad leaf, 8 to 10 feet, 2*s.* 6*d.* to 5*s.* each.
ASH, Weeping; ELMS, POPLARS; Double-flowering Scarlet, Pink and White THORNS; CHERRIES, PRUNUS, &c.
PAMPAS GRASS, strong roots, 75*s.* per 100.
CLIMBING and WALL PLANTS in great variety.
Descriptive LISTS free on application to
CRANSTON'S NURSERY AND SEED CO. (Limited), King's Acre, near Hereford.—March 10.

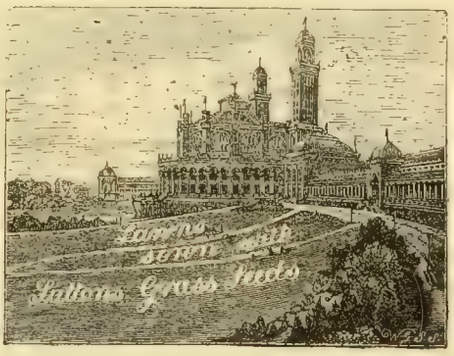
Illustrated Hardy Perennials.

THE present year's issue of this CATALOGUE is now ready, and contains a fine selection of New, Rare and Hardy Perennials, also collections of Orchids and Carnivorous Plants; Bulbs, including Anemones and Ranunculus; Hardy Ferns, Aquatics, Bamboos, and Ornamental Grasses, &c. Also an abbreviated List of Hardy Florists' Flowers, consisting of such only as should be planted at this early season. Post-free on application.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

CHRYSANTHEMUMS, FUCHSIAS, PHLOXES, &c., all in the best and most distinct kinds, including the finest novelties :—
10,000 CHRYSANTHEMUMS, in all classes, our selection of large-flowered, Japanese, Pompons, &c., 3*s.* per dozen, 10*s.* per 50, 15*s.* per 100.
5,000 FUCHSIAS, the finest sorts included, 3*s.* per dozen, 10*s.* per 50, 15*s.* per 100.
7,500 PHLOXES, the finest sorts included, 3*s.* per dozen, 11*s.* per 50; 20*s.* per 100.
Cuttings of any of the above half-price.
All other Indoor and Outdoor Plants, Trees or Shrubs for Garden or Conservatory, the best of varieties, most moderate prices, good quality, true to name. See large Advertisement, and apply for CATALOGUE to
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

WILLIAM BARRON AND SON'S Descriptive CATALOGUE of Coniferæ, Hardy Ornamental Trees, and General Nursery Stock—also their Rose, Forest, and Fruit Tree CATALOGUE—may now be had on application. A personal inspection of their unrivalled stock solicited. The Nurseries are three minutes' walk from the Borrowash station on the Midland (Derby and Nottingham) Railway.
Elvaston Nurseries, Borrowash, Derby.

SUTTON'S
BEAUTIFUL LAWNS.



PARIS UNIVERSAL EXHIBITION, 1878.

SUTTON'S PAMPHLET
ON
Laying Down and Improving Lawns, &c.,
Gratis and post-free on application.

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, Derbyshire, have to offer the following, at per 1000 :—
ALDER, 2 to 3 feet, 20*s.*; 3 to 4 feet, 25*s.*
ASH, Mountain, 3 to 4 feet, 18*s.*; 4 to 5 feet, 25*s.*
DOGWOOD, Red, 1 to 1½ foot, 30*s.*; 1½ to 2 feet, 40*s.*; 3 to 4 feet, 70*s.*
FIR, Spruce, bushy, 1½ to 2 feet, 20*s.*
POPLAR, Black Italian, 3 to 4 feet, 20*s.*; 4 to 5 feet, 25*s.*
WILLOW, Huntingdon, 5 to 6 feet, 30*s.*
PERNETTYA MUCRONATA, transplanted last spring, 25*s.*
RHODODENDRON, hybrids, 6 to 9 inches, 65*s.*; £27 per [10,000.
,, ,, 9 to 12 inches, 75*s.*; £32 per 10,000.
,, Stocks, for grafting, 80*s.*; £17 10*s.* per 5000.
WHINS, double, 1 foot, transplanted last spring, 80*s.*
YEWS, 1 to 1½ foot, 100*s.*; 2 to 3 feet, 200*s.*
LARCH, 2 to 3 feet, 25*s.*
BROOM, 1-yr., 2*s.* 6*d.*, 40*s.* per 25,000: 2-yr., 3*s.* 6*d.*, 60*s.* per 25,000; transplanted, 2 to 2½ feet, 15*s.*
GORSE, 1-yr., 2*s.* 6*d.*, 40*s.* per 25,000; 2-yr., 4*s.* 6*d.*, 80*s.* per 25,000.

New Cucumber, Sir Garnet Wolseley.

JOSEPH HAMILTON AND SON, Wellington Place, near Carlisle, will supply SEEDS of the above, in Packets of 6 Seeds, post-free for 30 stamps.
"The points in which Cucumber Sir Garnet Wolseley surpasses all other long-fruited varieties are the symmetry of its fruit, and the abundance with which they are produced; there being no shank or handle to Sir Garnet." — *Gardeners' Chronicle*, September 27, 1879.

To the Trade.

"PRIDE OF ONTARIO" POTATO.
H. AND F. SHARPE are now offering the above excellent POTATO, grown from their original stock. It gave universal satisfaction last season, having produced a fine yield, and comparatively free from disease. As the stock this season is limited early orders are requested.
Seed Growing Establishment, Wisbech

ORCHIDS.
ENORMOUS STOCK.
The largest in Europe.

MR. WILLIAM BULL has thousands of these beautiful plants to select from, at 7*s.* 6*d.* and 10*s.* 6*d.* each, and upwards.
Establishment for New and Rare Plants, King's Road Chelsea, London, S.W.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers the following Plants, of which he has a very large stock :—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6*s.* per 100, 50*s.* per 1000; 100, in 12 choice sorts, 8*s.*; or in 25 sorts, 10*s.*
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2*s.* 6*d.* per 100, 20*s.* per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10*s.* per 100; Madame Vaucher and Virgo Marie, two best whites, 12*s.* per 100; Master Christine, best pink, 12*s.* per 100; White Vesuvius and New Life, 20*s.* per 100; Dr. Denny, nearest to blue, fine, 5*s.* per doz. Pelargoniums, in 12 best varieties, 5*s.* per doz., 30*s.* per 100.
,, TRICOLORS—Mrs. Pollock, 2*s.* 6*d.* per doz., 18*s.* per 100; Sir R. Napier and Sophie Dumaresque, 3*s.* per doz., 20*s.* per 100.
,, SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 12*s.* per 100; Princess Alexandra and Prince Silverwings, 15*s.* per 100.
,, GOLD-LEAVED—Crystal Palace Gem, 12*s.* per 100; Happy Thought, 15*s.* per 100.
,, DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 12*s.* per 100; Madame Amelia Baltet, very fine white (the best), 20*s.* per 100.
,, BRONZE—Maréchal McMahon, the best for bedding, 18*s* per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5*s.* per 100, 50*s.* per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6*s.* per 100, 50*s* per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5*s.* per 100, 40*s* per 1000
TROPÆOLUM Mrs. Treadwell and Vesuvius, the best scarlets, 10*s.* per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

TREES for AVENUE, PARK, or STREET PLANTING.
ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
,, Horse, 14 to 16 feet, girting 8 to 10 inches.
,, Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
,, Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.
They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.
The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.
ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

SPRING FLOWERING PLANTS.
PRIMROSE, double: crimson-purple, 6*s.* per dozen, 45*s.* per 100; yellow, 3*s.* per dozen, 20*s.* per 100; lilac, 2*s.* 6*d.* per dozen, 16*s.* per 100; white, 3*s.* per dozen, 20*s.* per 100
,, single, crimson (fine), 2*s.* 6*d.* per dozen, 16*s.* per 100
POLYANTHUS, 2*s.* 6*d.* per dozen, 16*s.* per 100
AURICULAS (alpine, fine), 3*s.* per dozen, 20*s.* per 100
MYOSOTIS ALPESTRIS COMPACTA (very dwarf, 3 inches fine), 2*s.* per dozen, 10*s.* per 100
VIOLET, Victoria Regina (strong clumps), 4*s.* per dozen, 25*s.* per 100
HEPATICA, single blue, 3*s.* per dozen, 20*s.* per 100
PHLOX SETACEA (strong), 4*s.* per dozen, 25*s.* per 100
IBERIS SEMPERVIRENS, 3*s.* per dozen, 20*s.* per 100
ARABIS ALBIDA (strong), 2*s.* per dozen, 12*s.* 6*d.* per 100
PANSY, Blue King, 2*s.* per dozen, 10*s.* per 100
,, Imperator (fine, plum-purple), 3*s.* per dozen, 20*s.* per 100
VIOLA, Golden Gem, 2*s.* 6*d.* per dozen, 16*s.* per 100
,, Blue Bell, 2*s.* 6*d.* per dozen, 16*s.* per 100
,, Blue Gem (very dwarf), 2*s.* 6*d.* per dozen, 16*s.* per 100
WALLFLOWERS (double German sorts), 2*s.* per dozen, 12*s.* 6*d.* per 100
,, single ditto, 1*s.* 6*d.* per dozen, 10*s.* per 100
RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.
Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

LEICESTER RED CELERY has again proved itself to be the hardiest, sweetest, most solid, and best Celery this unfavourable season; when most kinds have been soft and watery this has been good in every way. Those wishing to obtain the true article should have it in printed packets, price 1*s.*; post-free on receipt of 13 stamps.
BROCCOLI, Harrison's new Dwarf Hardy; a late valuable kind, 1*s.* per packet.
SAVOY, Harrison's King Coffee Garden, 1*s.* per packet.
TURNIP, Harrison's Exhibition; a perfect round white variety, from 6*d.* per packet.
CARROT, Harrison's Early Market, 6*d.* per packet.

HARRISON'S "LEICESTER SEEDS," of choicest quality, are supplied in collections of 21*s.* and upwards, sent carriage free. Trade Prices and full particulars on application to
HARRISON AND SONS, Seed Growers, Leicester.

MANGEL SEED.

JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.

Bardney Manor, Lincoln.

ROOTED CUTTINGS

(Choice Varieties with Names).

FREE AND SAFE BY POST. FREE AND SAFE BY POST.

We have much pleasure in offering the following in well-rooted healthy young plants, and which, by our improved system of packing, can now be sent by post with perfect safety to any part of the British Isles. Customers may depend on really fine varieties only being sent, but the selection must in all instances be left to us :—

	Per Doz. s.	d.
BEGONIA FUCHSIOIDES, a pretty pot plant for the greenhouse or window .. .. each, 6*d*.	—	
CHRYSANTHEMUMS, large-flowered, incurved, reflexed Japanese and Pompons, very choice varieties	4	0
,, good standard varieties	2	6
COLEUS, from our splendid collection, newest and choicest sorts	5	0
,, good handsome varieties	3	0
DAHLIAS.—Our collection of these is very fine, and includes all the newest and best in cultivation.		
,, Choicest new and select Show and Fancy varieties	5	0
,, good standard sorts	3	6
,, Pompon or Bouquet	3	6
FUCHSIAS, a very fine collection.		
,, new varieties of 1879	6	0
,, choice exhibition varieties, single and double ..	4	0
,, good standard varieties	2	6
GERANIUMS (Pelargoniums), Zonal and Nosegay, new varieties of 1879, Denny's, Pearson's and Lye's	10	0
,, ,, extra choice sorts for exhibition, &c.	6	0
,, ,, good and choice varieties	4	0
,, standard sorts	2	6
,, ,, double-flowered, choicest varieties	4	0
,, ,, Madame Amelie Baltet, beautiful pure white, very double, the finest .. .. each 6*d*.	5	6
,, silver variegated, Daybreak, &c.	2	6
,, gold and silver, tricolor, and bronze varieties, extra choice sorts	5	0
,, ,, ,, ,, good sorts	3	6
,, Ivy-leaved, in beautiful variety	2	6
,, sweet-scented varieties .. .. .. each 6*d*.	5	6
MIMULUS, choicest large-flowered, with names ..	3	6
,, ,, ,, in mixture..	2	0
PHLOX, choice perennial varieties, from our splendid collection, with names	3	6
PENTSTEMONS, very fine named varieties	2	6

From CAPTAIN JAS. DE COURCEY HUGHES, *Rathdowney, Queen's County, October* 24.

"I enclose Post-office Order to amount of account, and am much pleased with the rooted cuttings I got from you. They all turned out well, and made particularly nice shaped plants."

From ROBERT BOULT, Esq., *Halvergate, July* 5.

"I have the pleasure of informing you that the collection of Pelargoniums sent by you to Holland last Autumn, to Mr. V. W. de Villeneuve, was awarded the Gold Medal at the Horticultural Show held this week at Nymegen, Holland."

Cheques or Post-office Orders to

DANIELS BROS.,

TOWN CLOSE NURSERIES, NORWICH.

The Largest Rose Gardens in England

CRANSTON'S NURSERIES, HEREFORD.

(*ESTABLISHED* 1785.)

The following Descriptive and Priced Catalogues are now published, and may be had free on application :—

DESCRIPTIVE CATALOGUE of ROSES.

DESCRIPTIVE CATALOGUE of FRUIT TREES.

DESCRIPTIVE CATALOGUE of FOREST TREES.

DESCRIPTIVE CATALOGUE of CONIFERS, EVERGREENS, &c.

DESCRIPTIVE CATALOGUE of BULBS and SPRING FLOWERS.

DESCRIPTIVE CATALOGUE of GARDEN and AGRICULTURAL SEEDS.

CULTURAL DIRECTIONS for the ROSE, **By John Cranston.**

Sixth Edition. Price 2*s*., free by Post for 27 stamps.

Address—

CRANSTON'S NURSERY & SEED CO. (LIMITED), KING'S ACRE, HEREFORD.

CARTERS'

THE FIRST PRIZE LAWNS

AT THE

PARIS EXHIBITION.

CAUTION.—PARIS LAWNS.—The best Lawns at the Paris Exhibition (as certified by the International Jurors) were formed with Carters' Fine Lawn Grass, and were awarded the First Prize and only Gold Medal. All other competitors, English as well as Foreign, received Second and Third Prizes only.

CARTERS' PARIS GOLD MEDAL LAWN GRASS.

1s. 3d. per pound; 25s. per bushel.

Ordinary Lawn Grass .. .. 1*s*. per lb. ; 20*s*. per bush.
Grass Seeds for Park Lands .. 1*s*. ,, ; 20*s*. ,,
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Write for CARTERS' PAMPHLET on the subject, sent gratis and post-free.

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TO BE SOLD, a fine Plant of TRICHOMANES MAXIMUM. Price 3 guineas. May be seen. Apply by letter to E. H., 24, George Street, Hanover Square, London, W.

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ASPARAGUS, Giant and Colossal, 2-yr. and 3-yr. ; SPRUCE FIR, 2 to 3 feet ; CEDRUS ATLANTICA, 8 to 12 feet ; Standard and Pyramid PEARS, very fine ; VINES, extra strong and short-jointed ; PASSIFLORA CŒRULEA, in pots ; TEA ROSES, in pots, coming into bloom.

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CONIFERÆ, half a foot high.

12*s*. per 100, Eight of each of the following sorts. £5 per 1000, Eighty of each of the following sorts.

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THE FAMOUS SCOTCH CHAMPION,

ACKNOWLEDGED BY EVERYBODY TO BE

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One Packet each, nine vars., as above	9 6

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Write for our NEW PAMPHLET, post-free.

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EXCELLENT PEAT FOR SALE, on the Mount Mascal Estate, within a mile and a half of the Bexley Station of the South-Eastern Railway. The Peat stands within a few hundred yards of the road, and there is a cart track to it in good order. Price per cubic yard, as it stands ready dug, 7*s.*; or delivered at Bexley Station, 9*s.*; other places, at special rates. For particulars apply to
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BAGSHOT PEAT.—Brown and Black, as supplied to the Crystal Palace and all principal Nurserymen. Pronounced very best quality at lowest price.
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BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
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"Dear Sir,—We have tried the Amazonas Sana Copia Potato Manure supplied by you, and have much pleasure in stating that the produce of Potatos was three times the quantity to those grown with the aid of stable manure. The tubers are much larger in size, of fine quality, and little affected by disease.—Yours faithfully, "BANTIN BROTHERS.
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JUST TO HAND, *ex Duart Castle*, a parcel of RAFFIA, fine quality, good colour, and extra strong.
SEED BAGS and SACKS. Specially prepared Sewing or Tying, White or Tarred TWINE, ROPES, LINES, &c. NETTING and SHADING CANVAS. RICK CLOTHS and WATERPROOF COVERS of all descriptions.
Prices on application to
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TRAINING STICKS and LABELS,
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ANDERSON'S RUSSIA MATS,
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are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

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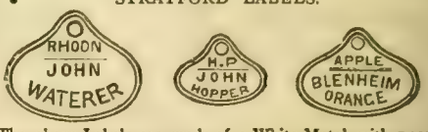

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The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."
Samples and Price Lists free.
J. SMITH, The Royal Label Factory, Stratford-on-Avon.

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MESSRS. JAMES VEITCH & SONS

BEG TO INVITE INSPECTION OF THEIR
MAGNIFICENT PRIZE COLLECTIONS,
Which are now in great perfection, and include many Novelties never before flowered in England.

These Collections have received the following Awards this Season:—
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Large Gold Banksian Medal, for Amaryllis.
Silver Flora Medal, for Hyacinths.
Royal Botanic Society's First Spring Exhibition, March 24:—
Five First-class Certificates, for Amaryllis.
Four First-class Certificates, for New Hyacinths.

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TO THE TRADE.

SEED POTATOS.

H. & F. SHARPE

Invite the attention of the Trade to their Special PRICED LIST of SEED POTATOS, issued last November,

Which comprises, amongst many others, the following excellent varieties, viz.:—

PRIDE OF ONTARIO (New),
RIVERS' ROYAL ASHLEAF,
MYATT'S PROLIFIC ASHLEAF,
MONARCH KIDNEY (New),
AMERICAN EARLY ROSE,
BRESEE'S PROLIFIC,
MAGNUM BONUM,
CHAMPION,
ELLIOTT'S WONDER,
SNOWFLAKE,
BRESEE'S PEERLESS,
BRESEE'S KING OF THE EARLIES.

The above have been Grown from the Finest Selected Stocks, are of Splendid Quality, and Free from Disease.

SEED GROWING ESTABLISHMENT,
WISBECH.

PROSPECTUS OF THE GENERAL HORTICULTURAL COMPANY—(*Continued from p.* 392).

5. To purchase from its Shareholders, at fair market prices, such plants, cut flowers, fruit, vegetables, &c., as they may wish to dispose of, as well as all plants which may have outgrown their establishments, and which are suitable for the purposes of the Company, and to supply the Shareholders with vegetables, fruit, flowers, plants, seeds, &c., implements, and other garden requisites, on the same principles as Co-operative Associations.
6. To establish and maintain a School of Instruction for the training of young gardeners, for which purpose the Company's Nurseries and Gardens will be utilised.
7. A Register of thoroughly practical competent Gardeners will be kept, and facilities offered the Shareholders of obtaining men of character and ability.

A provisional Contract, dated March 17, 1880, between John Wills of the one part, and William John Smith, on behalf of the Company, of the other part, has been entered into for the purchase of the undermentioned leasehold Nurseries, his plant, contracts, stock and utensils-in-trade, and goodwill of his business for the sum of £35,581, of which £11,000, representing a portion of the goodwill, and the beneficial interest in the leases of the Nurseries, will be taken by him in fully paid-up shares. The balance to be paid in cash.

The purchase-money is based upon a valuation made by Messrs. Protheroe & Morris, of 98, Gracechurch Street, E.C., which may be seen at the Company's Office.

No promotion money has been or will be paid; the only preliminary expenses up to allotment will be those of Registration, Advertising, Printing, Legal Charges, &c.

The existing Establishments are :—

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THE EXOTIC NURSERY AND WINTER GARDEN,

AT ONSLOW CRESCENT, SOUTH KENSINGTON.

Held on Lease, for a term of which forty-three years were unexpired at Michaelmas, 1879, *at an annual rent of* £90.

Besides the handsome Winter Garden there are **six large** glasshouses at this Nursery, and a commodious Flower Shop, with large Stores beneath the Conservatory.

II.

SUSSEX PLACE NURSERY,

ONSLOW SQUARE.

Held on Lease for a term of which twelve years were unexpired at Michaelmas, 1879, *at an annual rent of* £91.

This Nursery is well stocked with Forest Trees, Shrubs, and various other plants suitable for the purposes of the business. There are **five large plant-houses,** and adjoining it a large Yard with convenient Stabling and Van Sheds.

III.

FULHAM NURSERY,

IN THE FULHAM ROAD, HAMMERSMITH.

Held under two Leases, one for a term of which seventy-two years were unexpired at Christmas, 1879, *at an annual Ground Rent of* £60, *and the other for a term of which fifty-one years were unexpired at Michaelmas,* 1879, *at an annual rent of* £140.

At this Nursery there are altogether **seventeen ranges** of Glass. Many of the houses are very large, and contain immense collections of plants. There are also convenient Stables, Van Sheds, large Carpenters' and Painters' Shops, Potting Sheds, &c.; the principal portion of the ground not covered with glass is planted with large numbers of the best kinds of Roses and other suitable plants and shrubs for the supply of cut flowers.

IV.

THE MELBOURNE NURSERY,

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PROSPECTUS.

First Edition.

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[*Continued on p.* 391.

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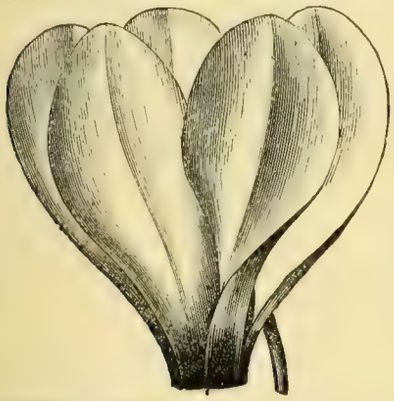

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THE
Gardeners' Chronicle.

SATURDAY, MARCH 27, 1880.

ALLOTMENT GARDENS.

OF late years the tendency of city and metropolitan improvements has been to drive the poorer classes from the centre to the circumference, and they are now being grouped in large communities in several neighbourhoods. If allotment gardens are to be provided near some of these there is great necessity for its being done at once, ere all the open spaces are covered by the builder. It has recently been stated that during 1879 something like 11,000 new houses were built within the metropolitan area, and that this is an annual average. This means the absorption into London every year of what is equivalent to a town of large extent.

In addition to supplying, by the establishment of allotment gardens, healthful and elevating recreation for the people, by drawing them away from grosser pursuits and less worthy occupation for their leisure hours, allotment gardens have an inestimable value as open spaces, serving as lungs, by means of which fresh air and necessary ventilation are brought into the social body. The advantages of allotment gardens are so patent that no one would be found to oppose their introduction; the provision of open spaces is a universally acknowledged social necessity, but little is done in the way of securing them. It would be well if in all cases where recreation grounds are established some portion should be set apart as allotment gardens.

Parliament, in its wisdom, has provided the machinery by which allotment gardens can be established. By an Act of Parliament passed on October 15, 1831, 1st and 2d William IV., reciting an "Act of George III. to amend the laws for the relief of the poor," power was given to churchwardens and overseers to provide land for the employment of the poor not exceeding 20 acres, and where such quantity should prove insufficient they were to be at liberty to provide such other quantity not exceeding 50 acres. Proviso made, that no poor inhabitant to whom such land should be let should gain a settlement by reason of his occupying such land.

By Act of Parliament of June 1, 1832, 2d William IV., it was enacted that it should be lawful for the trustees of allotments, together with the churchwardens and overseers in parish vestry assembled, to let portions of such allotments not less than one-fourth of a statute acre, and not exceeding 1 acre, to any one individual, as a yearly occupation from Michaelmas to Michaelmas (and at such rent as land of same quality is usually let for), to such industrious cottagers of good character being day labourers or journeymen legally settled in the parish, and dwelling within or near its bounds, as should apply for the same in manner thereinafter mentioned; that the person having land to cultivate must so tend it as to preserve it in a due state of fertility.

That for the purpose of carrying this Act into effect a vestry meeting of the parish should be held in the first week in September in every year, of which ten days' notice should be given in the usual manner, at which meeting such applicant should be admitted a tenant; that the rent should be payable to and received by the churchwardens and overseers on behalf of the vestry at the end of each year; that if the rent should be four weeks in arrear, or the plot of ground not duly cultivated so as to fulfil the useful and benevolent purpose of such Act, then the churchwardens and overseers, with consent of the vestry, should serve notice to quit on any such occupier, and such occupier shall deliver up possession in one week after such notice; that if any occupier should refuse to quit, or if any other person should take possession thereof, complaint should be laid before two justices of the peace, who should issue a summons for such occupier to appear before them, such summons being either personally served on them, or, if not found, affixed to the door of the church, and such justices shall make order in the matter. That all arrears of rent should be recovered by application to such justices, who shall issue their warrant to levy on tenants' goods and chattels. That the rent should be applied in the purchase of fuel to be distributed in the winter season among poor parishioners resident in or near such parish. That no habitation should be erected on any portion of the said land.

Such, then, is the legal machinery by which allotment gardens can be provided, but it is applicable more to rural districts than to the suburbs of London and large cities and towns. Whether municipal corporations, boards of health, rural sanitary authorities, have power to acquire land for allotment gardens is not set forth; but it would appear that they have exercised the power, with the consent of the vestry, jury of copyholders, &c., of setting out portions of common lands as allotment gardens.

At Ealing there are a number of allotment gardens, and they occupy sites of great and increasing value for building purposes. How these allotments were provided may be set forth in a few words.

In November, 1832, soon after the passing of the second Act just recited, Charles James Bloomfield, then Bishop of London, as Lord of the Manor of Ealing, did thereby consent to the enclosure of all those waste and common lands called Ealing Dean Common, containing 20 acres, 2 roods, and 16 perches, in order that the same might be occupied solely in allotments of not more than 1 rood by each person, to be appointed by a committee of management, of whom the vicar of the parish is to be one; the said allotments to be cultivated by the spade. Proviso: That no person is to work on the said allotments on the Lord's Day, on pain of forfeiture. Proviso: That no nuisance be occasioned to the public or occupiers of houses near allotments, and that sufficient space be reserved for roads and good paths, and also for frontages of houses if necessary. This deed was duly executed by the Bishop of London.

By deed of November 27, 1832, made between Sir Hubert Oakeley, Bart., vicar of Ealing, and the major part in value of persons having right of common over the same, after reciting, and by virtue of the above Act of Parliament, did give consent to the enclosure of all the said allotments, in order that the same might be held in not more than 1 rood by each person, as the committee of management (of whom the vicar to be always one) might determine, the same to be cultivated with a spade.

This deed having been duly executed by the major part of such persons having rights of common over said lands, they were laid out as allotment gardens as directed.

The Ealing allotments are something like 150 in number, and in size average one-eighth of an acre each. It is proposed to divide some of them, owing to the inability (or disinclination) of the occupiers to keep them in proper order. This is a matter, however, deserving tender treatment, as for a considerable portion of the year men who have to work twelve hours per day have but little leisure for tilling their ground, and Sunday labour is prohibited. This is a restriction not generally applied to allotment holders, though it does not prevent them gathering the produce of their gardens on Sundays. A person who receives the rents of the allotments is also a kind of overlooker, and it is his business to take note of their condition, and report the same to the committee. There is a large demand for the allotments, and the committee approve of division, where an arrangement to this effect can be come to. The yearly rent paid for each allotment of one-eighth of an acre is 5*s*.

The local horticultural society gives all possible encouragement to allotment-holders by offering prizes for garden produce at all their shows, and in addition the Baroness de Rothschild and Mrs. Walpole give every year a sum of money divided into twenty prizes for the best kept allotment or cottage garden, the sums ranging from 25*s*. to 5*s*. There is always a keen competition for these prizes, and it generally happens that the allotment holders carry off the best. Judges are appointed, who inspect the allotments and award the prizes, their returns being made about the middle of July.

I may here remark that one radical defect in the government of the Ealing allotments is that the committee is a permanent body, appointing to vacancies on their body as they occur, and making no return to vestry or other authority of the moneys received, or of the manner in which they are expended. The committee have the sole power of appointing the tenants of the allotments. I do not mean to insinuate that the rents are improperly expended, but it is a scandal that such a trust should be administered without any returns being made. This is a local matter, deserving of mention as a warning to others who may be contemplating the apportionment of land for allotment purposes.

I have already alluded to the encouragement given by the local horticultural society to allotment holders by offering prizes for produce from their gardens; the result is an extraordinary exhibition of such produce in the month of July, and so numerous are the entries and so keen the competition, that eight and more prizes are awarded in many of the classes; and it is usual to have from twenty to thirty entries in each. Indeed, it is found difficult to find judges who care to enter upon the very difficult task of making the awards in this department of the local show.

Wherever allotment gardens are established, some such encouragement should be given to their holders. The system of giving prizes to the best kept allotments is a praiseworthy one, but the inspection ought to be monthly, and extend from Lady Day to Michaelmas Day. When the inspection is confined to a month or six weeks, the holder may put forth a kind of spasmodic effort to have his allotment in good condition for that period, in order to secure a favourable verdict from the judges, and neglect it for the remainder of the year. It is general good cultivation that should be encouraged, with due regard to judicious and profitable cropping.

In addition, encouragement is given to forecourt cottage-gardeners by means of special prizes for the best kept flower-garden. The Society is indebted to some public-spirited gentleman for these prizes, and they also bring a good competition. As a general rule, flowers occupy a subordinate position to vegetables, in consequence of the value of the latter as supplying the family aliment to a considerable extent.

That our system of allotment-gardens encourages habits of industry, sobriety, and thrift is placed beyond doubt, and that such desirable results flow from the system is a weighty reason for their more general provision. "Earth is so kind," wrote Douglas Jerrold, "that just tickle her with a hoe and she laughs with a harvest." In establishing allotment-gardens, and in encouraging the best culture, the seeds that will grow and ripen into another harvest are laid in the ground to fructify into habits and desires, elevated in tone and beneficent in their range, and which constitute the evidences of true social progress. *R. D.*

New Garden Plants.

Maxillaria arachnites, *n. sp.**

This is near Maxillaria pertusa, Lindl. It is smaller in all its parts, has much shorter bulbs, shorter narrower leaves, the yellowish flower with its triangular acuminate segments bent and twisted, whence I took the name, being reminded of spiders. Lip ochre-coloured with a purple border, and many short streaks and lines; fragile pellucid hairs consisting of almost globular cells stand on both sides of the lip, and several in front of the triangular callus on the lip and disk. I have before me a glorious specimen—nine bulbs, six flowers—kindly sent by Mr. Backhouse, Holgate House, York. The plant was imported from Western New Granada. *H. G. Rchb. f.*

Cœlogyne humilis (*Lindl.*) tricolor.

Dr. Lindley has already stated that there are two varieties of this lovely species, one with amethyst, the other with brown marbling on the lip. The first was the original variety, as may be understood by Dr. Lindley's standard work, *Genera and Species Orchidearum*, p. 43. Whatever may be one's opinion about naming varieties, there is no doubt this is a case where an extra name for the variety is wanted, as the orchidist likes to know what he purchases, the colours being so widely distinct. This is no case of naming an individual as a variety. I propose to call this brown-marbled variety tricolor. I have fine fresh flowers of both at hand, kindly sent by Mr. W. Bull. *H. G. Rchb. f.*

Liparis formosana, *n. sp.*†

Much in the way of the well-known Liparis bituberculata, Lindl. (elata, Lindl.), but it has long almost cylindrical bulbs (0.11 : 0.014 m.), oblong acute very crisped and plaited leaves, a sagittate oblong acute lip, with two non-coherent teeth at the base and hyaline square wings to the column, whose anther is simply acute. The peduncle is beautifully purple. The sepals and petals are very light purple with green borders. Lip dark brown with green borders. Column green. Back of mucronate anther deep brown. I have at hand careful coloured sketches of all the details of the fresh Liparis bituberculata, which have much assisted me. I well know that Dr. Thwaites, an eminent authority, has combined with Liparis bituberculata the obscure Liparis odorata, Lindl. (Malaxis odorata, W.), founded on the "Kuatton pounam marawara" of Rheede only. I hope to be able to pronounce my opinion on this question at some time with better information than I can do now. Our actual novelty was gathered in Formosa, by Mr. Maries. It has just flowered in the Royal Exotic Nursery of Messrs. Veitch & Sons (March 7). *H. G. Rchb. f.*

* *Maxillaria arachnites*, n. sp.—Affinis Maxillariæ pertusæ, Lindl.: pseudobulbis oblongis obtuse ancipitibus, monophyllis (0.025 : 0.01); folio a petiolari basi angustissima cuneato ligulato acuminato; pedunculo breviori paucivaginato; ovario vulgo ex bractea arctiuscula exserto; sepalis triangulo acuminatis (0.03 longis, basi 0.008 latis); tepalis paulo brevioribus, subfalcatis, omnibus curvatis tortisve; labello oblongo antice trilobo, lacinias lateralibus obtusangulis antice crenulatis; lobo mediano porrecto undulato crenulato acutiusculo, carnosissimo; callo ligulato a basi ad medium, ibi abrupte acuto, utraque, labelli superficie pilis sparsis articulatis crystallinis fragilibus circumspersis seu aggregatis. Neo Granada. *H. G. Rchb. f.*

† *Liparis formosana*, n. sp.—Pseudobulbo cylindraceo basi incrassato; foliis quaternis oblongis acutis, toto margine crispulis; pedunculo pluriangulato superne racemoso; bracteis ligulatis acutis ovaria pedicellata non æquantibus; sepalo impari ligulato obtuse acuto, sepalis lateralibus subæqualibus curvatis; labello cuneato oblongo elliptico acuto breviter sagittato, callis depressis triangulis geminis in basi, columna arcuata, alis quadratis hyalinis juxta foveam; anthera mucronata. In insula Formosa del. cl. Maries. Culta a dom. cel. Veitch. *H. G. Rchb. f.*

EUCALYPTUS COCCIFERA.

Some time ago we were enabled, through the kindness of Mr. Powell, gardener to the Earl of Devon, Powderham Castle, Devonshire, to lay before our readers an illustration of a fine tree of this species (see vol. xii., 1879, p. 113). Anxious to know how the tree had fared during the winter, we applied again to Mr. Powell for information. Mr. Powell replies the tree "was not in the least injured by frost, although unprotected. The lowest temperature registered was 16°." We are now able to give an illustration of the foliage and flowers of this species, taken from the Powderham tree at the end of January last (fig. 69). In a letter accompanying the specimen, Mr. Powell writes :—"When gathering the enclosed specimen I observed that the flower-buds are now forming for flowering in the year 1881. Those for this year are in a more advanced stage than those forming the subject of your former illustration. On a portion of the old wood may be seen a few bunches of seed-vessels from flowers of last year. I have tried to propagate from the seeds, but they fail to germinate."

The tree in question is fully described in Hooker's *Flora of Tasmania*, i., 133, and also in Bentham's *Flora Australiensis*, vol. iii. (1866), p. 204. A good figure will be found in the *Botanical Magazine*, t. 4637. It is a native of the mountains of Tasmania, and is a small tree with lanceolate acuminate or obtuse glaucous foliage, tufts of pale yellow flowers, each with a top-shaped flower-tube, surmounted by a very short, flat, broad lid or "operculum," which falls off, revealing the numerous stamens.

Fig. 69.—Eucalyptus coccifera : flowers pale yellow.

INTERNATIONAL POTATO EXHIBITION.

When it became known that purchases of seed Potatos would be made for restocking those districts of Ireland which had suffered most severely from the failure of the Potato crop last year, the committee of the International Potato Exhibition determined to offer their services to the Government, both as advisers and agents, if need be, in this matter. The proposal had the sanction of the Lord Mayor of London, who is the President of the Exhibition, as also of the Vice-Presidents, Mr. Alderman Hadley, Messrs. James Abbiss, Shirley Hibberd, Peter McKinlay, and James Crute, Esq., the Treasurer. Accordingly, on February 19 last, a meeting was held at 108, Queen Victoria Street, London, when there were present Messrs. Barr, Hooper, Earley, McKinlay, Hibberd, Crute, and McKenzie, and resolutions were agreed to in accordance with the primary proposition.

The following letter was then despatched to the Home Secretary :—

"To the Right Honourable Richard Assheton Cross, Her Majesty's Secretary of State for the Home Department.

"Sir,—The committee of the International Potato Exhibition have had under consideration the advisability of offering their services to Her Majesty's Government and those acting under authority, with a view to facilitate the selection of suitable varieties of seed Potatos for distribution in Ireland. Accordingly, at a meeting held at 101, Queen Victoria Street, London, on February 19, 1880, Shirley Hibberd, Esq., presiding, it was resolved—

"To respectfully inform Her Majesty's Government that this committee has been formed 'for the encouragement of the best means of Potato culture and the introduction and diffusion of improved varieties' of Potatos. During the past six years this committee has, by means of exhibitions, enquiries, and experiments, acquired a considerable amount of experience, which, it is hoped, may be rendered advantageous to national interests. The schedule of the forthcoming sixth International Exhibition of Potatos, which accompanies this memorial, will show that this committee has more than a passing or theoretical interest in the subject.

"Being in communication with the principal growers of seed Potatos in all parts of Great Britain and the United States of America, this committee would esteem it an honour to be permitted to advise and practically assist in the selection of sorts best adapted to the soils and climates of the districts in need of supplies, with a view to preventing the constant deterioration of the Potato plant, which, not only in Ireland, but throughout the United Kingdom, in great degree results from the use of degenerated seed.

"This committee, therefore, is prepared to submit to Her Majesty's Government such recommendations as appear suitable to the present emergency, and would gladly, by deputation, wait on you at any time you might be pleased to appoint.—I have the honour to be, sir, your most obedient servant,

J. A. McKenzie, *Secretary*,

"Tower Chambers, Moorgate Street, London, E.C."

The communication was by Mr. Cross forwarded to the Irish Government, and obtained the prompt attention of the Lord-Lieutenant, by whom it was placed in the hands of the Local Government Board,

Dublin. The Board, through Mr. B. Banks, secretary, informed the committee of the International Potato Exhibition that any information or recommendations supplied by the committee would be accepted gladly and communicated to the Boards of Guardians in Ireland engaged in providing seed for the occupiers of land in their unions.

On receipt of this communication the sub-committee to whom the matter was referred prepared and have forwarded to the Local Government Board, Dublin, the following

RECOMMENDATIONS.

1. The land intended to be planted with Potatos should be effectually drained, for if it become saturated with moisture at any time while occupied with the crop, disease is likely to ensue. The neglect of drainage in Potato culture has been so largely attended with disappointment and disaster that it is impossible to over-rate the importance of the subject.

2. The land should be prepared by deep digging and liberal manuring with whatever cheap fertilisers the district will readily afford. The cow-byre and pigstye should be regarded as supplying life to the Potato crop. Weeds and parings of Heath soil burnt in small heaps carefully stopped with earth or clearings of ditches to prevent flame, will furnish an excellent fertiliser at little cost, and suitable for every kind of soil. Where the land is poor and sandy, a mixture of kainit and superphosphate of lime, to be used at the rate of from 3 to 5 cwt. per acre, would be likely to prove highly valuable in aid of the crop. In places contiguous to the sea the people should be encouraged to manure their Potato plots with seaweed, wrack, shells, and sea-sand, all of which contain minerals that conduce directly to the healthy growth of the Potato.

3. Only on dry sandy soils should the dibber be used in planting Potatos. The best mode of planting is to open shallow trenches with the spade or plough, and lay the seed therein at regular distances, to be covered about 4 inches deep only in the first instance. When the shaws first show the ground should be well worked between with fork, hoe, or plough, to keep down weeds and admit air into the body of the soil. In about three weeks afterwards they should be moulded up. It should be impressed upon all cultivators that to mould the plant overmuch is injurious. It is sufficient if the growing tubers are fairly covered; indeed, if a few are exposed, and become green in consequence, there is no loss entailed, for they can be saved for seed.

4. In planting on the poorest soils, a distance of at least 20 inches from row to row, and of 9 inches from seed to seed, should be allowed. Generally speaking, with land of average quality and sorts of average growth, a distance of 2 feet 6 inches between the rows, and of 1 foot between the seeds will be found the best. Sorts that are known to be rank in growth must have ample space allowed for the spreading of the shaws to the light and air, and with these a distance of 3 feet, or even 4 feet, between the rows will be requisite. So far as may be possible, planting on light dry lands should be completed during the month of March, and on heavy lands during the month of April. Good crops may be expected from seed planted in May if the work is well done, but the danger of delay in the planting is that the increasing warmth of the season compels the seed to sprout unduly, and thus leads to a waste of energy. Every detail of Potato culture should have in view to conserve the original vigour of the plant.

5. The sorts specially recommended for general culture on heavy soils, and for districts where the rainfall is considerable, are Scotch Champion, Redskin Flourball, Magnum Bonum, Irish Cup, Perthshire Red, and White Rock. The sorts specially recommended for light land and for districts that have a moderate rainfall are Early Rose, Late Rose, Beauty of Hebron, Manhattan, Victoria, Grampian, Skerry Blue. All those recommended for heavy land may be planted on light land, but those recommended for light land should not be planted on heavy land.

6. The practice of planting small refuse seed has contributed in a most material degree to the deterioration of the Potato, not only in Ireland but throughout Europe. Any seed tuber weighing less than an ounce and a half is unfit for planting, and it is to be preferred that tubers averaging 2 to 4 ounces should be selected. Seed that has sprouted but little or not at all is to be preferred to that which has made much growth in store.

7. The proper cultivation and improvement of the Potato may be greatly promoted by means of competitive exhibitions, at which prizes should be awarded for the best samples, true to name, presented in a clean and attractive manner. In the schedules of all agricultural and horticultural exhibitions classes should be provided for Potatos, with a view to quicken inquiry and promote a permanent interest in the rational treatment of the plant and the selection of the most useful varieties for particular soils and climates.

8. The so-called lazy-bed system of Potato growing should be discouraged except in cases where proximity to towns ensures a ready and profitable market for early crops of small-growing sorts of high quality. The robust habited kinds, on which alone dependence should be placed for main crops in agricultural districts, are scarcely amenable to the system, which necessitates close planting and tends directly to degeneracy of the stock.

The committee of the International Potato Exhibition will at all times gladly advise as opportunity may occur and as circumstances may suggest, and are prepared to comply with any requests that may be made to them by the Local Government Board, Dublin, so far as lies in their power in respect of Potato culture.—I have the honour, &c.,

J. A. McKenzie, *Secretary*.

Tower Chambers, Moorgate Street, London, E.C.

HALLEY'S MOUNT,

ST. HELENA.

We are indebted to Captain S. P. Oliver for the loan of the sketch from which Mr. W. G. Smith has prepared the illustration (fig. 71) given on p. 401, of a most interesting view in the valley between Stitches' Ridge and Halley's Mount, in the historically interesting Island of St. Helena. The view was taken under the western side of Halley's Mount, and has Mount Actæon in the background.

In this valley is found abundantly the (so-called by the natives) Shee Cabbage-tree; the Lachanodes prenanthiflora of Dr. Burchell, the Mikania arborea of Dr. Roxburgh, or Solidago Leucadendron of Wildenove (see Hooker's *Icones Plantarum*, 1054). This plant grows to a height of from 12 to 15 feet, and its large broad handsome leaves have their midribs and veins of a deep crimson and purple, not unlike those of the Chilian Beet. The whole plant presents the appearance of a Brobdingnagian Brussels Sprout, the leafy crown giving a good effect; and growing as it does among masses of Polypodium and Nephrodium, its brilliantly coloured stalks show out brightly. Its drooping blossoms, which appear in June, are insignificant with its congener Pladaroxylon. The stiff upright stalks of Lachanodes contrast well with the general gnarled bushes and drooping Ferns associated with it. In the bed of all these mountain torrents are Weeping Willows (Salix babylonica). The stream here is perennial, and flows down to join the run in the James' Town Valley.

It is on the mountainous spur to the west of this valley, and but 100 feet or so higher up (on the left of this view) that it is proposed to erect a monument to the great Dr. Halley, after whom the mountain is named. For further details on this interesting subject we cannot do better than quote the following extracts from a letter of Captain Oliver's, published in the current number of *The Observatory**, and embodying some remarks from the work on the Island of Ascension, by Mr. Gill, of which it was our pleasant duty to speak in very favourable terms in our number for December 14, 1878, p. 754:—

"David strolled along to 'Halley's Mount,' to search for the site of the observatory where Halley, in 1677, made his catalogue of southern stars and observed the transit of Mercury. We did not know whether any record of this work remained in stone and lime; and it was a pleasant surprise to find on the spot that an astronomer's eye at once picked out as the most favourable a bit of low wall, duly oriented, and overrun with wild Pepper (Cluytia pulchella). This had been the observatory without doubt; and near to it is a quarry from which the stones for its erection had evidently been taken. So charmed was my husband with this interesting record of the work of 200 years ago, that his investigations and surmises regarding it left us short time to linger in the little hollow lying near the foot of Halley's Mount."

"Then and there the present astronomer at Cape Town expressed to Captain Oliver, who was with him, his desire of seeing this neglected site recognised by some memorial, however humble; and there is now reason to hope that the subject will be ventilated and soon assume a tangible form. A simple monument will best suit the subject and the locality to mark the very spot of Halley's observations; but a more practical monument, and one really needed, would be the re-establishment of Johnson's observatory, whose desecration Mrs. Gill pathetically laments.

"To scientific readers," continues Captain Oliver, "the name of Halley needs no recommendation, although to the modern public we fear the name conveys but misty and vague recollections as nebulous as cometary emanations. The list of his scientific achievements yields to few in rank and importance. His transit method for obtaining the solar parallax, his prediction of the periodic comet, and the discovery of the acceleration of the moon's mean motion would alone entitle him to a proud position among our scientific worthies, without counting his laborious service to the state by his improvement of the method for obtaining the longitude and calculation of the Lunar tables, his tide observations and cartography of the Channel coasts, and, lastly, his optical investigations. We do not often think of him as a sailor; and yet, previous to Cook, Capt. E. Halley was our first scientific voyager and the constructor of the famous magnetic chart with the isogonal curves of variation, better known as the 'Halleian lines;' whilst, not least, the friend and coadjutor of Isaac Newton, it was owing to his energetic zeal that the first edition of the *Principia* was published in 168-67.

"No more ardent admirer of Halley exists than Hudson Ralph Janisch, C.M.G., F.R.A.S.; and under such an administrator of the government it is fit that the monument should be raised in the island.

"As may be imagined, in such an insular position, in the heart of the southern trades, and right in the homeward track of the Australian and East Indian shipping, the time-ball and clock are most important items in the economy of a colony dependent upon ocean-going vessels for its existence; and to the credit of the Governor be it said that he personally regulates both by astronomical observation. It is an inexplicable anomaly that His Excellency should have to content himself with a home-constructed amateur observing station in the recess of a deep ravine, whilst 600 feet above it is a scientifically constructed observatory commanding an extensive horizon, solely used as a smoking symposium."

* *The Observatory*, a Monthly Review of Astronomy, published by Taylor & Francis.

DESIGN FOR FLOWER-BED.

The productions of the garden excite pleasurable emotions, according as the efforts of the gardener to produce a pleasing picture are fairly appreciated, or the beauties of the plants grown in them are intelligently perceived. It is true there are persons endowed with insight and acknowledged good taste, who hold the designing and arranging of gardens in contempt, but much as has been said and written, rightly and wrongly, against the work of the designer, there has certainly been very little accomplished, particularly in the case of formal gardens, towards the improvement of this art. The oft-quoted lines of Pope are as applicable as ever:—

"Grove nods at grove, each alley has a brother,
And half the platform just reflects the other."

The faults which in a general way our present flower-bed arrangements impress upon the observer are those of imitation, limitation, repetition, disunion in the parts. They show a patchwork-like bareness, or a useless floridity. The objectionable characteristics may well be avoided, not, however, by destroying summer effects as is sometimes proposed, but by giving proper scope for the introduction of hardy plants, and arranging the whole so as to yield progressive and ever-fresh impressions.

I herewith send you a diagram (fig. 70) illustrating some of the principles, which I arrived at some years ago, for the designing of flower-beds. Simple as the figure may appear to be, it shows a way in which the above-named faults can be avoided. The first glance will perhaps recall the idea of carpet-bedding, but the design in question is entirely different in its aim; for whilst carpet-beds depend upon the arrangement of technical lines, the effects or impressions to be realised by the principle illustrated by this diagram will or ought to depend upon light and shade. It shows a way by which to retain space for summer flowers, &c., and also of making these bedding designs permanently effective by the use of hardy plants. Instead of the usual poor patches of useless lines, in union neither with the surrounding buildings nor with Nature, it shows a principle of arrangement consonant with the teachings of Nature and the principles of Art, and demonstrates how a diversity can be developed by securing a proper proportion of light and shade in the landscape effect to be brought out.

Let me now endeavour to explain the diagram. A. shows the coffin-shaped bed so frequently kept before our view in laying out grounds, in order, I presume, to enhance our conception of the beautiful. This style should be avoided. B. shows what I take

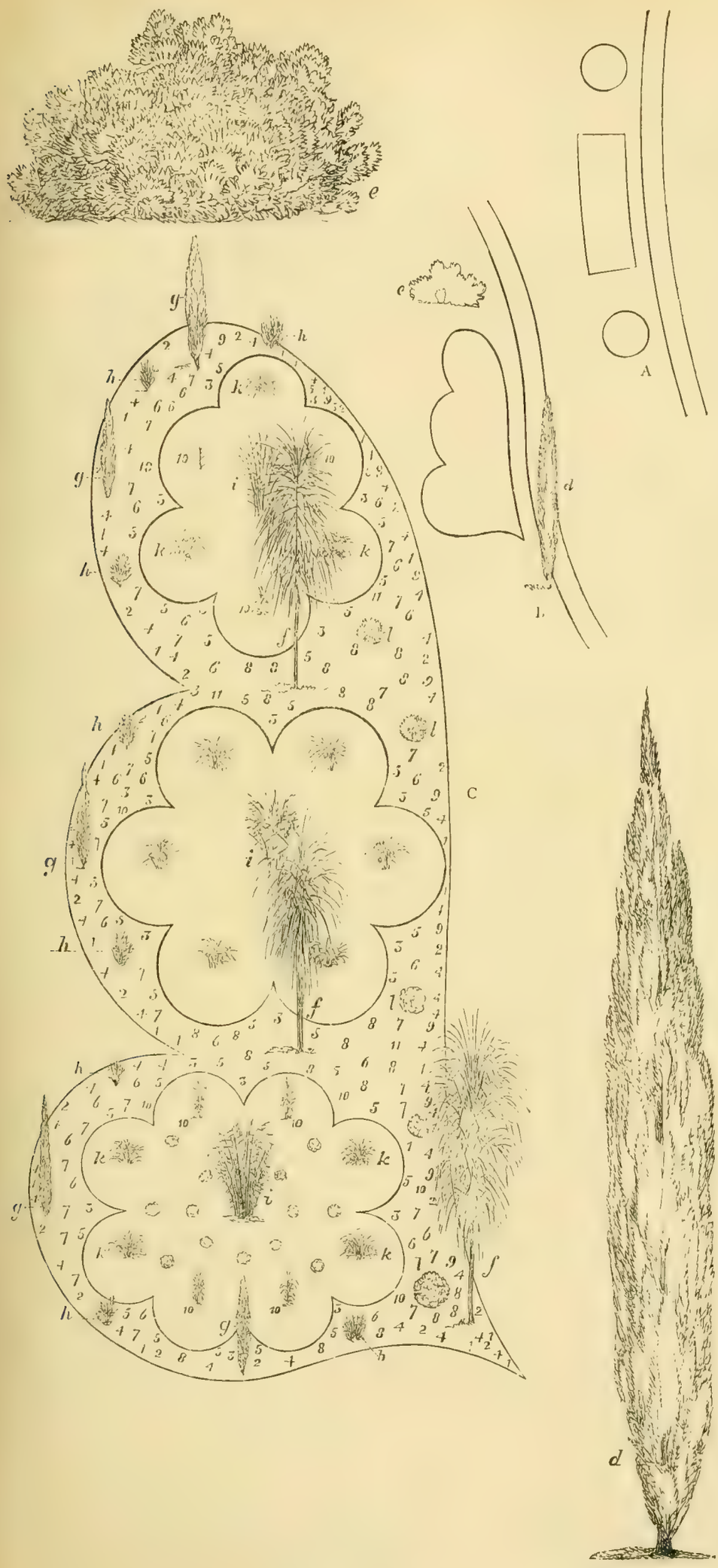

FIG. 70.—DESIGN FOR A BED OF FLOWERS YIELDING SPRING AND SUMMER EFFECTS.

to be an illustration of the proper style of disposition of a similar site in order to secure variety—not, indeed, its full development, for the question would require more space than can now be devoted to the subject. C. shows one example of the manner in which the details of B. can be worked out. The outer figure is intended to be planted with hardy plants, giving a continual succession of special effects, and these are meant to occupy the ground permanently in the position indicated, the whole thus securing a perpetual picture of beauty. In planting, this list might be much extended, but my intention has been rather to suggest the idea than to work out the subject. In practice I find it difficult to get a sufficient variety of suitable plants to arrange gardens on this principle. The central circles show the spaces retained principally for the accommodation of summer bedding plants.

I have devoted much study to the question of design as applied to the laying out of gardens, starting from the designs generally adopted in formal gardening, and passing on to others that are not yet in use. These latter show how a plot of ground, from a few feet to 30 acres in extent, may be tastefully arranged. I contend that forms may be designed adapted for various places, and fitting in with diverse characters of style, and that these may be worked out so as to supply the wants of different situations without incurring the faults already named. These designs I shall be glad to show to any person—should there be any such—who may be able and willing to do justice to this question.

Outlines govern all things; therefore let the outlines be diversified according to the situation to be occupied and the character to be developed, in such degree, and to such a proportion, as will serve to embellish the landscape by furnishing it with suitable and carefully arranged trees and shrubs. *J. Forsyth Johnson, Landscape Gardener, Oak Lane, Wilmslow.*

REFERENCES TO FIGURE.

A. Usual style of embellishing the side of a carriage drive
B. Another style of embellishment.
C. The plan B. enlarged, and shown in detail.
d. Populus fastigiata, the Lombardy Poplar.
e. Rhododendron.
f. Dracæna australis.
g. Golden columnar Yew.
h. Daphne Mezereum.
i. Bamboo.
k. Arundo conspicua.
l. Andromeda floribunda.
1. Winter Aconites.
2. Snowdrops.
3. Christmas Roses.
4. Crocus and Scilla sibirica.
5. Primroses.
6. Tulips.
7. Hepaticas.
8. Anemones.
9. Hyacinths.
10. Asphodelus luteus.
11. Tellima grandiflora.

The whole outer space to be carpeted with Antennaria dioica, margined with Aubrietia deltoidea, the various spring flowers and other plants being dotted over the space as marked by figures. The three enclosed inner spaces to be filled out with summer flowers.

Foreign Correspondence.

SETTLEMENTS ON THE STRAITS OF MALACCA.—The Malayan peninsula is comparatively unknown to Europeans, and it may not be uninteresting to make a few remarks as to the nature of the country and its inhabitants. The only districts in which any attempt has been made to turn to account the productiveness of the soil are the British possessions, generally known as the Straits Settlements, consisting of the islands of Pulo Penang and Singapore, and Province Wellesley and Malacca on the mainland.

At the north-western end of the Strait the British settlement of Penang keeps watch and ward, whilst at the south-eastern extremity our settlement of Singapore performs the duty of a British sentinel, in addition to its commercial operations. Between these two, 250 miles from Penang and 100 miles from Singapore, is the neglected but important settlement of Malacca itself, from which the Strait takes its name. These three (together with Province Wellesley, which appertains to Penang) comprise the British possessions on the Straits of Malacca.

We now turn to the settlements on the Straits of Malacca, which belong to Great Britain. These comprise, as I have already said, Singapore, Penang, and Malacca. Singapore, although the youngest, is the most flourishing and most important of the three; it was obtained by purchase from the Sultan of Johore in 1819. Penang next claims our attention. The Island of Penang is called by the Malays Pulu Penang (Betel-nut Island), and lies about 3 miles from the mainland, which at this particular place bears the name of Province Wellesley. It is situated at the north-west entrance of the Straits, in latitude 5° 25′ north, and longitude 100° 21′ east, and is about

14 miles long by 10 broad, containing about 75,000 acres. It is very hilly, the highest range being 2500 feet above the sea, affording to the inhabitants a charming retreat and a delightful climate, the temperature averaging not more than 72° Fahr. On the lower hills, of course, the average is somewhat higher, although still temperate. The rainfall is about 50 per cent. more than on the plains below, and all the hills are clothed with an abundant and constant vegetation. Government has a house on the hill, and there is also a convalescent bungalow for invalids. The British acquired this island by purchase from the Sultan of Quedah, and in a similar manner they obtained, in 1800, a strip of land of about 20 miles along the opposite shore of the peninsula, which they named Province Wellesley. This strip originally comprised about 25,000 acres of land only, but a small portion lying back from the shore has since been added to it. I wish particularly to point out the present state of Province Wellesley, which was, comparatively speaking, only a few years ago a Mangrove jungle teeming with pirates. Although the original pioneers of civilisation in the province are not yet dead, what is its position now? The greater part of it is in a state of high cultivation. This little patch of land, of about 300 square miles in extent, now contains almost as many people as there are in Perak, which is thirty times as large. It possesses nine large sugar estates, most of them fitted up, regardless of expense, with the most modern appliances, and valued at from 150,000 dols. to 300,000 dols. each. It has also two large Tapioca estates, and one of Tea, all of which employ about 20,000 imported labourers, irrespective of those engaged in the cultivation of sugar on a smaller scale, Paddy, Cocoa-nuts, and Betel-nuts, and other produce. The annual value of its products cannot fall short of 2,500,000 dols., being one-third of that of the exports of Jamaica, one of the most celebrated of the West Indian Islands, which contains some 4000 square miles, and 500,000 inhabitants. It is almost one continuous garden, and nothing like, or even approaching to it, is to be found between the coast of Tenasserim, except in that well-governed Malay State, Quedah.

This prosperous state of Province Wellesley shows what can be done by agriculture in the Malay States under British protection: and if so much can be done in so small a place what may be reasonably expected from the Malay States of Perak and Salangore, with their 20,000 square acres of virgin soil? The rivers of the Malay States are navigable for over 100 miles into the interior, so that facility exists for bringing down produce, all of which, from Klang northwards, would probably find its way to Penang.

I am confident that the Malay peninsula is destined at some future day to become the garden of the world, for it is the only country, Sumatra excepted, in which a state of perpetual summer exists, where the vegetation is always green, and where the climate is so healthy that a European can work in safety. The nine months' droughts, heavy floods, and the yellow fever, so fatal elsewhere, are unknown in these places.

Province Wellesley is irrigated by five rivers, the majority being of considerable volume, viz, the Muda, Prye, Jooroo, Jungjong, and Kreean. On the banks of the Prye and the Muda, and in some other particular localities, the soil is richer and of a more enduring character.

The banks on the Province Wellesley, or southern side, are lower than on the Quedah or northern side. Quedah is a native Malay State, tributary to the King of Siam. If it were not for the bund or embankment the whole of the province would be overflowed during the rainy season. The river rises to a great height when there are very high tides, and inundates the land lying on the British side up to the foot of the bund. I had occasion to ride along the top of the bund in company with a Government surveying party; starting from Buggan Birtam one fine morning, we came to a small Malay village, by name Buggan Ecan Mattee, which means in English "the place of the dead fish;" it is very swampy thereabouts. There is a police-station there, which is the most northern in Province Wellesley. After leaving this small village, on turning a corner of the grass-covered road, we came upon a Malay campong, or native habitation, situated on one side, and on the other were paddy or Rice fields stretching out as far as the eye could see; not long afterwards the bund was reached.

The first view I obtained of the Muda was lovely; our party had to ride in Indian file, owing to the bund being very narrow on the top—only a foot wide in some places. While riding along, the winding river frequently came into view after deviating from a straight course, and being frequently lost to sight. In some places on the Quedah shore the banks are covered with dense impenetrable jungle to the very water's edge; in other places there are broad strips of land apparently covered with rich pasturage suitable for cattle to graze upon. This neigbourhood is much frequented by the native traders in search of cattle, which here are to be acquired at a cheaper figure than elsewhere. To the best of my belief this is owing to the fertile properties of the soil, which are not at all opened up—a remark which may apply to the whole peninsula more or less. The whole country is comparatively neglected, as those in search of wealth have hitherto either gone to India, or pass it by unobserved on their way to China, and there are few who are able to give much information of the mineral and agricultural capabilities of the Malay peninsula to possible speculators.

At various times, as we rode along the bund, glimpses were caught of the Malay hamlets in the turns of the river. These hamlets, or lake dwellings, which constitute the ordinary habitation of the Malays, are built on four poles supporting the house, or Attap leaf-head; they exist among the Malays as the easiest way to protect them against wild beasts. Sleeping a night at Samataul, I was poled across the Muda in a native boat accompanied by the Government surveyor into Quedah. Landing we passed through thick jungle till we came to a place cleared in the dense foliage, where we had a few shots at some white birds with large beaks, but were unsuccessful in bringing any to the ground.

A quarter of an hour's brisk walking over fallen trees brought us to the top of the mountain my friend was going to survey, having previously got permission from his Highness the Sultan of Quedah. About half an hour's hard climbing landed us on the top, when, panting and breathless, we stopped to look around us and admire the scenery—the Muda, like a peaceful dream, lying at our feet. From the banks of the Muda, on the British side, to Bukit Martajam (bukit means hill in Malay), about 15 miles off, the land is flat, and most of this is cultivated by the Malays in paddy or Rice, interspersed here and there with Cocoa-nut and Betel-nut trees. The kingdom of Quedah seems a succession of forests and hills. The Sultan testifies great intelligence, and wishes to introduce European improvements. On a later visit to Quedah I had occasion to notice beautiful roads and a dock where he is having some yachts built by a European engineer; this was at Allah Styah, the capital. The road from Allah Styah to Anah Bukit, the residence of the Sultan's third brother, Tunkkoo Yaccoop, is a fine broad road, past the Rajah's palace. The Tunkkoo's house (Tunkkoo means in Malay a prince) is embosomed in Orange groves; he is a young man of about twenty-seven or twenty-eight, and dresses like a European.

Having feasted our eyes on the surrounding country from our elevated position, we retraced our steps, and arrived at Samatoul about 3 o'clock, and getting on our ponies found ourselves in due course at our journey's end.

The two staple articles of Province Wellesley are Sugar and Rice. The Malays have almost a religious regard for the Rice plant, and the Malay of Province Wellesley would as soon think of parting with his family as of voluntarily disposing of it to another. Sugar has formed a most productive source of prosperity in the Straits, and there is no doubt it will continue to do so. The planters in the Province Wellesley are at present unable, from limited means, to extend its production as much as the capabilities of the settlement will admit of. In the native states Europeans are hindered from opening plantations from the fear of the lawless rule of the native petty rajahs, and the consequent peril to the lives of Europeans, as there are no police or any of the other concomitants of a civilised and well ordered country—the will of the rajah is law (whether it be equitable or wholly unjust) within his own dominions; but the maintenance of order is carried out with so loose a tenure that the native princes have a very uncertain rule. *A. T. Sibbald.*

Humane Vermin-Traps.—We (*Worcester Herald*) understand that a subscription has been raised for the purpose of awarding one, two, or three prizes for the best design of a humane trap, or painless method of taking rabbits and vermin, the prizes to be awarded at the meeting of the Bath and West of England Agricultural Society at Worcester next June.

Garden Operations.

KITCHEN GARDEN.

Seakale.—This plant, which by a certain process of cultivation yields such a delicacy each season, is eminently one of those which is easy to propagate, and requires but a plain course of treatment in cultivation, and, moreover, it can be increased with such marvellous rapidity that if a stock of it is once obtained it can easily be maintained or augmented to almost any extent, either by means of seedling plants or by the more popular method of cuttings made from the roots; these are procured at the time the plants are lifted for forcing or other purposes, when for the sake of convenience in planting, they are taken off. If the best of these are selected and made into cuttings every year, and are planted in addition to the stock which has been forced, an adequate supply of plants to meet the ordinary demands in this way may be secured without any trouble or difficulty; and if for special requirements more are needed, then recourse can be had to the smaller roots for the same purpose. Cuttings are formed out of the roots with the thickest pieces 3 or 4 inches long, and prepared simply by cutting off the top horizontally and the bottom obliquely to distinguish it. After the operation lay them in soil which is moderately dry until the cuts become callused over, when they will be fit for planting. This operation should not in our opinion be proceeded with before the middle of March; the subsequent treatment will consist of mere ordinary attention, as the keeping of the soil about the plants free from weeds, to stirring it occasionally, and to limiting the breaks which issue from the plants to single growths on each; and for the purpose of obtaining fine growth and large well formed crowns manure the ground every year, and apply a slight sprinkling of salt and soot over the whole surface when the leaves have performed their office and are fit to be cleared away altogether. The plants, by reason of the force of vitality and powers of endurance which they possess, will grow almost anywhere, though the conditions be most obdurate; but to make the plants reach the highest standard in cultivation, and prepared to produce Kale in like manner, a deep and rich soil is indispensable, and if this partakes of a gritty nature it comes nearest to the natural requirements of the plant in question. Where the soil is not congenial it can be materially ameliorated and assimilated by the introduction of roadside scrapings. This is a compost of the utmost value and importance wherever the land is tenacious and heavy, and can be bought in the vicinity of most places at about 1*s.* a load; its value in many ways for cultural purposes is also such that a stock of it should be always kept on hand in readiness for use. To raise plants from seed let it be sown in March, in drills 2 inches deep, very thinly, and 18 inches asunder. To make plants the cuttings should be dibbled in from 9 to 12 inches apart in the rows, and about 18 inches between them. In digging and planting ground simultaneously a perpendicular trench should be cut down as the work proceeds, and the sets be placed and firmly embedded against it, keeping the top of the plants even with the surface of the ground.

Forcing.—This differs materially at various places both in the way of means and application; it can, however, be successfully accomplished in almost any place where a temperature of from 50° to 60° can be assured; at many places the Mushroom-house is the place which is chosen, or corners in close proximity to heating appliances are sometimes utilised; while the old plan of having pots surrounded with leaves, &c., is not yet entirely out of date. We practise a modified form of the latter process, because we are quite convinced that it cannot, if forced, be obtained in that tender state which makes it so palatable except by the assistance of heat which is produced from properly sweetened fermenting materials. We, therefore, as early as possible in the autumn make a point of collecting and carting to a fixed place in the frame-ground a quantity of leaves, and mixing an equal portion of long stable manure with them; a square mass is then formed about 5 yards over and about 2 yards high. This are trodden down moderately. When the heat is generated, and the time to commence forcing has arrived, we form a central space in it by taking out the material and leaving, as it were, a wall 3 feet thick all round. A wood frame is then placed on the side walls of leaves which is covered with boards at the top, over which 2 or more feet of the stuff removed is replaced. An entrance is made on one side and a door fitted to it, in order to be able to attend to the necessary operations, and for a medium of ventilation should it be requisite; at other times it is covered in altogether. The sets are planted on the floor within this place in prepared light and rich soil, and introduced as occasion requires. By these means and this inexpensive contrivance we get an adequate supply of Seakale to meet our demands, of the best description and with but little trouble after the commencement.

To have a regular supply of Seakale in the best condition, which is when it is about 3 or 4 inches long, necessitates frequent attention to the introduction of plants for successional supplies, and unless this matter is properly seen to it will at times become attenuated, and not nearly so good in point of quality. Very late supplies of it are not so much in demand. If they are wanted for private requirements no plan with which I am acquainted excels the use of pots being placed over the crown, and these covered with some kind of stuff which will prevent air from penetrating inside them: in this case the pots should be on before growth commences. Any surplus plants which may not have been required should have the tops cut off, as by so doing better crowns for the subsequent year will be the result.

General Work.—No complaint can reasonably be made about the weather which has of late prevailed; it has been all that can be desired for the purpose of advancing those operations which are of moment at this particular season, such as sowing seeds, planting out crops, and for promoting the destruction of the myriads of weeds which are just now coming through the soil.

Frame Ground.—The different subjects in cold frames, as Lettuces, Radishes, Carrots, &c., will need careful airings during the existence of cold easterly winds. Stanstead Winter Cabbage Lettuce is an excellent kind for this sort of work. We at the present time have a frame full of it coming in. Wood's Early Frame Radish is undoubtedly the best in its way, taking all points into consideration. Parsley in frames should be closed altogether excepting when very sunny, because at this time the advantage of cultivating it in this way is visible. Newly pricked-out plants of Brussels Sprouts, Celery, &c., should be kept rather close until they have taken hold of the soil. *Geo. Thos. Miles, Wycombe Abbey.*

FRUIT HOUSES.

Peaches and Nectarines.—When the young shoots in the early house have been neatly heeled-in with a tie close to the base, and the superfluous growths entirely removed or pinched back to form spurs, the trees should be allowed to make free growth until they are sufficiently advanced for the general tying down to the trellis. If any of the shoots show an inclination to become too strong, pinch out the points before they have time to derange the balance of the trees. Proceed with the thinning of the fruit—an operation which must be regulated by the strength of the trees, always bearing in mind that a liberal percentage must be left for removal after the stoning period. Where size and quality are first considerations, one Peach to every square foot of trellis covered with foliage will be found a heavy crop, and any number taken in excess will affect the weight of each fruit and shorten the lives of the trees. Under the influence of winds and sunshine the trees will require good syringing with tepid soft water twice a day, and if not already done the surface-roots should be mulched with short manure and well watered—the first time with pure water, and afterwards with tepid liquid manure. Shut off fire-heat early on fine mornings, and at the same time take off night air. Aim at a steady minimum temperature of 60° with a rise of 10° to 15° by day until after the fruit is stoned, when the trees will stand sharper forcing if it is found necessary. Disbud the trees in succession-houses and pinch for spurs or entirely cut away all shoots that are not likely to be wanted for the support of the present or the production of the next year's crop of fruit. Commence at the extremities of the trees, and work gradually down to the base. Thin away all small or badly placed fruit as soon as the most promising for the crop can be decided upon. Syringe, water, and ventilate in accordance with directions for the early house, and allow the temperature to range a few degrees lower. The unfavourable condition of trees on open walls will point to the advisability of retarding late houses for giving the autumn supply. At the present time one of our late houses is in flower and another containing trained and pot trees will be ten days later: the latter, in the event of the summer proving warm and bright, will be placed in a sheltered position out-of-doors to ripen their fruit, and after it is gathered they will be taken back to the house to ripen their wood. For culture in late houses such free setting kinds as Bellegarde and Barrington should be planted. Royal George is a general favourite, but being subject to mildew the houses in which it is grown should be well ventilated and fitted with hot-water pipes. *W. Coleman, Eastnor.*

Orchard-house.

At the time of writing this the trees are fully in blossom, and the weather is very favourable for a good set—clear cold east winds, with the thermometer seldom falling below 35° at night. It is just as well to gently shake the trees every day about 1 o'clock in the afternoon. There is no need to apply any artificial heat under such circumstances as the present. In applying water to the roots of the trees see that none is spilled on the paths or borders, a dry atmosphere is best; there is such a thing as an over-dry state of the atmosphere, but this is not possible so early in the season as this is, and in an unheated house. Air the house freely when the sun is shining by day, even if it is cold. The trees in the house that has had artificial heat applied will now be growing freely, the young growths nearest the top of the trees should be stopped at the fourth or fifth leaf; if those lower down are weakly, this will throw more vigour into them. When trees are very vigorous it is not necessary to be so cautious: they may be stopped all over the trees at the same time. It is quite necessary to stop these growths, especially if they are very strong; such shoots if left to themselves would give very unsatisfactory results: when they are stopped three or four slender growths are produced, which will probably be studded with blossom-buds. The night temperature of the house may now be maintained at 60°. Syringe twice daily during fine weather, in the morning only should it be dull and wet. Where Strawberry plants on the shelves have their fruit set, it is a good plan to support it on twigs: the end to be inserted in the soil, and the fruit to hang over the clefts of the twigs. Apply weak manure-water at every alternate application. *J. Douglas, Loxford.*

The Cherry-house.

These trees are peculiarly liable to the attack of both black and green fly, and their presence is usually indicated by the curling up of the leaves. If either of these pests should abound on the trees here it should be attended to at once. The remedy which we use and recommend for the purpose of exterminating the pest, and for making the leaves of the trees as nauseous and obnoxious as possible, is Quassia chips. These are employed at the rate of 6 oz. to a gallon of cold water, which after it is made is allowed to stand about twenty-four hours; and in order that the liquid may pass through the syringe freely and without giving much trouble, the chips are enclosed in a bag and submerged. It should be applied by means of a fine syringe at any time when there is no danger of it being washed off, and the applications should be discontinued altogether when the fruit is about half grown until such time as it is gone, when, if necessary, it can be used again. Another pest, in the shape of a grub, will also be troublesome at times at this period, the whereabouts of which will be observed from the same cause as before noted. These can only be got rid of by means of hand-picking—a very tedious process, but nevertheless effectual. Growth in the trees and fruit likewise is now proceeding rapidly; ply the syringe over the trees every day in the morning, and again early in the afternoon on sunny days. A comparatively low night temperature is best. Ventilate the house at about 58°, and close it for the day at about 60°; under genial conditions open the front sashes, and let the full force of the air operate on the trees. To help to swell up the Cherries satisfactorily a little stimulating agent may be applied; we always use guano in a diluted form. All growths excepting the terminal ones and those placed where fresh ones are wanted should be pinched-in to about the sixth joint, others should be heeled-in at the base and tied-in when they require it. *G. T. Miles, Wycombe Abbey.*

PLANT HOUSES.

Orchids.—Under the influence of the brilliant weather we are now getting, these plants will be fast recovering from the effects of the late dreadful winter. One of the very best signs is the development of new roots, after which naturally follows a green healthy look in the foliage. So wretched was the weather last autumn that such Cattleyas as C. Trianæ failed to make anything like their usual number of roots from the flowering bulb; the consequence being that the flowers of such have been wanting both in quality and quantity. I now see with pleasure that the said bulbs are pushing many roots, which promise well for robust growth. Such plants might, if they need more root-room, be safely potted, as the young roots will speedily establish themselves in the fresh compost. The following plants, which are now breaking and whose young breaks emit many young roots, should also be top-dressed or potted:—Cattleya exoniensis, C. labiata (autumn flowering), C. Leopoldi, C. amethystoglossa, C. Harrisoni, Lælia elegans, and its many varieties. The compost for these should consist of two-thirds of the best fibry peat and one third of sphagnum. Keep the plants well elevated and use enough stakes to hold them firmly in their places. Pot moderately firm, but avoid that hardness which prevents the water from passing rapidly away. The pots for these plants should be at least two-thirds full of drainage, secured by a layer of fresh sphagnum. After these plants have been potted, keep them rather dry at the roots in a moist, shady part of the Cattleya-house. The Australian Dendrobium superbiens will now be starting into growth, and will also require potting. In this respect and in all others, with the exception of water, it may be treated the same as the Cattleyas. Water must be given to it liberally and frequently, or sound sturdy growth need not be expected. D. speciosum and D. Hillii, the former of which will be now flowering, must be generously treated till they have finished up their growth. When resting through the winter they both require to be kept cool and dry, but whilst growing they delight in a hot, airy, moist atmosphere, with abundance of light. Many of the following Dendrobiums will be passing out of flower:—D. nobile, D. Ainsworthii, D. Wardianum, D. crassinode, D. Boxalli, D. primulinum, D. cucullatum, D. Findleyanum, D. cretaceum, D. moniliforme, D. lituiflorum, and D. capillipes. Where plants of the above species want more root-room, let them be at once seen to, and afterwards placed in their growing quarters. Either will grow perfectly well suspended in a teak basket near to the roof of the Dendrobium-house. An inch or two in thickness of fibry peat and sphagnum will suit their roots. For the next few weeks keep them rather on the dry side, but so soon as the young breaks send forth roots water more frequently. Such strong, erect growers as nobile do thoroughly well in pots provided they have a well-drained, open compost to root in. Avoid getting the young breaks filled up with water, and sponge the foliage often enough to keep it clear from red-spider or thrips. The raceme flowering section of Dendrobiums will now be pushing out their flower-buds, and in order to properly develope such the plants must receive more water at the roots, and a warmer atmosphere than their resting quarters. This section contains such fine Orchids as D. thyrsiflorum, D. densiflorum, D. Schröderi, D. Griffithianum, D. fimbriatum, D. Farmeri, D. suavissimum, &c. The tall-growing D. moschatum and D. Dalhousianum are also of this section, but as they flower later they may still be kept for a week or two on the resting system. Whatever is needed by these plants, in the way of pruning and staking, should be done at once; as it is difficult to do so without injury when the flower-spikes are far advanced. In pruning, cut nothing away that is not dead, for the bulbs of these Dendrobiums continue to throw flower for some years, even if they are leafless. Now that the hours of daylight are increasing the temperature in every division should be allowed to rise a few degrees. During the hours of darkness the cool-house should not sink for any length of time below 55°. Through the day ventilate freely whenever the external air is rising above 40°, and shade if the sun is powerful enough to carry the inside temperature above 65°. On dull cold days maintain a day temperature of 60°. The night temperature of the Cattleya, Mexican, and intermediate houses should not fall below 60°, and the day temperature must rise from 5° to 10° above this. Ventilate by the bottom ventilators when the external air is rising above 45°: they should be wide open at 55°. The East Indian-house temperatures should be, night, 67°, day, 73°, as maintained by fire-heat; a rise of several degrees more by sun-heat will do good. Ventilate through the middle hours of the day only, say from 11 till 3 o'clock. Give the Dendrobium-house a trifle less heat and more air. In all these houses shade only when the sun is clear and strong. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

Edging Plants.—About the first week in April, if the weather is favourable, all hardy edging plants of flower-beds and borders should be planted. Amongst some of the best I may mention:—Cerastium tomentosum, Veronica incana, Antennaria tomentosa, A. plantaginea, Santolina incana, S. lavandulæfolia, Dactylis glomerata elegantissima, Cineraria maritima, Sedum glaucum, Stellaria graminea aurea, Thymus aureus variegatus, Achillea aureum, Sedum acre, Sempervivum californicum (calcareum), S. tectorum, S. montanum, &c.

Plants for Massing.—Plants suitable for planting in groups or massing in single beds will be found amongst the following:—Brugmansia Knightii, Cannas of sorts, Cassia corymbosa, Cineraria platanifolia, C. acerifolia, Erythrinas of sorts, Eucalyptus globosus, Ferdinanda eminens, Ficus elastica, Grevillea robusta, Melianthus major, Monstera deliciosa, Nerium giganteum, Polymnia grandis, Sonchus laciniatus, S. pinnatus, Ricinus of sorts, Solanum macrophyllum, S. verbascifolium, S. Warscewiczii, S. robustum, S. marginatum, Sparmannia africana, Verbesina gigantea, Wigandia caracasana, and W. Vigieri.

Calceolarias.—A temporary frame should now be made for the reception of the autumn-struck Calceolarias, with 3 inches of well-decayed stable litter at bottom, and on this 4 inches of loam and leaf-mould. By the time the Calceolarias are required for planting in their summer quarters the litter will be found to be one mass of roots. *William Gibson, Royal Hospital Gardens, Chelsea, S.W.*

APPOINTMENTS FOR THE ENSUING WEEK.

Wednesday, Mar. 31	Sale of the whole of the Specimen, Exhibition, and other Plants, at E. Pilgrim's, Esq., Pittville, Cheltenham, by Protheroe & Morris (two days).
Thursday, April 1	Sale of Roses, Shrubs, Carnations, Picotees, and other Plants, at the City Rooms, 38 and 39, Gracechurch Street, E.C., by Protheroe & Morris.

THE question of the applicability of the Electric Light for Forcing Purposes may be considered as solved. To some gardeners it may seem a matter of little consequence whether or not the electric beam has the same power as the solar ray of so acting on the green matter of plants as to cause the breaking up of carbonic acid into its constituents and the evolution of the oxygen. That they would look on as a matter of scientific interest of little importance to them. Others better informed in the principles of their craft would not fail to recognise the vast importance of the matter. All alike would like to see practical demonstration of the potency of the light. It is all very well to talk of exhalation of oxygen, formation of starch, of sugar, of colouring matter, of oil, and the numerous substances met with in the tissues of a growing plant. It is interesting to learn how by interchange of gases, evaporation of water, and so forth, one substance is gradually converted into another, and so forth, as the plant is matured. But it is far more to the purpose, in the opinion of the practical gardener, to show the concrete result of all this in the shape of ripe fruits or richly coloured flowers. This has now been done.

At the meeting of the Royal Society on the 18th inst. Dr. Siemens showed two pots of Strawberries which had been treated in all ways alike, save in the circumstance that one had been submitted to the electric light for fourteen nights, while the other had not. The difference between the two plants was very marked. The plant which had been constantly exposed to light—solar by day, electric by night—had finer, more vigorous foliage of a deeper green than that which was grown in the ordinary way. The difference in the fruit was even more remarkable. The fruit on the plant subjected to the electric light was a week, or it might be ten days, in advance of the other. Of sixteen berries that we specially noted all but two were coloured, and most were ripe, only one or two were immature. On the plant which had not been subjected to the electric light we counted specially, for comparison sake, fourteen berries—one or two of which showed faint indications of beginning to colour, while the rest were all green, and as usual of various sizes; so that the electric light seemed to have had the effect, not only of hastening the ripening, but of ripening all the berries on a single truss nearly at the same time. If this result be obtained constantly, we need not say what a boon it would be to gardeners. But at present the experiments have been conducted on a comparatively small scale, and much remains to be done before the light can be generally employed; still, we look upon it as a certainty that it will be used extensively in the future, and that with very great gain in point of time especially, and time in forcing means money.

Various specimens were submitted to the several committees of the Royal Horticultural Society by Mr. Buchanan, Dr. Siemens' gardener, on the 23d; a notice of which will be found under the head of the "Scientific Committee" on another page of this issue.

Two questions remain for consideration—that of cost and that of rest. By an unfortunate oversight in our last number the word shillings at p. 363 was printed for pence. The actual cost at present is estimated at 4*d.* to 6*d.* per hour for a light equal to that of 1400 candles. Taking this as a rough estimate to be afterwards modified and probably reduced the gardener must bear in mind that his coal bill will be considerably reduced, not only because less time will be required for forcing, but because the light itself gives out a very considerable amount of heat. Again, where water-power can be employed in place of steam-power the cost would be very materially reduced.

Another question is that of rest. Practical gardeners and physiologists are alike of opinion that a regularly recurring period of rest is as essential to the welfare of the plant as it is to that of an animal. And the objection has been already raised that by the continuous exposure to light the plants will ultimately be killed. They will live like prodigals and spendthrifts, and share their fate in untimely death. But this argument is worth very little from the point of view of practical cultivation. The plants in high northern latitudes exposed to some weeks of continuous light live rapidly, produce flowers of surpassing brilliancy and perfume, and then hibernate till the next season. Do not gardeners heat their forced plants in exactly the same way? When their object is attained they no longer force, and the plant is allowed to go to rest. It does not follow, as the objectors appear to think, that because it may be desirable to use the electric light for a few days, or at most a few weeks, it will be necessary to use it always. Even if it were so, what is there to prevent a constant succession of recruits being grown on for forcing purposes to supply the places of those whose life may be spent in the process. As it is, few find it worth while to force their pot Vines a second season. The objection on the score of want of rest may then be dismissed as quite without force. We force the plant, not for its welfare, but for our use, and we take care to grow a sufficiency to compensate for any loss there may be.

—— Dendrobium lituiflorum.—A very remarkable specimen of this lovely Indian Dendrobe was shown the other day at Clifton, on the occasion of the Bristol Spring Show Society's exhibition. It was imported twelve months ago, is now growing in a 7-inch pot, and bore over 170 of its bright, fresh flowers—an admirable example of what can be done in a little time by good management with healthy imported plants. Great favourite as Dendrobium nobile has always been for general purposes, it is not unlikely that D. lituiflorum will become even more prized, on account of its extremely free-flowering habit and charmingly tinted flowers, which form a dense mass of delicate colour. We should add that the exhibitor was Mr. Perry, gr. to H. C. Miles, Esq.

—— Presentation to Mr. Bannister.—After the dinner on the 17th inst., at which the committee of the Bristol Spring Show and Chrysanthemum Society entertained their friends and the judges, an incident occurred which gave evidence of the manner in which the committee appreciate the services rendered by their Chairman, Mr. Bannister, whom they presented with a handsome inlaid writing-desk, bearing an inscription which expresses their high estimation of the manner in which he has laboured for the welfare of the Society. When those who take an active part in the work incidental to the management of a Society like this mark their approval of those of their number who devote their time and attention to the object in view, it is the surest evidence of continued success.

—— The Vegetative Organs of Orchidaceæ.—Dr. Pfitzer, the Professor of Botany in the University of Heidelberg, has arrived at Kew to pursue in the Jodrell Laboratory a research on the vegetative organs of Orchidaceæ. During the past winter the physiological room in the laboratory has been employed for Mr. Page's course of lectures on elementary physics and chemistry, which have been well attended by the young gardeners and others.

—— Dr. Schæffer.—We greatly regret to hear of the death, at the early age of thirty-five, of Dr. Schæffer, the able and courteous Director of the beautiful Botanic Garden at Buitenzorg, Java. Dr. Schæffer's death will be felt as a very serious loss to botany and horticulture.

—— The Central Horticultural Society of France.—The annual show of the Société Centrale d'Horticulture de France will take place from June 5 to June 8 next. It will be held as usual in the Palais de l'Industrie, Champs Elysées, and in conjunction with the exhibition of pictures, sculpture, &c.

—— Bath and West of England Society.—This Society will meet this year at Worcester, and there is a good prospect of the horticultural department being well looked after by the indefatigable steward of that department, the Hon. and Rev. J. T. Boscawen. Two cups will be given, one for the best collection of Orchids, and another for the best specimen Orchid.

—— The Sago Palm.—The museum of the Royal Gardens, Kew, has obtained in exchange from the Botanical Department, British Museum, a fine stem of the Sago Palm (Metroxylon læve). It has been erected in the Timber Museum (No. 3).

—— Epping Forest: Election of Verderers.—At a meeting of the Common Council, held on the 18th inst., the Recorder (Sir T. Chambers, M.P.) reported the result of the election of verderers of Epping Forest, pursuant to the Act of 1878. He stated that for the northern forest parishes, which returned two verderers, there were four candidates, and as Sir T. F. Buxton and Mr. E. N. Buxton headed the poll, they were therefore elected. For the southern parishes the two retiring verderers — Mr. Andrew Johnston and Sir Antonio Brady — were re-elected. The verderers hold office for seven years from March 25.

—— Forcing by the Electric Light.—The following neat epigram on the use of the electric light for forcing purposes appeared in the pages of *Nature* last week:—

> "Quis veterum vidit plantas sine sole virentes
> Germinat en semen Siemensis lumine claro."

—— Seed Potatos for Ireland — Messrs. James Carter & Co., of High Holborn, have received an order to supply the Duchess of Marlborough's Irish Famine Fund with 1000 tons of Champion Potatos. Some idea of the magnitude of this order may be gained from the fact that it will amount to about 13,000 sacks.

—— The Relief of Irish Farmers. — *The Irish Farmers' Gazette*, in urging the importance of not neglecting green crop cultivation under present circumstances, remarks:—"A better use could not be made this year of some of the many thousands of pounds sterling that are now, and must be, distributed amongst the bankrupt small farmers in the distressed districts than in purchasing seeds of Parsnip, Swedes, Mangels, and Dale's Hybrid Turnips: they all know well how to cultivate them. £1000 worth of such seeds would go farther than many thousands worth of Champion or other Potatos, which, after all, by the mysterious decrees of Providence, may be smitten in one night. We say in one night. Why? Because before our eyes a large sowing of Potato seed, saved from the Potato apple or plum, as some call it, in 1845, was destroyed in one night, though well protected; no near relative to or congener of the common Potato is safe from the Potato fungus, Peronospora infestans. In 1848 and 1849 we saw Solanum suffruticosum seriously injured in leaf, stem, and root in the Trinity College Botanic Gardens by the same identical disease as that affecting the common Potato. Unfortunately, the farming classes gradually put faith in the Potato, year by year increasing the area under crop, notwithstanding the serious warnings received; for, although the disease has never

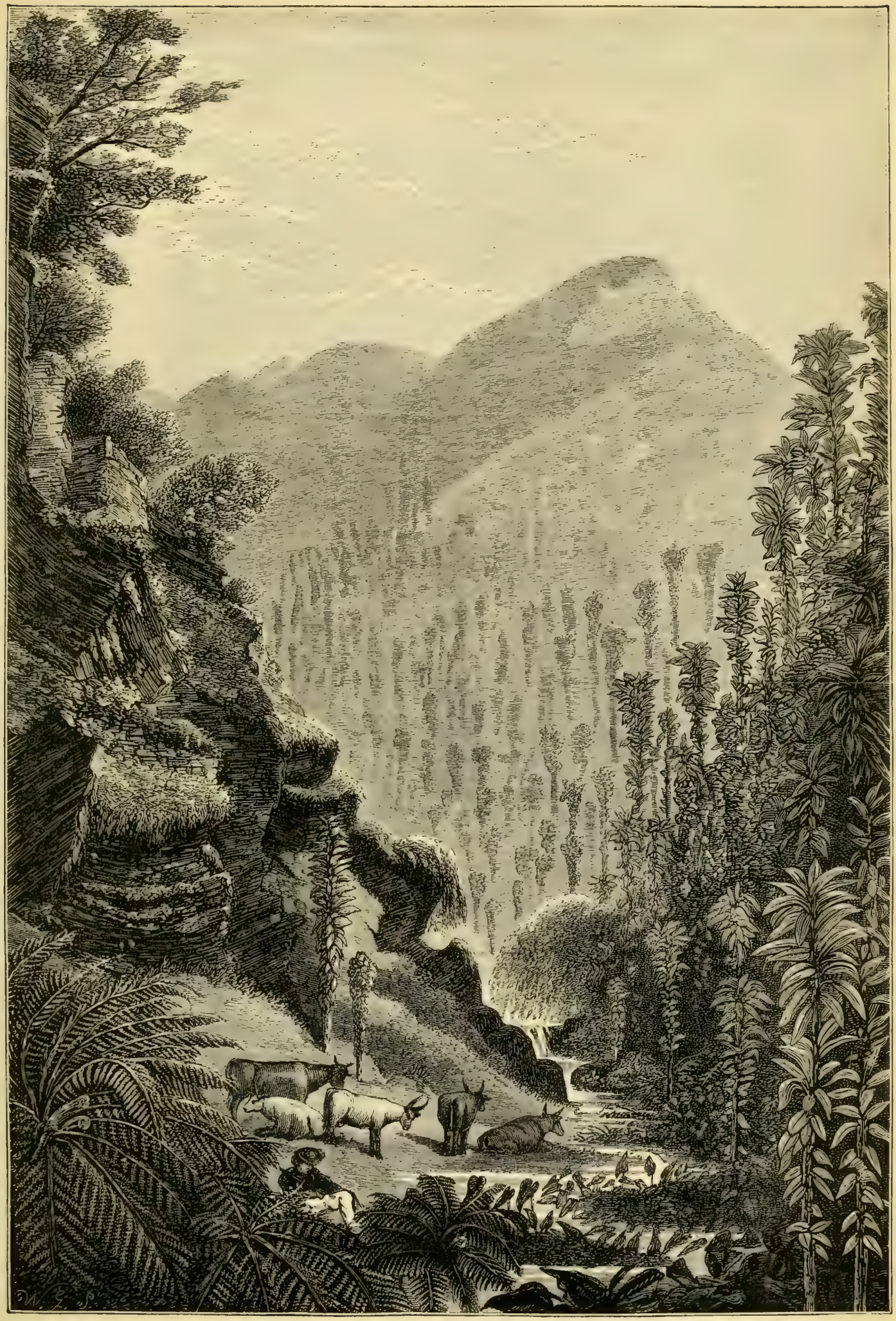

Fig. 71.—Tree Ferns and Shee-cabbage on Halley's Mount, St. Helena. (see p. 396.)

ceased to afflict the crop, the produce was so large that they said they could well afford the loss of 25 per cent., and so on, till a general destruction has fallen on some of the best varieties, except the Champion, although it has not escaped scatheless, so that it will be more than madness to depend wholly on that or any other variety till it is the pleasure of the Almighty Ruler of all to destroy the destroyer—the mysterious, the subtle, insidious Peronospora infestans."

—— Sale of the late Mr. Serjeant Cox's Orchids.—On the 17th, 18th, and 19th inst. the collection of Orchids formed by the late Mr. Serjeant Cox, at Moat Mount, Mill Hill, near Hendon, was brought to the hammer at Stevens' Rooms, and realised £1996 16*s.* 6*d.* There were 1240 lots, and the following are some of the prices obtained:—Cypripedium Harrisianum, 120*s.*; Masdevallia ignea, M. peristeria, and one other, 200*s.*; Cattleya Trianæ, 180*s.*; Vanda planelabris, 100*s.*; Phalænopsis Schilleriana, 100*s.*; Angræcum Ellisii and Phalænopsis rosea, 110*s.*; Odontoglossum vexillarium, 273*s.* and 136*s.* 6*d.*; Odontoglossum Hallii and one other, 120*s.*; O. triumphans, 170*s.*; O. Andersonianum, 441*s.*; O. pulchellum majus, 150*s.*; O. citrosmum roseum, 210*s.*; Masdevallia ignea, 210*s.*; M. Lindeni, 220*s.*; M. tovarensis, 252*s.*; Cypripedium Stonei, 190*s.*; and Ada aurantiaca, 210*s.*

—— The General Horticultural Company (John Wills), Limited.—Such is the title of a new company which has been established for the purpose of purchasing and developing the business of Mr. Wills as a nurseryman and floral decorator. The company, which is to be conducted on co-operative principles, starts with an imposing array of lady patrons, directors, &c., and has taken extensive premises in Regent Street. In addition to the ordinary features of similar businesses, it is proposed that shareholders should dispose of the surplus produce of their gardens through the agency of the company, and so obviate the necessity for employing a middleman as salesman. It is proposed to have in the Regent Street premises a continuous display throughout the London season of floral and table decorations laid out in the newest and most *recherché* styles, and the lady patrons will be invited to inspect them and offer suggestions.

—— Why Trug?—Mr. Shirley Hibberd writes "When I sent the note on the useful Sussex basket (p. 373) I asked myself, Why Trug? And the only answer I could discover was, because it rhymes with thug, bug, rug, and mug. The Sussex Trugg (according to Nathan Bailey, who is not always to be trusted) covers a milk-pail, a hod of mortar, and two bushels of anything. In the larger, and therefore best local sense, trug is an obsolete and ugly word derivable from 'trieg-en,' to deceive. From this same root we have truck, the equivalent of dray and drag, a thing intended for carriage of goods, whether with or without wheels; for some carriages are sleighs, and run upon runners. And the modification gives us track, the route of the carriage whatever it may be, whether bridle-path, wheel-rut, or railway. But track may apply to the goods carried, and the mode of carriage; hence we speak of a British track-way, without any suspicion of impropriety. The direct offspring of 'trahere' may be left alone; they were tracks, tracts, and traces; they never become trucks, although trucks may become tracks. We must not truckle to Sussex, or any other county: if it cannot click the *k*, but must soften it to *g*, the School Board must be brought to bear upon it. If we are to say trug, then let us say Zomerzet, Yarkshur, and Brummagum. We, of London, are the salt of the earth, and salt enough to season everybody, and in London trug is a foreign word, and must be scouted. A truck basket and a truckle basket are things we can identify as connected with carriage. In the same way we know a truck or truckle bed and a truck system, where goods are carried in payment of wages instead of money. In *Hudibras* (i., 3) we have—

"'He that is beaten may be said
To lie in Honour's truckle-bed.'"

—— New Azaleas.—We have just seen some blooms of seedling Azaleas raised by Mr. William Carmichael. In the case of some of them the blood of his new hybrids from A. amœna has been used, and the result is enlarged double flowers, having that compactness of form peculiar to the species employed in the first instance. One of them, a purple-coloured variety, promises to be a great acquisition.

—— Hardiness of Primula cortusoides amœna.—The Rev. C. Wolley Dod writes:—"I can confirm what Mr. Harpur Crewe says about the hardiness of this Primrose, as I planted several plants of the white variety last spring on a rockery in a cold and damp part of Cheshire, and find them all coming up exceedingly strong. This agreeably surprised me, as I generally find white varieties of flowers are more tender than the species. For example, Erica mediterranea alba, and Menziesia polifolia alba, have both been killed in the last two winters, whilst the ordinary form has been quite unhurt. Primula Munroi, with white flowers, which survived the winter of 1878 on my rockery, has disappeared now."

—— Camellias Out-of-doors.—In different parts of England, North as well as South and West, there are frequently to be met with a few examples of Camellias planted out-of-doors, and which have come out unscathed through the severest winters, so as to establish their claim to being hardy. Yet so few people see them thus fully exposed, that their power of resisting a low temperature is not thoroughly known. At Ashton Court, Bristol, there is a large vigorous bush, some 10 feet high, that has been long growing out in a bed amongst Rhododendrons and other shrubs in the grounds, where there is nothing to shelter it in any way. We recently saw the plant, and there is not a leaf or a flower-bud on it that shows the slightest effects of the winter, although there has been 24° of frost registered. Bays growing near it have been much cut, and we think the Camellia is now fully proved to be a hardy plant. The Ashton Court example is a red variety, the name not known. Aralia Sieboldii growing under the same conditions is not injured; Phormium tenax, somewhat seared, but not so as to do permanent injury.

—— New Hyacinths.—The exhibition of Hyacinths at South Kensington on Tuesday was as extensive a one as ever before seen in London, and though some good flowers were shown the general lack of massiveness and finish in the spikes justified the predictions of those who were of opinion it would prove an indifferent Hyacinth year. The wet spring and summer of 1879 appear to have exercised a baneful influence on the Hyacinth crop in Holland, as it did on garden crops in our own country. This lack of quality was perceptible especially in the case of the red Hyacinths, and more particularly the high-coloured varieties, which are no doubt among the most delicate of all. Of the new varieties Cavaignac is a good addition to the large-belled single blue class, the flowers are very large, solid, smooth, and stout, colour pale greyish-blue, with a distinct flame of blue down the centre of each segment, and the reverse of the bells azure-blue. It is worthy of remark that a new Hyacinth appearing at this distance of time should bear the name of the stout old Republican General of thirty years ago, but it cannot be a sport from the single red variety of that name, as some suppose, unless it has caused a striking change of character in the size and shape of the bells as well as the colour. Electra is a very delicate pale grey-blue single variety, really pale lilac instead of blue, with a slight blue reverse, spike large, full, and symmetrical, and having all the promise of a fine exhibition variety. Queen of Yellows surpasses its consort, King of Yellows, in that it has a deeper tone of colour, and the bells are clear and destitute of the green tips to the segments that, in its young state at least, disfigures the latter. Leopold II. is a single blue Hyacinth, well worthy of notice; one might term it a pale blue Argus, but with dashes of lilac on the surface of the segments: it forms a good and symmetrical spike. Charles Dickens, S.R., is a very novel and distinct variety: and while fleshy pink is the prevailing tint, there is a mixture of buff with it; the bells are large and finely formed, and there is the promise of a good spike. Grand Blue, single blue, has a deep and well defined stripe of deep blue on the pale grey-lilac segments; it also is a fine and distinct variety. Masterpiece, a rich shaded claret-coloured flower of the mauve class, as it is termed, has a fine and full spike of handsome segments.

—— The Royal Horticultural Society's Journal.—The library of the Royal Gardens, Kew (and we may add other libraries), is in want of the first number of the fifth volume of the present series of the *Journal of the Royal Horticultural Society*, to complete its set. As the number is out of print, it is hoped that some one who possesses the number may be disposed to send it to the Editors for presentation to Kew.

—— Thornton Heath Horticultural Society.—The fourth annual exhibition of this Society will be held in the grounds of K. T. Oelrichs, Esq., Elm House, Thornton Heath, on Wednesday, August 18.

—— West of England Rose Show.—This exhibition is fixed to be held at Hereford on Wednesday, July 7.

—— Early Tulips.—We looked in vain for any appearance of novelty among these, except a pure white self-coloured form of Joost van Vondel, with flowers remarkable for their depth of petal and purity of colour. The original flower is a rosy-crimson self, with pencillings of white sometimes bordering to a flame. Mr. Cutbush states the sport is fixed, and this characteristic makes it a valuable addition to the white self Tulip. Chrysolora is still the best yellow, deep and clear, and a fine built flower: and Vermilon Brillant, a vivid crimson self. The Tulips were much below their usual fine proportions, as if they, in common with the Hyacinths, had suffered from the wet season.

—— Seedling Amaryllis.—The splendid group of Amaryllis (Hippeastrums) staged by Messrs. Veitch & Sons on Tuesday last were illustrative of what might be termed three different types of this rich and striking stove plant. In the tallest and palest coloured flowers were seen the influence of the blood of the old Dutch varieties, and one or two imported types were singularly fine and striking. In others, Ackermanni pulcherrima and aulica had apparently affected the pedigree, and their rich deep colour bore testimony to the presence of their blood. In a very few flowers—but they were singular because of their distinctness—the blood of pardinum was present; the chequered surface was in pleasing contrast with other forms. Undoubtedly the fine Peruvian Leopoldi had given much of its character to a large number of the seedlings; indeed, it has been used for two purposes—to give improved form to the flowers, and dwarfness to the character of the plant. That these characteristics had been secured to a large extent was plainly apparent, and Messrs. Veitch & Sons are attempting something more—they are essaying to impart to these hybrids of Leopoldi greater depth of colour, that shall in great measure, if not wholly, cover the surface of the segments; and they are also endeavouring, not without evidence of accomplishment, to produce more than the usual twin flowers usual to the stout scape. It is also worthy of notice that some of these seedlings had flowered in the short space of nineteen months from the seed-pans, the average time required to produce flowering plants being from twenty-eight to thirty months.

—— Dirca palustris, the Leather-wood of Virginia, is by no means unattractive at the present time in the Cambridge Botanic Garden. It is somewhat a rare shrub—at least of the size here represented, and quite distinct in appearance. The outline formed by its branches is very nearly globular, and the twigs are so numerous as to make it very dense so far as it extends. On trying to pluck a branch the popular name by which it is known is found to be very appropriate, though strictly speaking the word bark should be used instead of wood, the property of toughness belonging really to the bark—a frequent circumstance in the Thymeleæ. This shrub is now without a leaf, but being studded all over with drooping yellow flowers, becomes a subject for attention.

—— Gardening Appointments.—We hear that Sir Richard Wallace, Bart., has engaged Mr. Bethell, formerly Gardener o W.tH. Wakefield, Esq., Sedgwick House, Kendal, to take charge of his fine gardens at Sudbourn Hall, Suffolk. Mr. Bethell should here find full scope for the exercise of his well tried abilities.

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Home Correspondence.

The Influence of the Electric Light upon Vegetation.—In the *Gardeners' Chronicle* of the 13th inst., in the article upon the electric light applied to horticulture, the remark is made that "It was unfortunate in this respect that a point was made of the unfolding of Tulip flowers when exposed to the lamp, the unfolding being due rather to the heat than the light." This variety positively refused to open in a temperature of 72°, but when brought under the influence of the lamp in a temperature of 70° it opened in less than an hour, and at the meeting of the Royal Society the pot containing the Tulips stood in a recess in the wall, and if I am not mistaken was directly over a heating apparatus, probably a coil of pipes. It was thickly covered with paper to exclude the light until it was wanted. When I undid the paper the flowers were closely shut up, and I am quite certain that the temperature was as high where it was placed as when placed upon the table under the lamp, where it opened in about forty minutes. At the lecture before the Royal Institution on the 12th, the pot of Tulips was placed at first upon the table again covered with paper, when uncovered it was in about the same condition as regards opening as at the Royal Society, and it was soon evident that it began to feel the influence of the light, but as the lamp was not so powerful and the time of exposure less, it did not open so much. Since then, I have repeated the experiment three times with the same result. Some varieties of Tulips, like all varieties of Crocus, may open in the dark when exposed to sufficient heat, but the variety in question would not do so. I am aware that vitality might upset these conclusions, but in the five above experiments such was not the case. If I may be allowed to offer an opinion on the application of electric light to horticultural operations, I would very decidedly say the advantages are very great. After seeing the light here in the conservatory in November, I became convinced that for forcing purposes here was a powerful agent ready to be turned to account. The vividness and correctness with which the various colours of flowers were brought out was a proof to me that the electric and solar rays were at least in some respects similar, and all I have seen in the various experiments carried out here goes to strengthen these convictions; and granting that electric and solar rays are alike, it will not require a very great stretch of the gardener's imagination to believe that a friend has made his appearance. In the month of December when a gardener looks at his languishing Cucumbers he knows he is perfectly helpless; he looks up to the impenetrable clouds, and his heart aches: but there are better times in store for him. Turn the engine on, and the new sun shines, and shines just where it is required, and its power and intensity is in the operator's hands. I may be thought sanguine, and I know that when a man is mounted on a hobby-horse he does not exactly see how the animal lifts his hind legs, but still I am satisfied with his action, and feel sure that had we begun in time I should have been able to exhibit ripe Melons at the Horticultural Society on Tuesday last. The progress they have made during the short time the light has been applied is very remarkable, and its removal to a distance from the first planted ones is also evident. The leaves made since are wanting in that dark green colour which is so desirable, but of course every day now lessens the comparative results, and especially so in these unusually bright days. It is not many gardeners who are fortunate enough to have a scientific employer, but I believe there are many in the country who would gladly avail themselves of scientific agency to assist them in their various duties. Few have it in their power to obtain much scientific knowledge, and, generally speaking, would the word "scientific" enhance the gardener's written character? I doubt it, and have had reason to do so. I once went after a situation; while naming the places I had lived in as assistant gardener the gentleman gave me attention, but when I said I had lived two years (and was still there) in the Royal Botanic Gardens, Regent's Park, under Mr. Marnock, he threw up both hands, and exclaimed, "Oh, no, no! I want a man who can grow Grapes, Pines, Melons, Cucumbers, &c. Good morning." I turned away sadly, and began to ruminate on the possibility of my having made a mistake and was wasting time, but I got above the thought, and as long as I live shall I remember with thankfulness that I had the opportunity of living in the said gardens and under the said gentleman. Since writing the above the *Gardeners' Chronicle* of the 20th has come to hand, and I note, as arranged, that two pots of Strawberries were to be exhibited before the Royal Society by Dr. Siemens on the 18th; but if they have either sweetness or flavour it will be a decided proof of not only what electric light can do, but also of the short space of time it can do it in. These Strawberries were not under the light more than 137 hours, and although coloured they could not possibly be ripe. I hope I shall be found wrong, but I shall venture the opinion that they have been found wanting in flavour simply because they have not had sufficient time. *D. Buchanan, Sherwood Park.*

Vale Royal.—This is the name of the estate upon which Lord Delamere resides when in Cheshire, and is about 3 miles from Northwich and 12 miles from Manchester. I recently paid a visit to the gardens, and was kindly conducted over the grounds and through the range of glasshouses by Mr. Milne, the head gardener. In the course of my visit I observed a few things which I think deserve special mention; and in the first place I would remark that it is often possible to produce the most charming and effective results from inexpensive plants. This was illustrated in a very marked manner on the occasion of my visit to the above place, where I saw, in a span-roofed house about 25 yards long by 8 yards wide, a picture I shall never forget. The elements which made this picture were as follows:—Begonia manicata, B. nitida, B. Ingrami, and Adiantum cuneatum. This house was filled with these four kinds of plants, artistically arranged—the Begonias in excellent bloom, and the Adiantums judiciously intermixed with the flowers. Anything more beautiful it has never been my lot to see. Primulas, Cinerarias, and Mignonette are grown here in large quantities, and are marvels of culture. Peaches, Nectarines, and other fruits under glass, gave promise of an abundant crop, and as an example of good "all round gardening," Vale Royal will bear favourable comparison with any establishment it has ever been my privilege to see. *B. F.*

Pulmonarias.—Few hardy plants are more effective in early spring, especially on strong cold soils like mine, than Pulmonarias. I have tried for two or three years by begging and buying to obtain all the sorts in cultivation. Besides those which belong to the genus Mertensia, I find the following eleven names in catalogues:—P. angustifolia, azurea, caucasica, grandiflora, mollis, mollis alba, officinalis, rubra, saccharata, sibirica, tuberosa. Excluding the white variety, which seems to belong to officinalis, I had reduced the other ten to four, namely—1, the common old Jerusalem Cowslip, usually known as officinalis; 2, a more compact growing species with smaller spotted leaves, and bright azure-blue (never red) flowers. No. 1 spreads its root-stock underground, and the shoots all grow upright. No. 2 keeps a single root-stock, and the shoots slope away from it. Three or four plants of this were sent to me in a letter from the neighbourhood of Poole, in Dorsetshire, where it is common, growing wild. They all agree in their characteristics, and I have always called them angustifolia. No. 3 has larger leaves, with more patchy and conspicuous spots than officinalis; flowers larger, generally red, occasionally blue; bought as sibirica, but it is sold also as caucasica and rubra. No. 4 resembles No. 2 in habit of growth, but has much narrower leaves, and entirely without spots; the flowers are dark purple and dark red. I sent flowers of Nos. 3 and 4 to an eminent authority to be named, and they were named officinalis and angustifolia respectively. I do not question the correctness of this, but it in fact reduces all my Pulmonarias to one, for in Bentham's *British Flora* (p. 577) we are told that "in many parts of the Continent the two forms (officinalis and angustifolia) pass very gradually one into the other," and are, therefore, one species. If I knew where to obtain any distinct varieties or species I would gladly either buy or give plants in exchange for them, but I have worked up all the herbaceous catalogues I can get. *C. Wolley Dod, Grange-over-Sands, Lancashire.*

The Effect of the Past Winter on Hardy Plants.—In compliance with your invitation to your readers in a "leader" in last week's *Gardeners' Chronicle* to place on record the effects of the past winter on hardy plants and vegetables, I have carefully taken note of those plants and shrubs that have suffered most here. I do not propose to say anything about vegetables for the present. Before I proceed to offer a few brief remarks upon the plants that seem to have suffered most it will perhaps be as well to state that all kinds of hardy plants and Conifers grow luxuriantly in this climate. The soil varies very much, from a rich alluvial loam to a poorer soil, resting on a bed of gravel. The climate in ordinary seasons is so favourable to plant-growth that the choicest and most tender Conifers grow to an amazing size in a few years, the only drawback being that of excessive humidity in wet seasons, which renders all kinds of hardy plants, Roses, and fruit trees more susceptible to injury from frost. The extraordinary vigour, however, of Conifers and other ornamental trees and shrubs enables them to weather an occasional storm when plants of less robust health would succumb to its influence. It is surprising how little trees and shrubs have suffered here compared with the duration and severity of the past winter. There is just one point that should be made clear to a certain class of your readers, and that is, that plants that are either killed outright or are so severely injured as to render their recovery hopeless should not be discarded altogether unless the circumstances connected with their demise are so clear that there would be little prospect of their ever succeeding if planted again. Two consecutive winters such as 1878 and 1879 are, so far as I have been able to gather, of very rare occurrence, and therefore many plants that would have outlived our severe winter are killed altogether by the second chiefly in consequence of want of light and sunshine to ripen the wood to a degree that would render it weather-proof. Camellias planted out-of-doors had not a brown leaf this time last year, but they have suffered a little last winter, doubtless because of the immaturity of the wood. Hydrangeas are killed back a little; Magnolia grandiflora has suffered slightly, Berberis Darwinii severely. Tender kinds of Rhododendrons have gone "soft in the bud," and Sweet Bays have been scorched as if they had been set fire to: perhaps these are worse than anything else of the hardier class. Kalmias that made second growth in the autumn are, of course, killed back, but not permanently injured, and shrubby Veronicas are killed to the ground; Euonymus have also suffered in almost all situations. Amongst a large collection of Conifers Picea lasiocarpa and Pinsapo are the only kinds that have suffered, the latter but slightly. Roses have suffered seriously in this neighbourhood generally. When the frost set in last November the earth was in excellent condition, and to this fact we attribute our good fortune in losing so little. I shall have a different tale to tell of vegetables. In all reports of this kind there should be great scope allowed for the different conditions under which all kinds of plants are grown; soil, situation, rainfall, altitude of locality, and thick or thin planting are substantially amongst the foremost grounds upon which information should be furnished on this important subject. *Dorset.*

Pentstemons.—Among the many beautiful hardy perennials there are few, if any, to rival these in the showiness of their flowers, or to compare with them in general usefulness for decorative purposes in the herbaceous border, where if they do not come into bloom quite so early as many other things, they continue long after, and only give in when frost holds them fast in its grip. In mild winters I have cut from them till after the turn of the year, and as they are so persistent and free in their habit of blossoming, I mean to try some in pots, as under the protection of glass in a cold frame or a greenhouse they would be quite safe and come in most valuably at a time when flowers are scarce. I find that the best for autumn blooming are those raised annually from seed, from which, now there has been such a vast improvement effected in them, splendid varieties may be obtained, differing materially in shade of colour and markings, as well as in the size of the flowers. If the finest strains are obtained, these may be had almost as large and fine as those of Gloxinias, and any that show extra merit in this way can always be propagated and perpetuated by cuttings. To have the plants strong and such as will afford fine spikes, the seed cannot well be sown too early, and if this be done at once, and the pans or pots containing them placed where they can get a little warmth, they will soon germinate and be fit for pricking off in boxes, or under the shelter of handlights, where they can be protected and nursed on till large enough for finally planting out in the open. To give them a fair chance, the situations intended for them should be well broken up and have a little rotten manure well worked in, which will induce vigorous shoots, and enable the plants to become established before the advent of dry weather, so trying to fleet-rooted subjects like Pentstemons. Besides being so serviceable in borders Pentstemons make magnificent beds, the best form of which are circles, and these of moderate size, as then the whole of the flowers can be seen to advantage. *J. S.*

A New Metal.—A new compound metallic substance has been discovered by Mr. J. Berger Spence, which promises to be of great utility to the fine and industrial arts. As it will probably be of service for many horticultural purposes, it may be interesting to some of your reader to have the subject mentioned in your columns. The compound has been named Spence's Metal, and is formed of a compound of molten sulphur and metal, which hardens on cooling into a solid tenacious metal of a dark grey colour. It has the valuable property of expanding on cooling, instead of contracting as most other metals do. Favourable reports of it are given by some of the London and Edinburgh gas and water companies who have used it for the purpose of making joints in water and gas piping. The advantages claimed for it as a jointing material are:—1st. Its expansive property on cooling. 2d. Its cheapness, being only

about one-fourth the price of lead. Lead costs about £18 per ton, Spence's metal costs £15 per ton. A ton of the latter is fully three times the bulk of the former, and would therefore go full three times as far as lead in working. 3d. It is easily melted, lead requiring a temperature of 620°, while Spence's metal melts at 320°. At a lower heat it is said to become pasty, it also gets into the same condition when the temperature rises about 350°. Its suitability for hot-water joints would of course depend upon whether or not it would be affected by the heat of water at or near boiling point, In all probability Spence's metal will be extensively used for medallions and busts, vases, ornamental castings and such-like, as it is said to take and to retain a perfect impression, and a high polish; while so far as present experiments have gone, it appears to be entirely free from atmospheric influences. These properties would be valuable in the event of the material being made into labels, all the more as it can be produced in various colours from the colour of bronze to the deep blue of steel. A compound of molten sulphur and sand has long been in use as a substitute for lead in running in iron standards into stone for fencing purposes. I know of a fence, about a mile in length, by the side of a public road, which was put up some twenty years ago. The standards were run into the stone with a mixture of sulphur and sand. The fence is as firm and straight now as when it was first put up, and the teeth of time seem to have made less impression on the sulphur composition than on the stone in which it is imbedded. *D. M.*

Asparagus Kale. — That this vegetable when grown in soils of a cold and retentive nature is liable to rot off (p. 370) in the autumn cannot be gainsaid; but in soils of an opposite character losses from this cause are few and far between. As a proof of this, I may state that out of 400 plants we have lost less than forty. It ought not to be planted in ground which has been heavily manured. On the contrary, it is much better to plant it on ground which has been previously occupied by some crop of an exhausting nature, as then its susceptibility to rot is reduced to a minimum. I am unable to state what amount of frost it will endure, suffice it to say that 8° was the lowest reading of the thermometer in the gardens here. *J. Horsefield, Heytesbury.*

Wood-ashes and Soot.—We have now arrived at that part of the season when gardens become infested with different kinds of insects injurious to vegetation, one of the most troublesome of which is the Turnip-fly or Black Jack, so fatal to seed-beds of Broccoli, Cauliflowers, and all other varieties of the Brassica tribe, which the flies assail almost immediately they are out of the ground, to the utter destruction of the hearts of the plants, thus causing the whole of those they feast on to become blind and useless for pricking out. To ward off their attacks there is nothing better than a frequent dressing of wood-ashes and soot in about equal proportions, put on early in the morning while the leaves are moist with dew, when the finer particles stick and render them unpalatable to the Jacks, which take themselves off to fresh fields and pastures new. Besides being so inimical to these pests, the soot and ashes are excellent fertilisers, and just of the kind suitable for stimulating the growth of young seedlings of any of the vegetables above-named. Slugs, too, have a great dislike to them, especially if a little fresh-slaked lime be added, which mixture is most valuable in any garden to keep a store of, that it may be always ready to hand when wanted. It is not the heavy application of it which is needed, as that is liable to do harm, but it is the dusting over at intervals of a few days that bothers the insects, and brings about their discomfiture. Unfortunately, wood-ashes are difficult to get in most places, and the way we meet this is to make our own, by saving all the prunings of Gooseberries, the clippings of hedges, rakings of leaves, and any rubbish of that kind which will burn. To get to do this freely, and consume any weeds or other gatherings, we take advantage of a dry time to start the fire, which is kept going till the whole is passed through. Any that is not required for seed beds comes in admirably for sowing amongst growing crops, all kinds of which are benefited by its use. Where the supply of manure is deficient for these it may be eked out by adding to the soot and ashes some guano, which, if incorporated and scattered thinly over the ground just before the advent of rain, effects wonders even on the poorest of land. Vines, too, are especially benefited by a spring dressing of the border with these last-named ingredients, which soon show how agreeable they are in the improvement they work on the foliage. *J. S.*

Spent Hops.—It may not be generally known that spent Hops are rich in fertilising qualities and most valuable for applying on light lands, where, stirred in beneath the surface, they assist greatly in keeping it moist and bringing about a healthy root-action. Soaked with liquid-manure, or mixed with soot by turning them over, no better dressing need be desired; and any one therefore living near breweries, where they can be obtained for the carting away, should not lose an opportunity of securing as many as they want or have use for. The thing is to let them rot by undergoing very gentle fermentation, during which their decomposition may be much hastened by frequent stirring over, and bringing the outside each time the process is carried on into the middle, where the chemical action soon breaks up the fibre by causing decay of the parts. *J. S.*

Proliferous Plantains.—Some years ago I found a monstrous variety of the Plantago major growing in a piece of rough ground far from cultivation almost exactly like the variety you figure at p. 364. I made a drawing of it at the time, but have never seen another specimen like it. *William Wickham, Binstead-Wyck, Alton.*

—— The following lines, which I quote from *The Loves of the Plants*, Canto I., may interest some of your readers, as showing that proliferous Plantains were not unknown to the distinguished author of the *Botanic Garden*, Dr. Erasmus Darwin:—

> "With strange deformity Plantago treads,
> A monster-birth! and lifts his hundred heads.
> Yet with soft love a gentle belle he charms,
> And clasps the beauty in his hundred arms." *W.*

Trug Baskets. — Baskets exactly similar in appearance and description to the one mentioned in the *Gardeners' Chronicle* are used in North Wales. I had one to take out Fern hunting, and the woman who weeded my flower garden always used one of them. *Helen Watney.*

Fruit Trees in Pleasure Grounds and by the Roadside.—The general cry out in England is at the great scarcity of fruit, and no wonder, considering the many waste places there are where trees might be planted, but somehow or other an idea appears to have taken possession of people's minds that they are only suitable for gardens or orchards, which is the most mistaken notion possible, for what can possibly be more ornamental on a lawn or grass-plot than an Apple, Pear, Plum, or Cherry? either of which are alike beautiful when in flower or fruit, the former especially with their rosy cheeks; and I think we have it somewhere on record that Newton was instructed in the law of gravitation by having one fall on his head. Although a tap in the same way on the pate of a schoolboy might not set him pondering in a similar manner, he would take it as a good joke, and look on the cause of it as lawful prize; and if Apples and other fruit were to be found tumbling about by the sides of lanes and hedgerows, or were more common than they are, there would not be the incentive there is for urchins to steal. I have never had the pleasure of travelling on the Continent, but I am told that trees are so planted and are abundant enough for the inhabitants of those favoured parts to look on the fallen produce as common property, provided they do not trespass for it; and if such a system of growing fruit answers there, why not here, where we stand so much in need of it? We have plenty of old pollards of various kinds that are no great ornament to the landscape, whereas trees in bloom in spring are a sight that gladdens every one, and are most beautiful objects to behold. Apple blossoms, with their lovely pink petals, never fail to command admiration, and the snowy-white of the Cherry and Plum is a vernal garb that looks like purity itself and is fit to be seen anywhere. Why then are they not planted near dwellings in shrubberies on lawns and in pleasure grounds where they would be attractive objects for at least six months in the year? True, the birds might visit the Cherries, but what of that? They deserve their share, as they cheer us with their song and thus add to our pleasures in life, one of the greatest of which is to have our feathered friends around us to hear their melody and see them hopping about. Fruit trees now are not expensive, and landed proprietors might therefore at small cost confer a great national benefit by planting largely on their estates; and if they would only enlarge cottage gardens and put some there it would be a step in the right direction. Owners of villa residences have the matter in their own hands, and may adorn their grounds with that which is useful as well as ornamental instead of having the unsuitable things often seen in such places. One has only to walk in the suburbs of our large cities and towns to witness the most absurd filling up of the forecourts of these dwellings, where in a few roods of ground are to be found fast growing Firs and other trees in sufficient number to plant a small wood, when at the same time perhaps they have scarcely an Apple, Pear, or Plum belonging to them; and yet either of these latter would be far preferable in every respect. *J. S.*

Chimonanthus fragrans.—There is a very fine tree here, over 10 feet high, trained against the side of the house, and it has for the last six years been covered with blossoms, but this winter the bloom has failed. *Helen Watney, Liss, Hants.*

Reports of Societies.

Royal Horticultural: *March* 23.—H. J. Elwes, Esq., in the chair. At the termination of the usual business proceedings, which on this occasion were conducted in the large conservatory, Dr. Masters explained the nature and results of the important experiments in forcing which have been made by Dr. Siemens with the electric light, and which are fully alluded to in another column. At the invitation of the Council, Mr. Shirley Hibberd then gave a brief lecture on the history and characteristics of the Hyacinth and the Amaryllis. The former, said Mr. Hibberd, was a comparatively modern flower, and certainly less ancient as a florists' flower than the Tulip, Narcissus, and Lily. It was reported in the books that John Parkinson had above fifty varieties of Hyacinths, but when he turned to the *Paradisus* he found that of the true oriental Hyacinth, which alone of this class is the flower of the florist, Parkinson had but eight varieties, some of which in respect of their relationship to the Hyacinth proper were certainly in a doubtful position. John Gerard had about half-a-dozen, and amongst them a good double blue, which in Johnson's edition is admirably figured at p. 114. Going back to Dodoens, he found that in 1550 this botanist of the Low Countries was acquainted with the oriental Hyacinth, the flowers of which were of an excellent blue colour, and at p. 206 of Lyte's translation of his *History of Plants* will be found a figure showing that the Hyacinth of that day was a poor thing, producing a few single flowers such as those we are accustomed to see on offsets of a year old. It is remarkable, however, that the Hyacinths of the older writers, however genuine as representing the oriental species, comprised only blue and purple and white varieties. The old masters were apparently ignorant of the glorious crimson and carmine and the delicate yellow coloured Hyacinths that are now so much prized in displays of spring flowers. When these originated may be guessed at, but we should probably never know to a year, or even to fifty years, when they first appeared, and those who discovered or raised them appear not to have bequeathed to us any records of their benevolent deeds. It is certain, however, that Holland was the first home in Europe of the oriental Hyacinth, and to the plodding race of commercial florists who now supply us with bulbs the world is indebted for the creation of the Hyacinth as a florists' flower. And it was pretty certain that they had it well in hand at the very time our fathers of horticultural literature were in the thick of their work, for Swertius, in his *Florilegium*, as cited in Martin's edition of Miller, in the year 1620, figured forty varieties, and very scrupulously avoided representing anything so heterodox as a double flower. In Martin's edition of Miller reference is made to Peter Voorhelm, who must have been in the flesh about the year 1680, as a great cultivator and raiser of new varieties, and the first to recognise, with a true florist's perception, the merits of the double flowers. It had been his rule to throw them out of his collection, but he was himself thrown out at last, and while on a sick bed a number of double seedlings took advantage of his absence to enjoy life in their own way, and thus they, for a time at least, escaped destruction. Voorhelm had the good fortune to see one of these, and having kept it and increased it, obtained good prices for the offsets, and that fine old stimulant, money, made him thenceforth a raiser of double Hyacinths. The first-named variety of this class was called Mary. This appears to have been soon lost. It was followed by one called the King of Great Britain, which was so much in favour that the price of a bulb was 1000 florins. This price was soon doubled by the demand that arose, and thus at the end of the seventeenth century we have an instance of a Hyacinth valued at about £200. The Tulip mania was at its height in 1634 and two years subsequently. It may be said to have come to an end with the celebrated declaration made at Amsterdam on February 24, 1637, rendering speculative purchases null and void. At all events, the Tulip had ceased to inspire the rapacity of gamblers and the eccentricities of madmen, and had left a lesson such as not even the recent run upon imaginary water stock is likely to confer upon the present generation. The Hyacinth, therefore, which was then as it were forming itself for fame, was happily preserved from all taint of speculative trading, and the prices paid for scarce and beautiful varieties were simply testimonies of the esteem of amateurs for these new and attractive flowers. It is well for floriculture when prices rise to a point encouraging to systematic endeavour. To raise new flowers is a tedious and costly proceeding, however delightful it may be, and if the business is not seasoned with a moderate spice of the commercial element it is not likely to acquire

the full proportions of usefulness. In the case of the Hyacinth we saw clearly what happened as a consequence of the profit attending the production of new varieties. In 1768 was published at Amsterdam the Marquis de St. Simon's treatise, *Des Jacinthes*, in which it is declared that the town of Haarlem was then environed with Hyacinth farms, and the Dutch florists had named and described about 2000 varieties of the fragrant flower. Mr. Hibberd next remarked that he was not prepared to say how many acres of Hyacinths might be found at Haarlem at the present time, but he would advise any lover of flowers who had not yet seen those flower farms to pay them a visit at the time when they are in their full glory, for they then constitute a spectacle not less unique than wonderful—so vast, so various, and so rich are the displays of colour, and so delicious the perfume diffused far beyond the range of the flowery fields. From the middle of April to the middle of May Haarlem was steeped in splendours that no dying dolphins could imitate, and the rich setting of the green meadows all around enhances the brightness, while adding to the completeness of the picture. To state the exact number of varieties now in cultivation is perhaps impossible. It probably does not exceed 1000, and of these we might perhaps spare 700 or so without any serious loss. In the spring of 1873 he flowered at Stoke Newington a collection of 500 varieties, and found fully one-third of the whole number wanting the qualities that constitute average merit. A report of the trial would be found in the *Gardeners' Magazine* for 1873, and it would be out of place there to bring forward any of the minute details. But he might mention that the mid-season flowers proved to be the best, and the blue and white varieties were in most cases superior in quality to the red. Thus it appeared that in raising flowers by cross-breeding we must expect to lose quality with every gain in departure from the normal type. As regards the distribution of merit, however, in connection with the season of flowering two very important facts were noted. The earliest flowers that appeared were of good quality, but those of the mid-season were better. But as the later kinds came into bloom we obtained an exhibition of the merest rubbish, and the later the sort the worse was its quality. Thus, as the case stands at present, late-flowering Hyacinths appear to be altogether undesirable. With reference to the cultivation of these charming flowers in Holland, Mr. Hibberd stated that the soil in which they are grown for market is sheer sand or blackish sandy peat, often of such a loose nature that the workmen attach flat boards to their boots to prevent their feet sinking into it. And so liable is the sand to be blown away that it is a common practice to scatter Hyacinth flowers over vacant plots, for no man liked to see his estate fly through the air and settle within another man's boundaries. The land is usually prepared by dressing it heavily with manure from the cow-sheds, and for this an almost fabulous price is paid. The land being ready, and loaded with manure, is planted with Potatos, and this crop being removed it is ready for planting with Hyacinths. When a crop of Hyacinths has been taken the land is planted with Tulips, and the next crop may be Tulips again or Crocuses. Then the land is once more refreshed with a heavy dressing of cow manure, and the rotation is repeated, beginning with Potatos. The Hyacinth takes us to the east, its home being the mysterious country known as the Levant. The Amaryllis takes us to the west, the species that are most prized in our gardens being natives of the New World. But the examples of so-called Amaryllis that had delighted them were not Amaryllis, but members of a genus called Hippeastrum, or equestrian star, one of the species being striped in a way to suggest the name. But the florists had never called them by Dean Herbert's name, and in this matter he (the lecturer) would stand by the florists, for the people who have to use a language should have some part in making and keeping it. It was only a case of conservative reaction, and indicated the unchangeable inborn gallantry of the florists in preferring a heroine of Theocritus and Virgil to a fancy of a serious Churchman. But the classification of Dean Herbert had a sound scientific basis, and the Hippeastrums stand apart as a section of Amaryllis marked by unmistakable characters. In respect of cultivation there were two matters of considerable importance to be mentioned. One was, that the species of Hippeastrum, all of them derived from the tropical zone of the Western Hemisphere, interbreed most freely, and hence the florist may find endless delight in raising new varieties, and the student of the origin of species may turn to them for the solution of problems, or to encounter fresh ones that he will never be able to answer. And another matter of importance was that these noble flowers were really difficult to manage, and consequently many fail before they learn the way to complete success. They rarely thrive in a peat soil, and they never thrive unless they are perfectly drained and watered judiciously. In common with many tropical plants, they can be brought into flower at almost any time; nevertheless, the spring was the best time to flower them, because they need a clear solar light to develope their splendid colours, and the subsequent summer heat favoured the ripening of the bulbs.—On the proposition of Sir Charles Strickland, a hearty vote of thanks was accorded to Mr. Hibberd for his most interesting lecture, delivered in about the worst place for speaking in public that ingenuity could devise.

Spring Show in the Conservatory.—It has seldom been the good fortune of the Society, even when it could afford to offer prizes for competition, to be favoured with such a display as was made on Tuesday last, and, it must be observed in their honour, by a very few exhibitors. The exhibition of Amaryllis made by Messrs. Veitch alone was worthy of all praise; but when we add that Mr. B. S. Williams also exhibited a choice group of these showy flowers—that Hyacinths were shown in great force, if not in such fine condition as heretofore—and that the new General Horticultural Company (John Wills), Limited, contributed an extensive and most effectively arranged group, we shall have given some idea of the pleasing character of the exhibition. The collection of Amaryllis shown by the Messrs. Veitch, and which gained for that firm a large Gold Banksian Medal was, we should say, undoubtedly the most remarkable one that has been seen in this or any other country, consisting, as it did, of some 350 plants, all in flower to the day, nearly all, or by far the larger proportion being unnamed seedlings flowering for the first time, and representing as a whole a triumph of art in hybridising and of skilful cultivation. Of the parentage of these seedlings we know nothing, but it is evident that they are the result of only one or two crosses, two well-marked types of flowers being most numerously represented by varieties but slightly varying from each other, and consequently an impression of sameness was created, which a careful examination of the flowers did not shake off. One of the seedlings was labelled as blooming nineteen months from the date of the seed being sown. The Messrs. Veitch also exhibited a collection of Hyacinths and Cyclamens, the former being the best plants exhibited, but not so fine as usual. The splendid group of plants previously alluded to as being exhibited by the General Horticultural Company (John Wills), Limited, was also deemed worthy of a large Gold Banksian Medal. Fine-foliaged plants were represented by handsome young specimens of various Palms and Dracænas, Crotons and Ferns, Nepenthes and Sarracenias, relieved with a grand mass of forced Lilac, small clusters of Spiræas, Cyclamens, and lovely Orchids, such as Phalænopsis Schilleriana, various Odontoglossums, Dendrobiums, and Cypripediums, &c., the whole being set in a carpet of Maidenhair Fern, and arranged in Mr. Wills' usual effective style. Next to these two collections, by far the most striking was an extensive display of Hyacinths, Tulips, and Lily of the Valley, backed up by a grand row of plants of Spiræa japonica and Dicentra spectabilis alternately arranged. The Spiræas were especially fine examples of high cultivation, and while we cannot say as much in praise of the Hyacinths, we are bound to say that a better lot as a whole, or a more extensive group, could scarcely have been expected from a private grower; and the Gold Medal awarded was well deserved. The exhibitor was Captain Patton, 1, Langford Place, Abbey Road, St. John's Wood, whose gardener is Mr. Boultweed. Mr. William Bull also received a Gold Medal for a select group of plants, consisting of Palms, Cycads, and Ferns, and a number of Orchids in flower, together with striking specimens in flower of Sarracenia Drummondii, and S. flava major. Silver Banksian Medals were also awarded to Mr. B. S. Williams for the choice and select group of Amaryllis above alluded to, and which was shown in conjunction with an admirable little group of Orchids, which included a handsomely flowered specimen of Cœlogyne ocellata maxima. To Mr. H. B. Smith, of Ealing Dean, for a remarkably fine group of Cyclamens of various colours. To Messrs. W. Cutbush & Son, of Highgate, for a group of Hyacinths and Tulips, and several pans of admirably flowered Lily of the Valley; and to Mr. J. Aldous, Gloucester Road, for a group of decorative plants. To Messrs. Osborn & Sons, Fulham, a Silver Flora Medal was awarded for a group of stove and greenhouse flowering and fine-foliaged plants and an extensive collection of Hyacinths and Tulips.

Scientific Committee.—Sir J. D. Hooker, K.C.S.I., in the chair.

Report on Injurious Insects.—A copy of Miss Ormerod's report for 1879 was presented by the reporter, and in reference to it mention was incidentally made of the circumstance that the author was collecting materials for a complete history of the remedies available for dealing with various insect pests, and would feel indebted to any observers who would furnish her with accurate information on the subject.

Plants Shown.—Mr. Elwes showed a spray of a Vaccinium known as V. Morteni, a very pretty greenhouse shrub, with small ovate leaves and racemes of clear white bell-shaped flowers. As there was some doubt as to the name a further report will be made. A. Fritillaria from Japan was shown by Messrs. Veitch, and is supposed to be F. verticillata var. Thunbergii. It has long linear leaves terminating in a tendril and small greenish-yellow, bell-shaped flowers, faintly mottled with purple. Colonel Clarke showed a yellow Chrysanthemum in full flower, and explained the method by means of which he succeeded in getting the plant to flower at so unseasonable a time. The plant, when the flowering period is over, and after a short rest, is put into a steaming hot temperature for a time, with the result of causing the development of heretofore latent buds on the young stem. Colonel Clarke also showed a spray of the Lace Bark, Lagetta lintearia, in bloom. The broadly ovate leaves are of a rich green colour, while the cylindrical flowers are of an opaque white. The name lace-bark was given on account of the netted character of the inner bark, which is used as a substitute for lace in Jamaica. A curious Begonia from Cochin China, with prostrate stem and obliquely ovate leaves of a purplish colour with a central blotch, was shown by Messrs. Veitch, and excited much curiosity. It was not in a condition for determination, but had the provisional name of B. Davidiana.

Wood from Gravel Deposit.—Mr. W. G. Smith exhibited a piece of a tree-branch recently thrown out from the base of a 25 feet excavation of sand and gravel at Shackelwell. The wood dated back from the deposition of the gravel and sand by the Thames at this place. The drift deposit here belongs to one of the higher and older terraces of the river.

Japan Birch.—Dr. Masters showed, for Messrs. Maule, of Bristol, a portion of the trunk of this tree, perhaps a variety of B. utilis (see *Gardeners' Chronicle*, 1876, vol. v., p. 630). The bark was of peculiarly silvery-white papery nature and very beautiful. Messrs. Maule write:—

"The specimen of Japan Birch is cut from a tree in our nurseries. We got it from seed at the same time we raised Pyrus Maulei. We do not consider that there are two species. The specimens sent you we considered were all the same, as even the common Birch differs a little from seed; but all of these Japan Birches are paper-barked and silver without exception. You know that our common Birch is sometimes silver-barked and papery, but not always, and they do not assume this until old trees. This Japan Birch is a very robust grower, does not run up like the common Birch, and will make a useful tree. We have about ten large trees, 15 to 20 feet high, and several hundreds 2 to 3 feet. We intend increasing it, as it seeds freely."

Forcing by Electric Light.—Dr. Masters brought forward some specimens exhibited by Mr. Buchanan, gardener to Dr. Siemens, and commented on the new power placed in the hands of the gardener by the agency of the electric light. The specimens from Dr. Siemens' garden consisted of—

1. Three pots of seedling Mustard, one of which had been exposed to the electric light, one to the daylight, and one to both—other conditions being equal. In this case there was not much difference in point of vigour, but the plant which had been exposed to solar and electric light was darker in colour.

2. Two buds of Countess of Oxford Rose, one exposed to the electric light for forty-eight hours, one grown as usual. The bud under the electric light was considerably more advanced.

3. Two spathes of Calla æthiopica, one grown in the ordinary manner, the other subjected for forty-eight hours to the electric light. In this case the difference was exceedingly striking, the plant which had been grown under the electric light being greatly in advance of the other. Cut specimens similarly treated manifested an equally striking difference.

4. Three pots of Carrots, three in each pot: one had been exposed to continuous light, first solar, and then electric; one had been exposed to the electric light only, and one had been exposed to daylight only—all other conditions being uniform. In these latter specimens there was very little difference between the plants grown under solar and those under the electric light, but the plants subjected to both were greatly superior in vigour and colour.

Insects Injurious to Cypress.—Further specimens were sent by the Hon. and Rev. J. T. Boscawen, which were referred to Mr. MacLachlan. The injuries inflicted were very serious, the whole of the branches on the lower two-thirds of the tree being killed.

Retirement of Mr. Jennings.—Dr. Masters moved, and Colonel Clarke seconded, a resolution expressing the regret of the committee that they were about to lose the services of Mr. Jennings, and conveying the thanks of the committee to Mr. Jennings for the ability and courtesy he had displayed as secretary to the committee. The resolution was carried unanimously. An expression of regret was also made that the Council had not notified to the committee the fact that the services of Mr. Jennings were to be discontinued.

Floral Committee.—Dr. Denny in the chair. New Hyacinths were shown to-day by Messrs. James Veitch & Sons, Messrs. W. Cutbush & Son, and Captain Patton, but only two were certificated, and those are named below. From Messrs. James Veitch & Sons also came a batch of seedling Amaryllis, three of which were certificated; also flowering plants of the ordinary form of Spiræa japonica, and its variety foliis aureis, which has a denser spike of flowers than the former; a species of Fritillaria from Japan with small pale green flowers; the banded Juncus zebrina, and the white-flowered Epidendrum bicornutum, which is so striking by reason of its prettily pencilled labellum. Mr. B. S. Williams showed Imantophyllum miniatum var. Martha Reimers, with a splendid truss of orange-scarlet blossoms; also the semi-double spathed form of Anthurium Scherzerianum. Messrs. T. Jackson & Son, Kingston, sent specimens of light and dark coloured forms of Primula denticulata; and the major form of P. rosea, shown under the name of P. Stewartiana, by which its seeds were first offered to the trade. A sporting Cyclamen persicum, with white and rosy-purple flowers on the same plant, was shown by Mr. W. Kimpton, of South Paddock, Ashford, and dignified with the name of Miss Catherine Hugessen. The General Horticultural Company showed well grown examples of a new Dracæna named Thomsoni, with large broad green leaves, margined with crimson. Mr. G. Goldsmith, Hollanden, Tonbridge, exhibited a well flowered specimen of Trichopilia suavis, and received a Cultural Commendation.

New Plants Certificated.

First-class Certificates were awarded at this meeting to Messrs. James Veitch & Sons for Amaryllis King Arthur, a remarkably fine-shaped flower, of good size and great substance, very smooth, in colour creamy white, shaded with crimson; for Amaryllis Empress of India, a very large flower, a rich shade of scarlet in colour, with a white centre; for Amaryllis Storr's Beauty, a crimson-scarlet flower, with a white bar at the base of the segment, and smaller in size than the last-named; for Hyacinth Cavaignac, a single blue sport, we presume, from the red variety of the same name—it is a large porcelain blue flower of the Czar Peter type, and of excellent quality; and for Hyacinth Queen of the Yellows, the best yet shown in its class, its merits consisting of a larger and closer spike, and larger bells than are found in such sorts as Ida, &c. Mr. B. S. Williams also received a First-class Certificate for a charming Amaryllis named Exquisite, a medium-sized flower, bright scarlet in colour, with a white bar down the centre of the segments; and a similar award was made to Mr. Greenfield, gr., The Priory, Warwick, for Cineraria Mr. Thomas Lloyd, an exact counterpart of the double one shown at the last meeting, except in colour, this being a rich deep blue.

Fruit Committee.—H. Webb, Esq., in the chair. Mr. T. H. Sutton, The Gardens, Worksop Manor, contributed half-a-dozen splendidly developed pods of Vanilla, for which he was voted a Cultural Commendation. The only other exhibits were a dish of Mickleham Pearmain Apples, from Mr. Burnett, The Gardens, Deepdene, Dorking; and a collection of two dozen dishes of Apples and sixteen of Pears, from Mr. G. Goldsmith, of Hollanden.

Royal Botanic: *March* 24.—A considerable number of the good things shown at South Kensington on Tuesday made their appearance here, and consequently the Society's first show of the season was of a higher order of merit than usual, and, favoured by fine weather, it was well attended. Except in the case of Hyacinths and Tulips, the competitions in the various classes were, as usual at these early shows, not very strong. In the amateurs' class for twelve Hyacinths the competitors were Mr. Douglas, gr. to F. Whitburne, Esq., Loxford Hall; Mr. Moorman, gr. to the Misses Christy, Combe Bank; Mr. Boultweed, gr. to Captain Patton, St. John's Wood; and Mr. Weir, gr. to Mrs. Hodgson, Hampstead; and the prizes were awarded to the first three in the order named, the competition between the first two being very close, while the exhibits of the third were only of an ordinary description. Hyacinths, as a rule, are not of the usual quality this season, nevertheless the plants of both of the first-named growers were an advance in quality on any others shown. The varieties exhibited by Mr. Douglas were De Candolle, Koh-i-noor, King of the Blues, La Grandesse, Macaulay, Charles Dickens, Mont Blanc, gigantea, Lord Derby, Vuurbaak, and Grandeur à Merveille; and most of these sorts figured in Mr. Moorman's stand. In the corresponding class for nurserymen the awards went, in the order named, to Messrs. Gregory & Evans, Sidcup; Messrs. Osborn & Sons, and Messrs. W. Cutbush & Son—the first-named having good examples of Lord Derby, King of the Blues, Koh-i-noor, De Candolle, La Grandesse, and Macaulay. For a dozen pots of Tulips (amateurs), Mr. Douglas also came in 1st with admirable specimens of Kaiser Kroon, white Joost van Vondel, the best of its section, Proserpine, and Vermillon Brillant. Mr. Boultweed came in a good 2d, and Mr. James Weir 3d. Messrs. Gregory & Evans also took the lead amongst nurserymen in a similar class, showing large and fine flowers of the red Joost van Vondel, Vermillon Brillant, Proserpine, and Kaiser Kroon. Messrs. Cutbush & Son were 2d, and Messrs. Osborn & Sons 3d. Mr. James Douglas and Messrs. Cutbush & Son were respectively 1st and 2d in a class for twelve pots of Narcissus, the varieties staged by the former being Gloriosa, Grand Monarque, Queen of the Netherlands, and Brilliant. None of them were so strong and well flowered as usual. Mr. Douglas was also awarded the 1st prize for half-a-dozen of the finest Deutzias that have probably ever been shown, the plants being dense bushes, about 3 feet high, from 2 to 3 feet in diameter, and densely flowered. The highest award for six hardy Primulas also went to the Loxford grower, who had P. Monroi, P. denticulata purpurea, P. nivalis, P. cortusoides amœna lilacina, P. vulgaris Purity, a good white, and P. vulgaris platypetala, a good double lilac. For six Amaryllis Mr. J. Wiggins, gr. to H. Little, Esq., Hillingdon Place, took the highest award with four unnamed varieties, a seedling named International, and a variety named Panorama. Mr. Wiggins had also the 1st prizes in an open and an amateurs' class respectively, for a dozen Cyclamens of excellent quality. For six Primulas Messrs. Gregory & Evans were well 1st, and Mr. Wiggins 2d; and Mr. Boultweed had the 1st prize for a dozen pots of Crocuses. Stove and Greenhouse Flowering plants were, as usual, but poorly represented. For twelve, Mr. G. Wheeler, gr. to Louisa, Lady Goldsmid, was 1st, having amongst others a well flowered Azalea concinna, a nice plant of Erica Lindleyana, and a small well flowered bush of the neat little white flowered Leucopogon Richei, a subject not often seen at exhibitions. The 2d prize went to Mr. J. Bristowe, gr. to J. Donner, Esq., Wood Hall, Dulwich. For six Azaleas, Mr. Rattry, gr. to R. Thornton, Esq., The Hoo, Sydenham, came in 1st with a neat set of standards; and for six forced Roses in pots Messrs. Paul & Son, of Cheshunt, the only exhibitors, were awarded the highest prize for a well bloomed lot of small specimens, consisting of Duke of Edinburgh, Anna Alexieff, Madame Lacharme, La France, and Alba rosea.

The miscellaneous class was, as usual, a heavy one, and included contributions from most of the leading trade growers. Messrs. James Veitch & Sons contributed a good bank of Hyacinths, a fine selection of Amaryllis, and several new plants. Mr. B. S. Williams and Mr. William Bull each exhibited the choice collections of plants staged by them at Kensington on Tuesday; and Captain Patton showed the same collection of Hyacinths, Tulips, Spiræas, and Dicentras. Messrs. Gregor & Evans, of Sidcup, had a nice group of decorative Pelargoniums and Cinerarias of good market quality; and Messrs. William Paul & Son, of Waltham Cross, sent eight boxes of cut blooms of Camellias, which included samples of a great many varieties. Messrs. W. Cutbush & Son had a group of Tulips, and another one of Lily of the Valley; and Messrs. Paul & Son, of Cheshunt, showed a pleasing group of small pot Roses and Ghent Azaleas. To all of the above extra prizes of various values were awarded.

New Plants Certificated.

Botanical Certificates of Merit were awarded to Mr. William Bull for Polystichum viviparum, a West Indian evergreen species, with stout, shining dark green fronds and a neat habit of growth; and for the new golden variegated Selaginella Kraussiana aurea. To Messrs. James Veitch & Sons, for Tradescantia Madame Legueuse, a pretty silvery variegated plant of the T. zebrina type. To Mr. B. S. Williams for Anthurium Scherzerianum semi-plenum, the new semi-double chaste-looking spathed variety; and for a fine plant of the Cœlogyne ocellata maxima. Floral Certificates of Merit were voted to Messrs. James Veitch & Sons for Amaryllis Iris, a fine reddish-crimson flower; for Amaryllis Emilia, greenish-white, heavily suffused with crimson, a well-formed flower of the Leopoldi type; for Amaryllis Princess Augusta Victoria, a large and fine flower, white, faintly lined with deep rose; for Amaryllis Duchess of Connaught, a good pure white of medium size; for Amaryllis Thalia, crimson, shaded with deep blood-red, large in size, and good in form; for Cineraria Mr. Thomas Lloyd, a remarkably fine double blue-flowered variety; for Hyacinth Queen of the Yellows, the best of its class, both in size, colour, and form; for Hyacinth Distinction, a pleasing and welcome addition to the type of dark reddish-claret coloured varieties; for Hyacinth Captain Boyton, a striped porcelain-blue, but not so clear as it might be; and for Hyacinth Cavaignac, a grand single porcelain-blue, having a fine spike and bells of great size, good substance, and undeniably good form. To Mr. Kale, nurseryman, Godalming, for Chorozema aurea floribunda, a very fine, free-flowering, greenhouse plant, the flowers pure yellow with white wings. To Mr. B. S. Williams for Amaryllis Exquisite, scarlet banded with white, and of beautiful shape. To Mr. Wiggins, gr. to H. Little, Esq., for Amaryllis International, dark blood-red with white venation; and for Primula sinensis var. Meteor. To Captain Patton for Hyacinth Lady Headley, a pretty peach-coloured flower of great promise; and to Mr. H. B. Smith, of Ealing Dean, for Cyclamen Rosy Morn and C. picturatum—the former a bright shade of rose, the latter a delicate blush, both with crimson centre, and both large in size.

Bristol Spring Show: *March* 17 *and* 18.—The tenth spring exhibition was held at the Victoria Rooms, and proved a decided success. Hyacinths and other spring bulbs were present in great force, intermixed with enough larger plants to give variety and impart interest to the whole. The Treasurer, W. Derham, Esq., gave a handsome Silver Cup as a special prize for twenty-four Hyacinths, not less than eighteen varieties, and twelve pots of Tulips, six double and six single (amateurs). For this there was a close competition, and H. C. Miles, Esq. (gr., Mr. Perry), came in 1st with an evenly flowered, well managed lot of plants. W. Butler, Esq., who was 2d, had also a very meritorious group, his flowers being somewhat smaller. In the class for twelve Hyacinths, not less than six varieties, the best flowers in the exhibition were shown. W. Fox, Esq., was 1st, his best flowers being Lord Derby (single blue), Lord Macaulay (single red), Von Schiller (single red), Alba maxima (single white), and De Candolle (single lilac.) C. Taggett, Esq., and G. Webley, Esq., were equal 2d. For twelve Hyacinths, consisting of blue, white, dark red, and light red, three of each, Mr. Butler was 1st and Mr. Taggett 2d. F. Owen, Esq., came in 1st for six. Tulips were largely shown and excellent in quality. For four pots of single varieties Mr. Taggett took the 1st prize and Mr. Butler the 2d.

An immense number of plants were exhibited in a dozen classes devoted to Hyacinths, Tulips, and Narcissus, which were well represented, and collectively made a very fine show. Messrs. Garaway, of the Durdham Down Nurseries, Bristol, exhibited, not for competition, over 200 Hyacinths, which in themselves were a comprehensive exhibition of this popular spring flower, the plants being very well grown and bearing stout compact spikes, all quite fresh and just to the day; they consisted of the best, well-proved kinds, as well as some not so generally grown.

In the class for collections of miscellaneous plants, Mr. H. C. Miles was a long way to the front with a very fine group, the flowering subjects in which were Orchids, Azaleas, Cyclamens, and Cinerarias, intermixed with Dracænas, Ferns, and other ornamental leaved plants. Amongst the Orchids were Phalænopsis Schilleriana carrying over seventy very finely marked flowers; Pleione humilis, Angræcum sesquipedale, Lycaste Skinneri, Sophronites grandiflora, Odontoglossum Hallii, O. crispum, Cypripedium Boxalli, C. villosum, Calanthe vestita, Dendrobium Wardianum, D. densiflorum, D. fimbriatum oculatum, D. Pierardi latifolia, and a remarkable plant of D. lituiflorum. Messrs. Maule & Son, Bristol, were 2d, with larger plants, including Dendrobium Wardianum, D. macrophyllum, D. Farmeri, Cypripedium villosum, 2 feet across; and well-flowered Cœlogyne cristata, Vanda suavis, with Tree Ferns, Palms, and others of similar character.

In the class for miscellaneous collections of plants in flower Mr. Miles was again 1st, showing a nice group in which were several Azaleas, the red-flowered Darwinia Hookerii, Abutilons, &c. With a single Orchid Mr. Miles was again 1st, showing a large and finely-flowered Cœlogyne cristata; Messrs. Maule & Son came in 2d with Cypripedium villosum bearing twenty-four flowers. For a single hard-wooded plant Mr. Miles took another 1st prize with a nicely bloomed example of Darwinia tulipifera about 2½ feet through; the flowers were fully expanded, giving evidence of the lengthened season that this very distinct and handsome plant can be had in bloom.

Messrs. Maule & Son were 1st for half-a-dozen forced hardy hard-wooded plants in flower with Ghent Azaleas, Azalea amœna, and a fine example of Tree Pæony bearing a number of large bluish flowers which were very attractive.

Azaleas were staged in considerable quantities, mostly small or medium-sized plants nicely flowered. There was a good display of Ferns, principally confined to the smaller growing species. Primulas were remarkably well done, the 1st prize plants especially being noticeable for their size, healthy foliage, and immense quantity of flowers, and the white varieties as they should be, pure in colour. 1st, Mr. H. St. V. Ames was the exhibitor. Cinerarias also were well grown and finely bloomed, but, as is too often the case now, were deficient in light-coloured varieties. In the class for fine-leaved plants Mr. Derham took the lead with an even, well-matched group, in which the most noticeable were Crotons Weismanni and

majesticus. Messrs. Parker & Bush, St. Michael's Hill Nursery, Bristol, exhibited a large and varied collection of well-grown fine-leaved and other plants, which, combined with the many other exhibits of a similar character, gave sufficient relief from the even flat surface presented by such an immense display of Hyacinths and other similarly low-growing things.

Cut flowers, as usual here, were forthcoming in plenty and well arranged. The Mayor's special prize, offered for the best arranged vase or stand, was won by Mr. Hookings, who also secured the highest award. In the Society's corresponding class Mr. C. Fisher took a 1st prize for twelve cut Roses, with flowers such as are seldom seen at this early season, being large and finely developed, mostly Tea varieties, the best of which were Catherine Mermet, Madame Falcot, Devoniensis, and Niphetos. Mr. Fisher also received an extra prize for a box of twenty-four, consisting of similar kinds. S. Gibson, Esq. (gr., Mr. Miller), was first for a single bunch of Grapes with Gros Colmar, very well shown, Mr. Burgess, 2d, having Lady Downe's.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, March 24, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
Mar.	In.	In.	°	°	°	°	°	°	°		In.
18	30.17	+0.34	56.2	32.0	24.2	43.1	+ 1.4	33.9	70	E.S.E	0.00
19	30.17	+0.35	58.4	31.2	24.2	44.5	+ 2.8	39.5	83	E. : N.E.	0.00
20	30.11	+0.30	50.5	30.9	19.6	38.6	— 3.1	36.3	92	E.N.E.	0.00
21	30.12	+0.32	51.9	33.5	18.4	41.7	— 0.1	35.7	80	E.N.E. : N.E.	0.00
22	30.15	+0.36	44.8	32.2	12.6	37.8	— 4.1	33.6	85	E.	0.00
23	30.14	+0.36	48.7	29.9	18.8	38.6	— 3.4	32.5	79	ESE : E.N.E.	0.00
24	30.11	+0.33	57.5	27.0	30.5	42.1	— 0.0	32.3	69	E. : S.E.	0.00
Mean	30.14	+0.34	52.6	31.4	21.2	40.9	— 0.9	34.8	80	E. : N.E.	sum 0.00

March 18.—A beautifully fine day. Cloudless Cold with hoar-frost in morning.
— 19.—Cold and dull in early part of morning. Fine and bright afterwards. Overcast at night.
— 20.—A fine bright day. Cold. Cloudy at night. Foggy and misty till 11 A.M.
— 21.—A fine bright day. Cold. Overcast at midnight.
— 22.—Dull and cloudy till evening, then cloudless. Cold.
— 23.—Dull till 11 A.M., fine and bright afterwards. Cloudless after 3 P.M. Very cold at night.
— 24.—A fine bright day, sky clear. Very cold early morning. Hoar-frost.

London: *Barometer.*—During the week ending Saturday, March 20, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.32 inches at the beginning of the week to 30.04 inches by the night of the 16th, increased to 30.40 inches by the night of the 18th, decreased to 30.28 inches by the afternoon of the 20th, and increased to 30.32 inches by the end of the week. The mean reading for the week at sea level was 30.25 inches, being 0.07 inch below that of the preceding week, and 0.22 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 58½° on the 19th to 45¾° on the 14th; the mean value for the week was 51½°. The lowest temperatures of the air observed by night varied from 31° on the 20th to 38¼° on the 14th; the mean value for the week was 34½°. The mean daily range of temperature in the week was 17°, the greatest range in the day being 24¼°, on the 19th, and the least 7¼°, on the 14th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—14th, 41.3°, + 0°.1; 15th, 41°.7, + 0°.3; 16th, 40°, — 1°.5; 17th, 43°.1, + 1°.5; 18th, 43°.1, + 1°.4; 19th, 44°.5, + 2°.8; 20th, 38°.6, — 3°.1. The mean temperature of the air for the week was 41°.8, being 0°.2 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 130¾° on the 17th, 129° on the 18th, 119¾° on the 19th, and 106° on the 16th; on the 14th the reading did not rise above 55°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 27½° both on the 18th and 20th, 30½° on the 19th, and 31° on the 16th; the mean of the seven lowest readings was 31°.

Wind.—The direction of the wind was E. and N.E., and its strength strong.

The weather during the week was fine, bright, and dry. The mornings were very cold, likewise were the nights. A *fog* or mist prevailed during the early part of the morning of the 20th.

No *rain* fell.

England: *Temperature.*—During the week ending Saturday, March 20, the highest temperatures of the air observed by day were above 57° at Truro, Blackheath (London), Leicester, Cambridge, and Nottingham, and below 50° at both Norwich and Leeds; the mean value from all stations was 54¾°. The lowest temperatures of the air observed by night were below 26° at Leicester, Cambridge, Wolverhampton, and Nottingham, and above 38° at both Truro and Plymouth; the general mean from all places was 30¾°. The extreme range of temperature in the week was above 31° at Leicester, Cambridge, and Nottingham, and below 17° at Plymouth and Brighton; the mean range from all stations was 24°.

The mean of the seven high day temperatures was above 52° at Truro, Bristol, Leicester, and Cambridge, and below 47° at Norwich, Sheffield, and Bradford; the mean value from all places was 50°. The mean of the seven low night temperatures was below 34° at Leicester, Cambridge, Wolverhampton, Nottingham, and Sheffield, and above 41° at Truro and Plymouth; the mean from all stations was 35¼°. The mean daily range of temperature in the week was above 19° at Leicester and Cambridge, and below 10° at both Truro and Plymouth.

The mean temperature of the air for the week from all stations was 41½°, being ½° lower than the value for the corresponding week in 1879. The mean temperature of the air for the week was above 45½° at Truro and Plymouth, and below 40° at Cambridge, Norwich, Wolverhampton, and Sheffield.

Rain.—Very little rain was measured during the week; at Plymouth 0.28 inch fell, and at Truro 0.11 inch fell, but at most other places no rain was measured; the average fall over the country was but three-hundredths of an inch.

The weather during the week was generally fine and dry, with cold mornings and nights. A little *fog* prevailed at some places on March 14.

Scotland: *Temperature.* — During the week ending Saturday, March 20, the highest temperatures of the air observed by day varied from 57° at Glasgow to 50° at Leith; the mean value from all places was 53½°. The lowest temperatures of the air observed by night varied from 27¼° at Aberdeen, to 31¼° at Greenock; the mean value from all stations was 29°. The mean range of temperature in the week from all places was 24½°.

The mean temperature of the air for the week from all stations was 40¾°, being 4¾° higher than the value for the corresponding week in 1879. The mean temperature was the highest at Glasgow, 43¼°, and the lowest at both Edinburgh and Leith, 39¾°.

Rain.—The amounts of rain measured during the week were very small. At Dundee 0.05 inch was measured, and at Aberdeen 0.03 inch fell; the average fall over the country was 0.02 inch only.

JAMES GLAISHER, F.R.S.

Florists' Flowers.

Seasonable Notes on Hardy Florists' Flowers.—Auriculas. — So far these charming spring flowers have made wonderful progress without any check to their development. Last year we were glad to place the whole of the plants into a house where they obtained artificial heat: this season they do not require this, but are nearly all in the cold frames. A few of those that are apt to come with cupped pips have been placed in the house, as also such that take a long time to open. Some varieties have their flowers open in two weeks after the pips can be discerned, others take five or six weeks. See p. 270 as to airing and shading the frames. The air is very frequently dry in April, and as the pots are quite full of roots the soil speedily becomes exhausted of moisture, so that it will be necessary to look over them every day; indeed there is something always required to be done to the plants in April. When there is more than one truss the others must be removed, but it must be done by picking off the pips merely; the flower-stems must not be taken off, else the portions remaining will rot, engender mould in the centre of the plant, and probably kill it. The trusses nearest the base of the plants are usually the best.

Carnations and Picotees.

April is rather a critical month. The plants are in their flowering pots by the end of March at the latest. It is desirable to keep the plants in cold frames as long as it is possible to do so after they are potted, as frosts at night, cold east winds by day, and rough weather, which may be expected even in April, seriously cripple the plants. I well remember the late Mr. N. Norman saying to me, in reference to this, "You cannot give your plants too much glass in the spring. Give them plenty of glass." These were as nearly as possible his own words, and he made this class of plants his life study. How he would have enjoyed the great Carnation and Picotee exhibitions held during the last two or three seasons! This is the month to sow seed. Fill the pots or pans to within 2 inches of the surface with the ordinary potting material, the top portion to be fine loam and leaf-mould with a little sand; in this sow the seeds just covering them over. Plunge the pots in a frame with a little bottom-heat, the seeds will vegetate more freely and sooner in heat; but if this is not available the pots may be placed in a cold frame.

Dahlias.

Pot roots should be started at once in a gentle heat if this has not yet been done. Shake the soil from the roots as soon as the eyes have been started, and repot the plants in 3-inch pots. Pot off rooted cuttings as soon as they are ready, and still propagate those varieties of which there is not yet sufficient stock. Earlier potted plants may be placed in a cold frame, but mats must be thrown over the glass at night. Sow seeds in heat, in the same way as in the case of Carnations.

Gladioli.

It is now quite time that the general collection was planted out. Instructions have already been given how this should be done. Such weather as we are now enjoying suits these plants well. They can be planted out in dry weather, and the ground is also in a good state to receive the corms. Sow seeds at once. I sow about thirty seeds in a 7-inch pot; at least twenty-five plants on an average will come up in each pot, and that is a sufficient number to give each a chance to form a good corm by the end of the season. One frame will do for these, for Dahlias, Hollyhocks, Carnations, &c.

Hollyhocks.

The instructions are similar to those given last month. Continue to pot off late propagated plants, and gradually inure them to the outer air. Plant out the earliest potted plants if they are quite ready, and encourage the late plants to make plenty of roots, to be planted out for successional bloom. Fork the ground over where the late plants have to be put out; the surface cannot be stirred up too often. *J. Douglas, Loxford.*

Enquiries.

He that questioneth much shall learn much.—Bacon.

Aaron's Rod.—What is the scientific name of the plant commonly called Aaron's Rod? *T. C. H.* [We have heard the Almond and the Golden Rod (Solidago) so called, but the authorities are silent upon the point. Can any of our readers answer the question? Eds.]

Purple Melic Grass (Melica coerulea).—I am very much interested in the culture and utilisation of this plant, and beg to propose the following questions in the hope of obtaining information:—1. How is it best propagated, or increased for planting? 2. How should it be planted? 3. I have obtained seeds of it in quantity, and at considerable expense, but the trial sowings of these are somewhat unsatisfactory. How should they be started or raised? 4. In the West of Ireland I see by a circular that a 10-acre plot of bog-land has been prepared for its growth. Is bog-land the best on which to plant the Melic? 5. Would any manurial stimulants increase the growth of the plant, and length of culm? If so, what manure or compound is best? 6. Any practical information from gentlemen interested in the growth and development, or utilisation, of this indigenous grass would be thankfully accepted. *Ebor.*

Answers to Correspondents.

Bone-dust as Manure: *Q.* Hunter, the famous surgeon and anatomist, was the first to notice the fertilising properties of bone-dust; but to Dr. Erasmus Darwin, the famous author of *The Botanic Garden*, and grandfather of Mr. Charles Darwin, is the credit due for first explaining its merits theoretically, and bringing it forward with authority. See the Introduction, by Mr. Charles Darwin, to Krause's *Life of Erasmus Darwin*, p. 113.

Erratum.—In Dr. Siemen's letter at p. 363, col. *b*, for shillings read pence, with reference to the expense per hour.

Forcing Seeds: *John Luke.* Probably the article you enquire about is Rippingille's Propagating Frame,

which is sold by the Albion Lamp Company, 118, Holborn, W.C.

Hyacinth Failure: *G. & W. Y.* The point of the spike, we should imagine, has been killed by cold—probably a downward draught from the window.

Insects: *J. J. B.* The small blue beetles which fed on your Turnips, Cabbage, Seakale, &c., last year are the Chrysomela (Phædon) Betulæ, which occasionally destroy the crop of Mustard seed in the Eastern Counties. A bag-net drawn over your plants would catch the beetles in large numbers, which should be scalded to death. *I. O. W.—C. W. V.* The little red grubs which are destroying your Raspberry buds are the caterpillars of a small beautiful moth (Tinea Corticella, Linn.,—rubiella, Bjerkander,—variella, Fab.). Pick off and burn the diseased buds, or give them a sharp squeeze, to kill the larvæ. Its transformations are figured in *Gard. Chron.* 1853, p. 757. *I. O. W.*

Names of Plants: *Kinmont & Co.* The variety of Pteris serrulata is very near to that known as fimbriata, and may come under the same designation.—*Mrs. Maynard.* Lavandula Stæchas, Atriplex Habimus, if a shrub.—*R. Nunn.* The Tulips are ordinary garden varieties, which we cannot pretend to identify. Their names are legion.—*J. M.* Your two Orchids were smashed in the Post-office. You should have sent them in a box strong enough to withstand the pressure to which such packages are subjected in transit.—*J. G. Mitchinson.* One of the forms of Narcissus odorus.—*W. B. T.* 7, Lycaste Skinneri; 8, Limatodes rosea; 9, Vanda tricolor; 10, Phaius Wallichii; 11, Odontoglossum Phalænopsis; 12, Dendrobium, not recognised, as the habit is not shown by the sample sent.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* Advertisements, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Catalogues Received: — Thomas S. Ware (Hale Farm Nurseries, Tottenham), Illustrated Catalogue of Choice Hardy Perennials, and Other Plants.

Communications Received. — G. N. — W. G. — R. S.— H. W. W.—T. B.—Philanthes.—A. D.—J. A.—Urania.—H. W.—W. B.—Amateur.—The Hon. Mrs. H.—C. W. V.—R. M.—J. E. H.—J. S.—T. C.—W. H.—F. W. B.—J R. J.—Enquirer.—W. G. C. & S.—J. K.—G. H.—J. A.—J. V. & Sons.—A. M.—C. L. (next week).—E. W. B.—R. H.—J. D.—E. O.—C. S.—A. H. C.—G. M.—J. E. V.—J. T. B.

Markets.

COVENT GARDEN, March 24.

Our business in forced goods is now at a standstill, and will be for a week or two, owing to the holidays and dissolution of Parliament — late Grapes and forced Strawberries experiencing a very severe decline. Best outdoor vegetables make high prices, but common sorts are principally cleared by the costermongers. *James Webber, Wholesale Apple Market.*

Plants in Pots.—Wholesale Prices.

	s. d.	s. d.		s. d.	s. d.
Arum Lilies, p. doz.	6	0–12 0	Ficus elastica, each	1 6–	7 6
Azaleas, per dozen	18	0–60 0	Foliage Plants, various, each	2 0–	10 6
Begonias, per doz.	6	0–18 0	Fuchsias, per dozen	9 0–	15 0
Bouvardias, per doz.	12	0–24 0	Genista, per dozen	9 0–	18 0
Cinerarias, per doz.	6	0–12 0	Hyacinths, per doz.	4 0–	9 0
Cyclamen, per dozen	9	0–24 0	Myrtles, per doz.	6 0–	12 0
Cyperus, per dozen	4	0– 9 0	Palms in variety, each	2 6–	21 0
Dielytra, per doz.	9	0–15 0	Pelargoniums, scarlet zonal, per doz.	6 0–	9 0
Dracæna terminalis	30	0–60 0	Primula, single, per dozen	4 0–	6 0
— viridis, per doz.	12	0–24 0	Spiræa, per dozen	6 0–	18 0
Erica gracilis, per dozen	9	0–18 0	Tulips, 12 pots	6 0–	12 0
— hyemalis, p. doz.	6	0–24 0			
Euonymus, various, per dozen	6	0–18 0			
Ferns, in var., doz.	4	0–18 0			

Cut Flowers.—Wholesale Prices.

	s d.	s. d.		s. d.	s. d.
Abutilon, 12 blooms	0 4–	0 6	Narcissus, Paper-white, 12 spikes	1 0–	1 6
Arum Lilies, per dozen	4 0–	9 0	Pelargoniums, 12 spr.	1 6–	3 0
Azalea, 12 sprays	0 6–	1 0	— zonal, 12 sprays	0 6–	1 0
Bouvardias, per bun.	1 0–	4 0	Primroses, 12 bunch.	1 0–	1 6
Camellias, per doz.	2 0–	6 0	Primula, double, per bunch	1 0–	1 6
Carnations, per dozen	1 0–	3 0	— single, per bunch	0 6–	..
Cyclamen, 12 blms.	0 4–	1 0	Roses (indoor), doz.	1 6–	9 0
Epiphyllum, 12 blms.	0 6–	1 0	— Roses, Fr., doz.	2 0–	6 0
Eucharis, per doz.	4 0–	9 0	Spiræa, 12 sprays	1 0–	2 0
Euphorbia, 12 sprays	3 0–	6 0	Tropæolum, 12 bun.	1 0–	3 0
Gardenias, 12 blms.	3 0–	12 0	Tuberoses, per dozen	4 0–	6 0
Heliotropes, 12 sp.	0 6–	1 0	Tulips, 12 blooms	1 0–	1 6
Hyacinths, 12 spikes	4 0–	9 0	Violets, Fr., per bun.	1 6–	2 6
— small	1 6–	4 0	— English, p. bun.	1 0–	2 0
— Roman, 12 spikes	1 0–	2 0	White Lilac, Fr., per bundle	4 0–	8 0
Lily of Val., 12 spr.	0 9–	2 0			
Mignonette, 12 bun.	6 0–	9 0			

Fruit.

	s. d.	s. d.		s. d.	s. d.
Apples, ½-sieve	2 0–	6 0	Oranges, per 100	6 0–	12 0
— American, barrl.	18 0–	30 0	Pears, per dozen	4 0–	8 0
Cob Nuts, per lb.	1 0–	1 6	Pine-apples, per lb.	1 0–	3 0
Grapes, per lb.	8 0–	12 0	Strawberries, per oz.	0 4–	0 9
Lemons, per 100	6 0–	10 0			

Vegetables.

	s. d.	s. d.		s. d.	s. d.
Artichokes, p. bush.	10 0–	14 0	Herbs, per bunch	0 2–	0 4
Asparagus, Sprue, per bundle	1 0–	..	Horse Radish, p. bun.	4 0–	..
— English, p. 100	12 0–	..	Lettuces, Cabbage, per doz.	2 0–	3 0
— French, per bun	7 0–	25 0	Mint, green, bunch	1 6–	..
— French natural, per bundle	3 6–	..	Mushrooms, p basket	1 6–	2 0
Beet, per doz.	1 0–	2 0	Onions, per bushel	8 0–	..
Brussels Sprouts, lb.	0 6–	..	— Spring, per bun.	0 6–	..
Cabbages, per doz.	1 0–	2 0	Parsley, per lb.	1 6–	..
Carrots, per bunch	0 8–	..	Peas, per lb.	1 0–	..
— French, per lb.	0 6–	..	Potatos (new), per lb.	0 3–	0 9
Cauliflowers, per doz.	2 0–	5 0	Rhubarb (Leeds), per bundle	0 9–	..
Celery, per bundle	1 6–	4 0	Seakale, per punnet	3 0–	..
Chilis, per 100	3 0–	..	Shallots, per lb.	0 6–	..
Cucumbers, each	1 0–	2 0	Spinach, per bushel	5 0–	6 0
Endive, per score	4 0–	..	Tomatos, per dozen	3 0–	..
Garlic, per lb.	1 0–	..	Turnips, new, bunch.	0 6–	..

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 150*s.* to 190*s.* per ton. German, 6*s.* to 7*s.* 6*d.* per bag; new English, 2*s.* per lb.

SEEDS.

London: *March* 22.—As might be expected, there is now an active sowing demand for farm seeds; but as regards values no important change is shown. Red Clover seed can now be bought in London at very moderate rates. The quality of the Canadian Clover this season is finer, and the price lower, than ever before. Some good yearling English Cow-grass is also offering at very reasonable figures. Trefoil, without being quotably higher, has lately met with increased favour. White Clover is comparatively scarce and dear. Alsike is unusually cheap. There is no alteration in grasses. Spring Tares, having been scarce and much wanted, advanced during the past week 2*s.* to 3*s.* per quarter. Of small Kœnigsbergs the supply on the spot seems nearly exhausted. Some good foreign gore Vetches are obtainable on Mark Lane at 49*s.* per quarter. In Canary seed the tendency is upward. Hemp seed realises 31*s.* per quarter. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

A steady tone prevailed at Mark Lane on Monday. In Wheat there was very little doing, and rates were much the same at the close as on Monday se'nnight. Barley was rather dull, with rates not over-well supported in the case of inferior qualities. Malt was quiet and unaltered. For Oats prices moved up from 9*d.* to 1*s.* per quarter as compared with the previous Monday. Maize was the reverse of plentiful, and quotations were very firm without being higher. Beans and Peas were held for extreme rates. Flour was taken off to a small extent on former terms.—On Wednesday Wheat changed hands quietly, at barely late rates. Barley was in slow demand on former terms. No change took place in malt. Oats and Maize were tolerably firm, but with a quiet market. Beans and Peas were unaltered. The flour trade was dull and weak. — Average prices of corn for the week ending March 20: — Wheat, 46*s.* 1*d.*; Barley, 34*s.* 11*d.*; Oats, 23*s.* 3*d.* For the corresponding period last year:—Wheat, 40*s.* 8*d.*; Barley, 33*s.* 9*d.*; Oats, 21*s.* 1*d.*

CATTLE.

At Copenhagen Fields on Monday trade in beasts was not very brisk, yet there was a fair demand for choicest qualities at rather over the quotations of Monday se'nnight. For sheep the demand was good, and prices higher. Choice lambs were scarce and very dear. Calves also fully maintained late rates.—Quotations:—Beasts, 4*s.* 4*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.*; calves, 5*s.* 6*d.* to 6*s.* 8*d.*; sheep, 5*s.* 4*d.* to 5*s.* 8*d.*, and 6*s.* 4*d.* to 6*s.* 6*d*; pigs, 3*s.* 6*d.* to 5*s.*

HAY.

Tuesday's Whitechapel Market report states that the best fodder met with a steady inquiry, but there was not much sale for inferior sorts. The supply was moderate.—Prime Clover, 110*s.* to 132*s.*; inferior, 70*s.* to 100*s.*; prime meadow hay, 90*s.* to 100*s.*; inferior, 50*s.* to 80*s.*; and straw, 30*s.* to 38*s.* per load. — Cumberland Market quotations:—Superior meadow hay, 100*s.* to 110*s.*; inferior, 40*s.* to 75*s.*; superior Clover, 120*s.* to 130*s.*; inferior, 80*s.* to 100*s.*; and straw, 36*s.* to 40*s.* per load.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that Potatos have been in fair demand, and the better descriptions have been firm in price. The arrivals continue on a moderate scale. Scotch Regents, 140*s.* to 160*s.*; Lincoln Champions, 175*s.* to 185*s.*; Scotch ditto, 170*s.* to 180*s.*; Victorias, 160*s.* to 180*s.* per ton. German reds, 6*s.* 6*d.* to 8*s.* 6*d.*; Dutch rocks, 5*s.* 6*d.* per bag.—During last week 165,960 bags were received at London from Hamburg, 19,745 Bremen, 7526 Stettin, 1430 Antwerp, 2156 Colberg, 1101 Ghent, 1168 Harlingen, 7243 Harburg, 2708 Rotterdam, 2468 bags 1279 sacks Boulogne, and 1210 bags from Malta.

Government Stock.—The closing price on Monday of Consols, for delivery, was 97⅞ to 98, and for the account, 98 to 98⅛. On Tuesday the price for delivery was unchanged, but for the account the closing figures were 97 13/16 to 98 1/16. On Wednesday Consols left off at 98 to 98⅛ for both delivery and the account.

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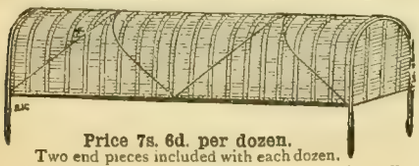

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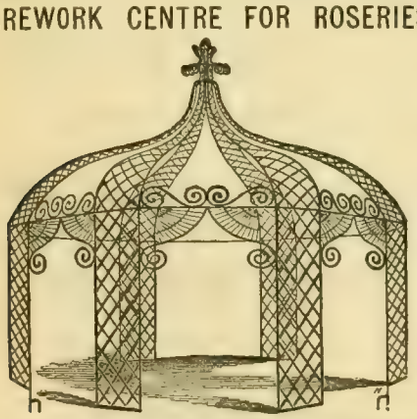

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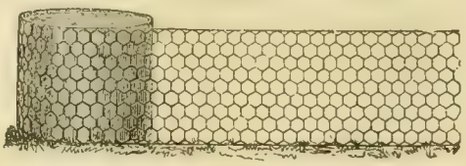

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1⅝ in.	Small Rabbits, &c.	19	3*d.*	18	3½*d.*	17	4¼*d.*
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RALPH WALLER AND CO., 45, Dale Street, Manchester, Manufacturers of all kinds of GARDEN NETTING, &c., for protecting Fruit Trees from frost; also HOTHOUSE SHADINGS, of various thicknesses, superior to any other yet discovered for lightness, strength, and durability, standing as they do all weathers. TIFFANY, of various kinds, always on hand. NETTING and SHADING, in pieces 30 yards long by 1½ and 2 yards wide.

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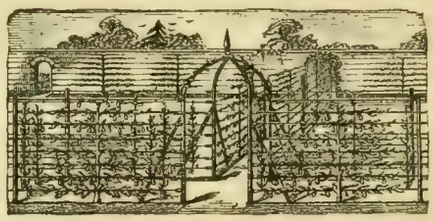
IMPROVED ESPALIER FENCING & WALL TRAINERS.



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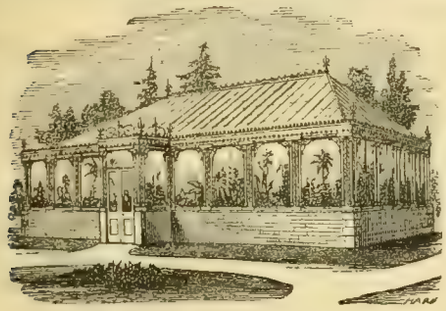

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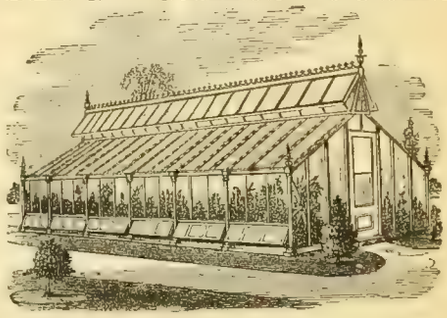

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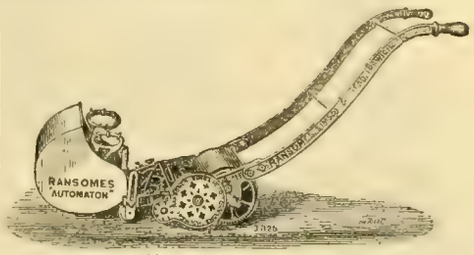

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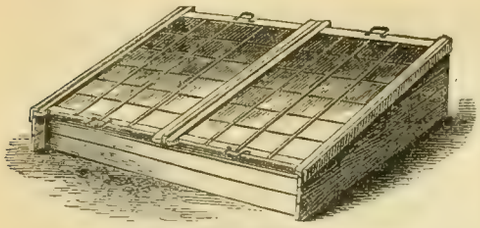

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The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.

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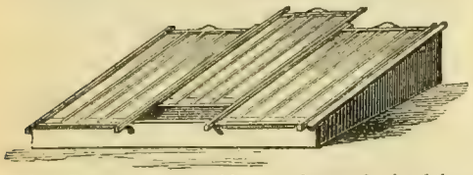

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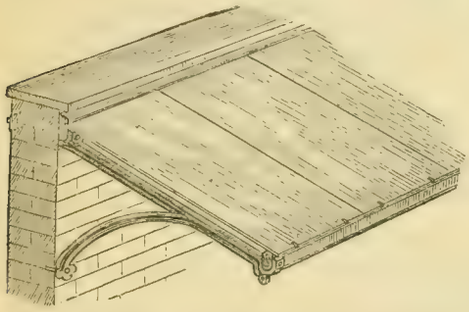

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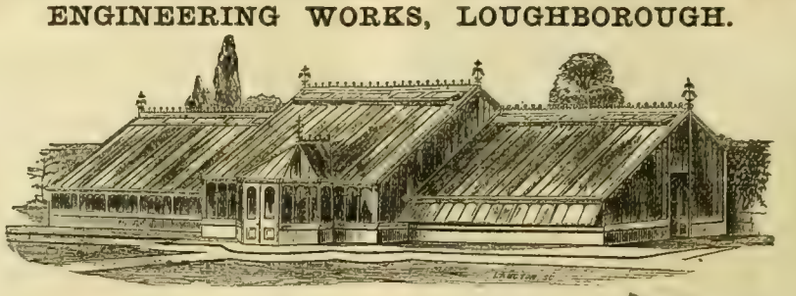

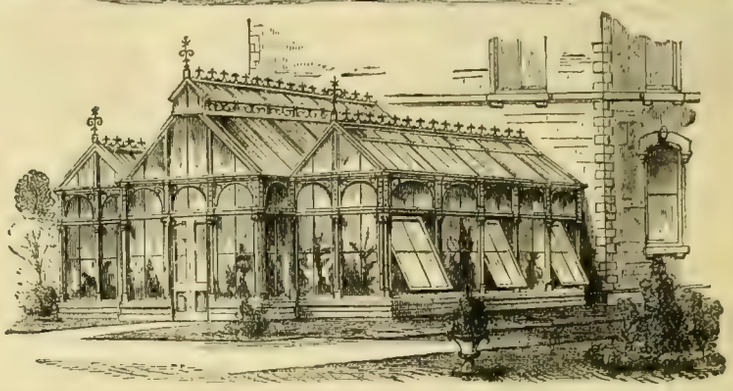

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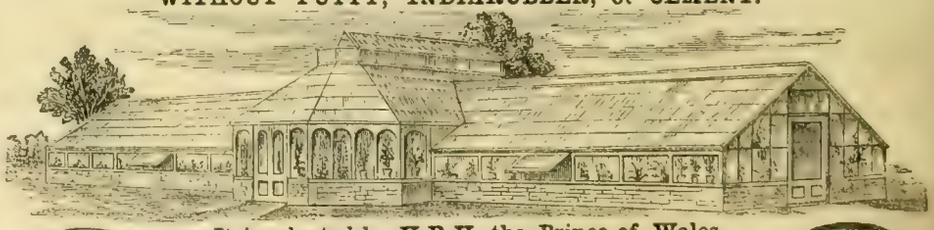

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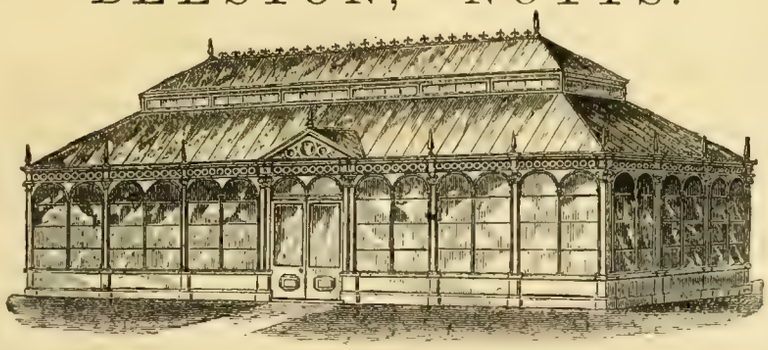

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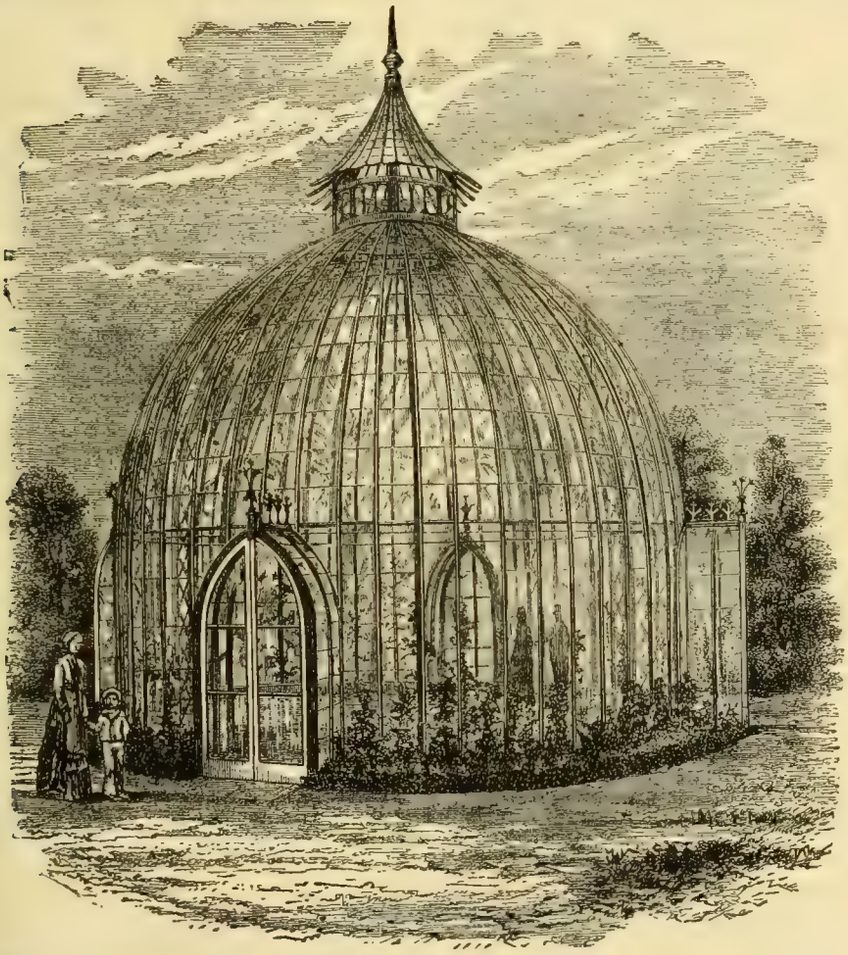

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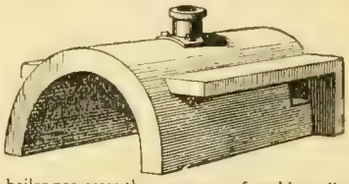

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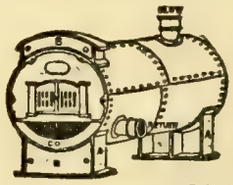

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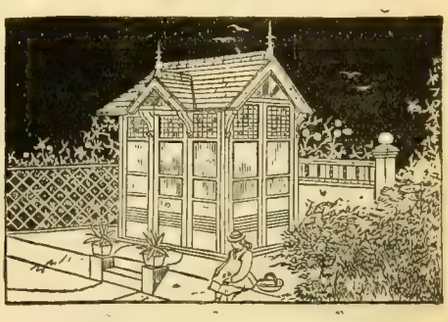

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9 ,,	..	.. 0 5 6		20 ,,	..	.. 0 11 0	
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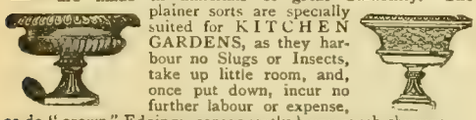

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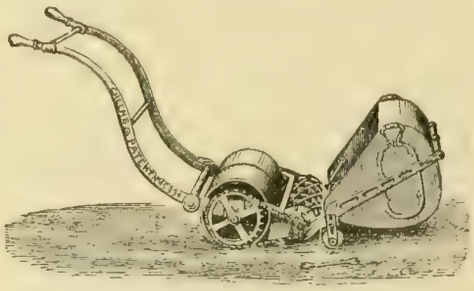

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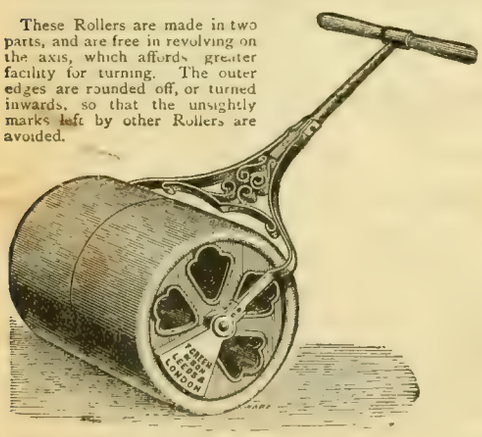

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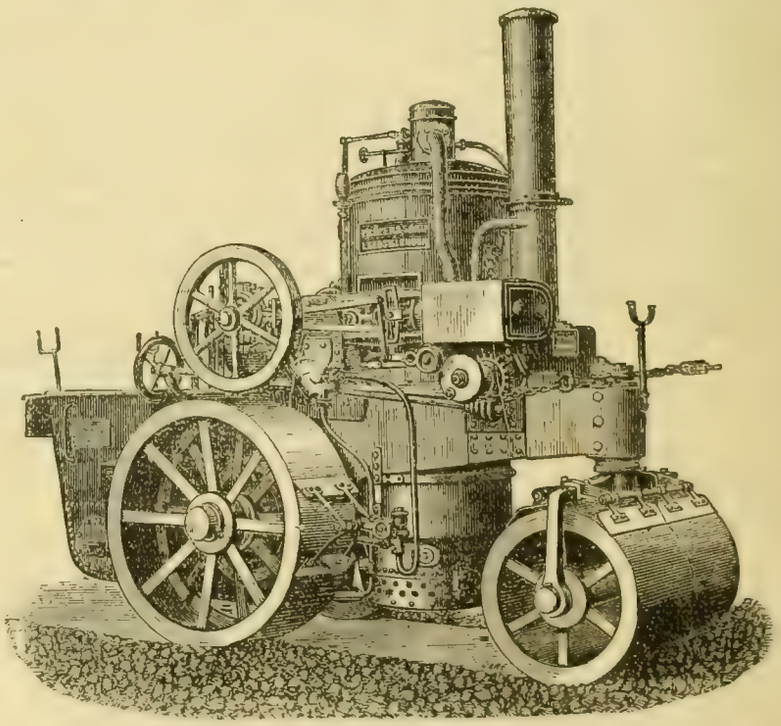

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of those already published:—

1879.—October	11.	1880.—January	10.
,,	25.	,,	24
November	8	February	7.
,,	15.	,,	21.
,,	29.	March	20.
December	13.	,,	27.

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER. HORTICULTURAL MEETING in the Town Hall, Manchester, on TUESDAY and WEDNESDAY, the 27th and 28th inst.
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Auction Mart, Tokenhouse Yard, Opposite the Bank, E.C.

MONDAY NEXT.—ORCHIDS and BULBS

MESSRS. PROTHEROE AND MORRIS will SELL at the Mart, on MONDAY NEXT, at half-past 11 o'Clock precisely, HERBACEOUS PLANTS and BULBS, from Holland, named Gladiolus, thirty-six young plants of Dicksonia antarctica, Carnations, Picotees, English grown Lilies, and various other Bulbs, together with 300 lots of Established ORCHIDS, mostly from private Collections, for Sale, without reserve. Amongst them will be found Chysis aurea, Cymbidium eburneum, C. Mastersii, Oncidium Roezlii, O. concolor, O. ascendens, O. dasytile, O. cucullatum, O. Rogersii, Odontoglossum Alexandræ, O. vexillarium, O. Phalænopsis, O. Pescatorei, tripudens, O. madrense, Acropera Loddigesii, Dendrobium fimbriatum, D. thrysiflorum, D. Ainsworthii, D. heterocarpum, D. tortile, Pilumna fragrans, Ada aurantiaca, Cypripedium Stonei, C venustum, Vanda cœrulea, V undulata, Lælia anceps, L majalis, Phajus maculata, Miltonia Regnelli purpureum, Mesospinidium vulcanicum, Anthurium Scherzerianum album, and a great quantity of other rare and beautiful varieties.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Important Sale of a First-class Collection of

CARNATIONS, PICOTEES, PINKS, and CLOVES, 500 Standard and other ROSES, selected FRUIT TREES, hardy CONIFERÆ SHRUBS, and AMERICAN PLANTS, GREENHOUSE PLANTS, DAHLIAS, choice SEEDS, LILIUMS, RANUNCULUS, ANEMONES, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the City Auction Rooms, 38 and 39, Gracechurch Street, E.C., on THURSDAY, April 8 at 12 o'Clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Orchids.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, on MONDAY, April 12, about 300 lots of ESTABLISHED ORCHIDS, STOVE PLANTS and PALMS, mostly from private collections. For sale without reserve.

Further particulars next week.

Catalogues of the Auctioneers at the Mart, and 98, Gracechurch Street, E.C

Eastwick Park Farm, Great Bookham, near LEATHERHEAD.

MR. JOHN LEES is instructed by Thomas Lucas, Esq., whose tenancy has expired, to SELL by AUCTION, on the Premises, on THURSDAY and FRIDAY, April 15 and 16, at 12 o'Clock each day, the whole of the LIVE and DEAD FARMING STOCK, comprising twenty-four Suffolk Horses and Colts, two Nag Horses, two Cart Colts, Herd of Shorthorns, Herd of Pure-bred Jerseys, also seventeen Milch Cows and Heifers, and five Steers, Flock of Southdown and Hampshire Down Ewes, with Lambs, Fat Sheep; Sussex and Berkshire Pigs and Poultry. The Dead Stock includes Portable Engines, Threshing Machine, Elevator, Reapers, Cattle Cart, ten Crosskill's Carts, Farm Machinery and Implements.

Reigate, Surrey.—March 10, 1880.

Eastwick Park Farm.

MR. JOHN LEES will include in the above SALE the well known Stud of twenty-three PURE-BRED SUFFOLK CART HORSES and MARES, together with the STALLION "Yellow-hair Laddie."

Eastwick Park Farm.

MR. JOHN LEES will include in the above SALE the Herd of SHORTHORNS descended from the "Charmer," and other fashionable strains, comprising ten Cows and Heifers, the Bull "Prince of the Blood" (37,259), and three others.

Eastwick Park Farm.

MR. JOHN LEES will include in the above SALE the Herd of PURE-BRED JERSEY CATTLE, comprising nine Cows and Heifers, and the Bull "Young Hero."

May be viewed upon application to Mr. HUTCHINSON, at Eastwick, and Catalogues on the Premises, and of Mr. JOHN LEES, Auctioneer and Land Agent, Reigate.

FOR SALE, the Lease and Goodwill, with upwards of 12,000 feet of Glass Erections (all heated with Hot Water), Stock and Utensils, of an old-established NURSERY and FLORIST BUSINESS, with a good Jobbing Connection—within 4 miles of Covent Garden. If required part of Purchase Money may remain at 5 per cent. Satisfactory reasons given for disposal. Apply to

Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.; and Leytonstone, E.

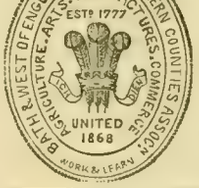
PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN, and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

Fifty Nurseries, Market Gardens, Florist and Seed BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS, HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained gratis at 98, Gracechurch Street, E.C.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

BATH and WEST of ENGLAND SOCIETY
(Established 1777) and
SOUTHERN COUNTIES ASSOCIATION.



WORCESTER MEETING,
June 2, 3, 4, 5 and 7.

ENTRIES of LIVE STOCK, IMPLEMENTS, &c., CLOSE APRIL 21, after which date no Fees nor Entries can be received.

POULTRY ENTRIES CLOSE MAY 5.

Forms and all information supplied on application to

JOSIAH GOODWIN, Sec.,
4, Terrace Walk, Bath.

How to Grow the Best Cinerarias.

SEE

SUTTON'S AMATEUR'S GUIDE.

Price 1s., or post-free for fifteen stamps.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

The best, and will become the most popular and

profitable plant of the year.

IVY PELARGONIUM MRS. H. CANNELL—Illustrated in *Gardeners' Chronicle*, *Gardeners' Magazine*, and *Florist and Pomologist*, and is admitted by all who have seen it to be an acquisition, and one of those good plants that only come occasionally, and give everybody satisfaction.

	Each—s. d.
Plants showing flower	5 0
Rooted cuttings, by post	4 0
Cuttings	1 10

Post free.

AN ACRE of VIOLAS and VIOLETS.—Can supply good plants, full of flower, at the very cheapest rate, either by the dozen or 1000. For the most correct and complete descriptions respecting them see H. C.'s *Floral Guide*, post-free for twelve stamps.

The Home for Flowers, Swanley, Kent.

F. AND A. SMITH'S BALSAM.—Seed of the above can be had from most Seedsmen throughout the world, in 1s. and 2s. packets mixed, and in 2s. 6d. collections of nine colours; also CINERARIA, PRIMULA, and CALCEOLARIA, in 1s., 2s. 6d., and 5s. packets, or direct from F. AND A. SMITH, West Dulwich, S.E.

N.B.—Blooms from our superb collection of Cinerarias and Primulas sent free on receipt of four stamps.

How to Grow Spring Flowers from Seeds.

SEE

SUTTON'S AMATEUR'S GUIDE.

Price 1s., or post-free for fifteen stamps.
SUTTON AND SONS, The Queen's Seedsmen, Reading

Verbenas—Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other good Bedding and Exhibition varieties, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, for cash with order.

Queen's Road Nursery, Markhouse Common, Walthamstow.

PICOTEES, best named varieties, 12s. per dozen pairs.

CARNATIONS, Selfs, various colours, 5s. per dozen.

PANSIES, named, 4s. per dozen. All strong, healthy plants.

Terms to the Trade.

SAML. HARTLEY, Heaningley Nursery, near Leeds.

CYCLAMENS.—Pot now for Winter Flowering—Strong, healthy Seedlings, in distinct and varied colours, 1s. 6d. per dozen, 10s. per 100. Choice mixed ANEMONE, 1s. per packet—all post free.

G. CORNHILL, Byfleet, Weybridge Station, Surrey.

Stock Plants.

GERANIUMS.—Stock Plants of New and valuable Geraniums with cuttings, for cash.

The magnificent new Silver-edged Geraniums, with grand flowers of all colours, strong plants 4s. 6d. per dozen, 25s. per 100, packed and put on rail. Strong rooted cuttings of all the best sorts 3s. per dozen, or 18s. per 100, by post. Cuttings 10s. 6d. per 100, post-free.

LISTS free on application. P.O.O. payable to

CHARLES BURLEY, Nurseries, &c., Brentwood, Essex.

FERNS from Devonshire, Cornwall, and Somerset, with Instruction Book for Making Rockery, Planting, &c., with each 5s. order. Fourteen named varieties, 100 7s., Small (Post) Ferns, 50 for 2s. Three varieties CLUB MOSS, 1s.; PRIMROSES, 2s. 6d. per 100, 18s. per 1000. British and Exotic CATALOGUE, 2d

GILL, Lynton, Devon.

Vines—Vines—Vines.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, has still on hand a fine Stock of Fruiting and Planting CANES of Muscat of Alexandria, Bowood Muscat, Mrs. Pince, Gros Guillaume, Burgundy, Prince, and Madresfield Court. Also Planting Canes of several other varieties. CATALOGUE free. The Trade supplied.

Remarkable Clearance.

BUNDLE of FLOWER SEEDS, containing 100 Separate Packets, 2s., carriage paid; Half, 1s. 3d. If not worth six times the amount or if unsatisfactory, money returned. Agents wanted everywhere, immediately, to fill up spare time.

W. H. HOWELL, Seed Merchant, Flackwell, High Wycombe.

CUT FLOWERS.—Beautiful ROSE-BUDS, Maréchal Niel and Lamarque, 3s. 6d. per dozen, carriage free.

ECCREMOCARPUS SCABER plants, 1-yr. old, 6d. each, three for 1s., carriage free.

S. COOPER, The Nurseries, Hadleigh, Suffolk.

PLANTING POTATOS.—Fine samples of the following, at moderate prices:—

PATERSON'S VICTORIAS,
SNOWFLAKE,
SCOTCH CHAMPION;
Also PRICKLY COMFREY.

JOHN AND GEORGE McHATTIE, Seed Merchants, Chester

CORSICAN PINE, Pinus Laricio.—April best month to plant. 200,000 stout transplanted, from 6 inches to 3 feet. This valuable timber tree is of very rapid growth, and perhaps the best known for withstanding the sea breeze. Special prices on application.

JAMES DICKSON AND SONS, "Newton" Nurseries, Chester.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

Azaleas coming into Bloom.

JAMES IVERY AND SON beg to offer as under, in the best varieties:—

Good Plants (in 48's), well set, at 21s. per dozen.
Smaller Plants, well set, at 15s. per dozen.
Cash with orders from unknown correspondents.
The Nurseries, Dorking, Surrey.

LOBELIAS.—Ebor, Brighton, and Pumila magnifica, from cuttings, 2s. 6d. and 4s. per 100.

CUCUMBER PLANTS (Telegraph), from 1s. 6d. each, ready for planting.

CYCLAMEN PERSICUM, in bloom, 30s. per 100, sample dozen 5s.

WHITE VESUVIUS, 20s. per 100, sample dozen 3s.

All package free for cash.

GEO. GUMMOW, 114, Loughborough Road, Brixton, S.W.

SEEDLINGS.—

2-yr. SCOTCH FIR.
2-yr. AUSTRIAN PINE.
2-yr. ALDER.
2-yr. LARCH.
2-yr. ASH.
2-yr. SILVER FIR.

Special low prices on application.

RODGER, McCLELLAND AND CO., 64, Hill Street, Newry.

NICOTIANA LONGIFLORA.—A deliciously fragrant plant with pure white flowers; one will scent a whole house; easily cultivated, almost perpetual bloomer. Packet of seeds, with cultural directions, price 7d. Stamps with order.—W. J. MARSH, Woodbridge, Suffolk.

MAGNUM BONUM POTATOS.—A splendid sample of the above, grown from Seed direct from the raiser (Mr. Clarke), price 7s. 6d. per bushel of 56 lb., free on rail, sacks included, on receipt of P.O.O.

H. T. BATH, Seedsman, &c., 80, High Street, Lymington.

Cheap **Orchids.**

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

TREE SEEDS.—
ABIES DOUGLASII, post-free, 2s. 6d. per ounce.
" MENZIESII, post-free, 4s. per ounce.
PICEA NOBILIS, post-free, 4s per ounce.
PINUS MONTICOLA, post-free, 3s. per ounce.
LARCH, Native, 2s. per pound.
The above are all of crop 1879, and collected from Trees grown in Scotland, and may be fully relied on for purity and hardiness.
Special prices for large quantities, and to the Trade, on application.
BEN. REID AND CO., Nurserymen and Seedsmen, Aberdeen.

WILLIAM BARRON AND SON'S Descriptive CATALOGUE of Coniferæ, Hardy Ornamental Trees, and General Nursery Stock—also their Rose, Forest, and Fruit Tree CATALOGUE—may now be had on application. A personal inspection of their unrivalled stock solicited. The Nurseries are three minutes' walk from the Borrowash station on the Midland (Derby and Nottingham) Railway.
Elvaston Nurseries, Borrowash, Derby.

Wandsworth Common and Garret Lane Nurseries.

R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.
All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
CATALOGUES free by post on application.

New Catalogue for 1880.

WM. CLIBRAN AND SON, The Oldfield Nurseries, Altrincham, Cheshire, will have great pleasure in sending their DESCRIPTIVE PRICED LIST upon application. Their stock of Florists' Flowers, Bedding and Soft-wooded Plants generally, is surpassed by none either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to purchasers is that none of the Plants offered are taken from a warm propagating-house and sent off immediately, but are all carefully hardened, and most of them potted off singly, and are thereby fitted for transit by post or rail without the slightest injury. A great proportion of the under-mentioned are autumn-struck plants, and can be had in pots if required, and all in a variety of sorts and colours, all good for exhibition or home decoration :—

Our Selection. Per doz.—	s.	d.
Abutilons, in variety ..	3	0
Achimenes, in variety ..	3	0
Ageratums, small plants, per 100, 5s.	1	0
Ageratums, in pots, per 100, 15s.	2	6
Antirrhinums	3	6
Begonias, Tuberous, from 4s. to	18	0
Other sorts	3	0
Bouvardias, 4s. to ..	6	0
Caladiums	9	0
Calceolaria Golden Gem (not in pots) per 100, 5s.	1	0
Carpet Bedding Plants (see Catalogue)		
Carnations and Picotees, 12 plants	7	0
12 pairs	12	0
Chrysanthemums, in great variety, per 100, 18s.	3	0
Clematis, to name ..	9	0
Coleus	3	0
Dactylis elegantissima, per 100, 6s.	1	0
Dahlias, per 100, 20s. ..	3	6
Delphiniums	6	0
Epiphyllum	9	0
Ferns, Stove and Greenhouse, 6s. to	9	0
Fuchsias, per 100, 18s.	3	0
Gardenia florida ..	6	0
Greenhouse Plants ..	9	0
Geranium bicolor ..	3	0
Geranium, Silver-edged	3	6
Geranium, Double ..	3	0
Geraniums for Bedding	3	0
Geraniums, for pot culture, 3s. to	6	0
Gladiolus, splendid seedlings, per 100, 20s. ..	3	0
Gladiolus Brenchleyensis, per 100, 6s. ..	1	0
Gloxinias, 6s. and ..	9	0
Hardy Climbing Plants, in great variety, 6s. ..	9	0
Hollyhocks, Seedlings	4	0
Helianthemums	2	6
Herbaceous Plants, per 100, 20s.	3	0
Heliotropes	2	6
Hepaticas	4	0
Iresine Lindeni, per 100, 10s.	2	0
Iris, German	3	0
Ivies, in variety	6	0
Ivies, Irish	3	0
Lantanas	2	6
Lilium auratum, very fine, each, 1s. and 1s. 6d.		
Lobelias, small, per 100, 4s.	1	0
Lobelias, in pots ..	2	6

Our Selection. Per doz.—	s.	d.
Mesembryanthemum fol. var., per 100, 10s.	2	0
Mimulus, in variety ..	3	0
Myosotis, per 100, 6s. ..	1	6
Pæonies, white, blush, crimson, and other shades	6	0
Pansies, show, per 100, 25s.	3	6
Pansies, Bedding, about 20,000 to select from, per 100, 12s.	2	0
Pentstemons, per 100, 25s.	3	6
Phloxes, per 100, 25s. ..	3	6
Pelargoniums, Show, Fancy, and French, 6s. to	9	0
Pinks, per 100, 25s. ..	3	6
Potentillas, Double ..	6	0
Polyanthus, Seedlings, per 100, 5s.	1	0
Polyanthus, named sorts (see Catalogue)		
Primroses, Double, 4s. to	9	0
Primroses, old Double Velvet, 1s. 6d each.		
Primroses, Single, assorted colours ..	2	0
Pyrethrums, Double ..	6	0
Roses, H.P., fine plants from ground, per 100, 40s.	6	
Roses, Climbing or Mosses	4	0
Rock Plants, per 100, 15s.	3	0
Salvias	3	0
Saxifrages	3	0
Sedums	3	0
Sedum acre aurea, elegans, and glaucum, per 100, 8s.	1	6
Stove Plants	9	0
Succulents, 4s. to ..	6	0
Tropæolums	3	0
Violas (immense stock of best sorts), per 100, 8s. to 12s.	2	0
Verbenas, stock plants, in pots	3	0
Verbenas, young, not in pots	1	6
Violets, sweet	3	0
Vines, all the leading kinds for planting and fruiting, 30s. to ..	60	0
Strawberry Runners (our collection contains 65 varieties), per 100, 2s. 6d.		
Apples, Pears, Plums, Cherries, Pyramid, 6s. to	18	0
Dwarf-trained, 18s. to ..	30	0

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.
Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV Bridge, Edinburgh.

Tricolor Geraniums.

ALFRED FRYER offers the following, in Autumn-struck Plants, at per dozen for cash :—Golden Tricolors : Isle of Beauty, 4s. 6d. ; Lady Cullum, 3s. 6d. ; Macbeth, 4s. 6d. ; Mrs Pollock, 3s. 6d. ; Peter Grieve, 6s. ; Sir C. Napier, 3s. 6d. ; S. Dumaresque, 3s. 6d. Silver Tricolors : Lass o' Gowrie, 3s. 6d. ; Mrs. John Clutton, 3s. ; Queen of Hearts, 3s. 6d. ; Prince Silverwings, 3s. ; A Happy Thought, 3s. Package free for cash with order. Post-free for 6d. per dozen extra.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Rhododendrons with Bloom Buds.

H. LANE AND SON can supply large plants for immediate effect. CATALOGUE on application.
The Nurseries, Berkhamsted, Herts.

Trade Offer.

RODGER, McCLELLAND, AND CO, 64, Hill Street, Newry, have to offer as noted below—prices on application :—
PRIVET, Oval-leaved, 1½ to 2 feet, and 2½ to 3½ feet.
THORN QUICKS, all sizes up to 2½ feet.
MAHONIA AQUIFOLIA, 1 to 2 feet.
PINE, Austrian, very fine, all sizes up to 1½ foot.
COTONEASTER SIMMONDSII, 2 to 3 feet.
POPLAR, Canadian, 4 to 10 feet.
LAUREL, Portugal, 1½ to 2 feet.
" Colchic, 1½ to 3 feet.

SUTTON'S BEAUTIFUL LAWNS.

PARIS UNIVERSAL EXHIBITION, 1878.

SUTTON'S PAMPHLET
ON
Laying Down and Improving Lawns, &c.,
Gratis and post-free on application.

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers the following Plants, of which he has a very large stock :—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000 ; 100, in 12 choice sorts, 8s. ; or in 25 sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100 ; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100 ; Master Christine, best pink, 12s. per 100 ; White Vesuvius and New Life, 20s. per 100 ; Dr. Denny, nearest to blue, fine, 5s. per doz. Pelargoniums, in 12 best varieties, 5s. per doz , 30s. per 100.
" TRICOLORS—Mrs. Pollock, 2s. 6d. per doz., 18s. per 100 ; Sir R. Napier and Sophie Dumaresque, 3s. per doz , 20s. per 100.
" SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 12s. per 100 ; Princess Alexandra and Prince Silverwings, 15s. per 100.
" GOLD-LEAVED—Crystal Palace Gem, 12s. per 100 ; Happy Thought, 15s. per 100.
" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 12s. per 100 ; Madame Amelia Baltet, very fine white (the best), 20s. per 100.
" BRONZE—Maréchal McMahon, the best for bedding, 18s per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

How to Grow the Best Gloxinias.

SEE SUTTON'S AMATEUR'S GUIDE.
Price 1s., or post-free for fifteen stamps.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

VIOLAS, 20,000 fine strong plants :—
" cornuta, white, } 5s. per 100, 45s. per 1000.
" " Queen of Blues, }
LETTUCE, strong autumn sown :—
" Siberian Cos, } 7s. 6d. per 1000.
" Giant Brown, }
Cash only. Carriage and package free to London.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

MAGNUM BONUM and CHAMPION.—The two best disease-resisting Potatos in cultivation. Stock of the former, from Messrs. Sutton, 1878 ; latter from Scotland last spring. Sample hundredweight bags of Magnum Bonums, 14s. ; and Champions 10s. ; also, Early Rose, at 7s. Will be put on rail on receipt of Post-office Order and address.
J. T. SMITH, Potato Merchant, Wisbech, Cambridgeshire.

SPANISH CHESTNUT, 3 to 4, 4 to 5, 5 to 6 feet.
ALDER, 4 to 5, 5 to 6, 6 to 7 feet. | HAZEL, 2 to 3 feet.
ASH, 3 to 4, 4 to 5 feet. | BIRCH, 3 to 4 feet.
The above are all well-rooted, transplanted Plants. A large quantity at reasonable prices. The Trade liberally dealt with.
GEORGE CHORLEY, Costers Nursery, Midhurst, Sussex.

To the Trade.

NEW ROSES for 1880.—Best thirty varieties, including Bennett's Pedigree and a choice selection of Tea Roses. Strong plants, in 4½-inch pots, now ready.
Descriptive Price LISTS post-free on application.
CRANSTON'S NURSERY and SEED COMPANY (Limited), King's Acre, near Hereford.

STRONG FOREST TREES.
ALDER, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

SEED POTATOS FOR SALE.
MYATT'S PROLIFIC ASHLEAF KIDNEY.
AMERICAN EARLY ROSE.
SNOWFLAKE.
MAGNUM BONUM.
SCOTCH REGENT.
CHAMPION.
FORTYFOLD.
PATERSON'S VICTORIA.
Lowest cash prices on application to
JOHN BATH, 32 & 34, Wellington Street, Covent Garden, W.C.

To the Trade.

HOME-GROWN MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE will be pleased to give special quotations for their fine selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS.
Seed Growing Establishment, Wisbech.

SEED POTATOS.—

Snowflake	Paterson's Victoria
Early Rose	Regent
Myatt's Prolific	Dalmahoy
Fortyfold	Fluke
Bresee's Prolific	Champion (Scotch)
Early Shaw	Redskin Flourball

And other leading varieties. Prices on application to
JOSIAH H. BATH, York Street, Borough Market, S.E.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1880.
RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade.

MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.
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" orientalis	" Lambertiana
" Schrenckiana	" monticola
CEDRUS atlantica	" muricata
" Deodara	" parviflora
" Libani	" ponderosa
CRYPTOMERIA elegans	" tuberculata
CUPRESSUS Lawsoniana	RETINOSPORA filifera
" " erecta viridis	" obtusa
" " lutea	" pisifera
" macrocarpa	" plumosa aurea
PICEA bifolia	" squarosa
" concolor violacea	THUJA gigantea
" magnifica	" Lobbii
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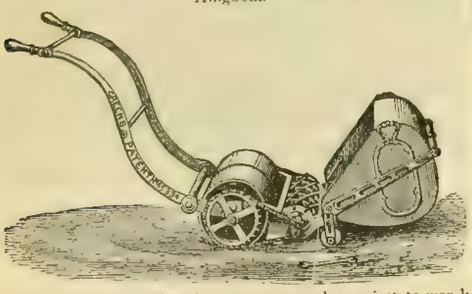

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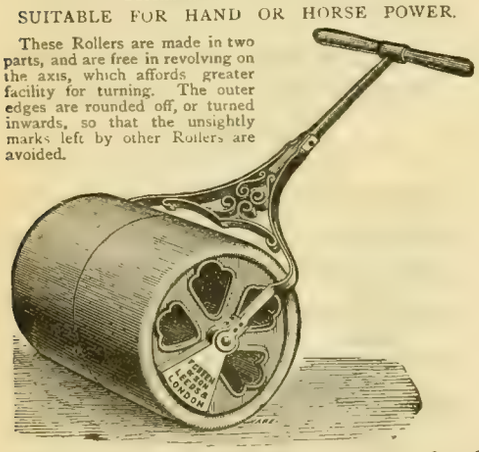

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The following is a fair sample of Testimonials, selected from some hundreds lately received from men of considerable experience:—

Messrs. J. & J. Hayes, *Nurserymen, Edmonton, London, N., on Feb 9, 1880, write:*—

"We consider your Nicotine Soap a great boon to all who have anything to do with plants or fruit growing, as it is so very useful for dipping and syringing when it is not convenient to fumigate. You are quite at liberty to make what use you please of this."

Messrs. Osborn & Son, *The Fulham Nurseries, London, write:*—

"We have given your Nicotine Soap a fair trial, and our experience confirms the character you give it, that it is an unrivalled preparation for killing insect life, without injury to plants."

Mr. B. Maller, *Burnt Ash Nursery, Lee, London, S.E., on Feb, 21, 1880, writes:*—

"I have given your Nicotine Soap a fair trial, and I must now say it is very satisfactory. I am now having it used freely for syringing, ½ pint to 4 gallons of water, without the least injury to the foliage."

Mr. J. C. Spyers, *Orchid Grower to Sir Trevor Lawrence, Bt., Burford Lodge, Dorking, on Nov. 24, 1879, writes:*—

"I have now tried in many ways your Nicotine Soap as an insecticide for Orchids, and it has given me great satisfaction," &c.

Messrs. Barnwell & Tilbury, *Nurserymen, Worthing, on March 19, 1880, write:*—

"Having used Corry & Soper's Nicotine Soap this year, we can with pleasure say it is the most useful insecticide that has ever come under our notice. We have tried it on Strawberry plants when in bloom, and find it most effectual in destroying the fly, whilst it does not in the least injure the plants or flowers, but gives a better and healthier growth to the plants."

Mr. George Abbey, *Gardener to C. M. Palmer, Esq., M.P., Grenkie Park Garden, Saltburn-by-the-Sea, on February 20, 1880, writes:*—

"The Nicotine Soap I had from you I find a safe and powerful insecticide, being destructive of every kind of insect infesting plants, and in no instance has any injury been done to the foliage. At a strength of 3 oz. to a gallon of water, I have use it for syringing Peaches during growth for the destruction of red-spider, without injury in any way (only to the insect!—which it instantly kills). At that strength to 4 oz. to the gallon it may, with perfect safety, be employed for syringing every description of fruit tree, whether under glass or outdoor, and a majority of plants, without the least injury, whilst at the same time it destroys aphides—green, brown, blue, and black—thrips, and red-spider. At a strength of 6 to 8 oz. to a gallon of water, I have employed it very successfully for destroying mealy-bug, brown and white scale, both by syringing the plants and applying with a brush, its effects upon the insects making its application gratifying; whilst from its grateful smell, it is pleasant than otherwise. At a strength of 8 oz. to the gallon, I found it a first-rate winter dressing for fruit trees, mealy-bug on Vines, as well as a destroyer and preventive of red-spider, thrips, and aphides. It also destroys American blight."

The following Nurserymen authorise us to say they have used the Nicotine Soap with unqualified satisfaction:—

J. Laing & Co., Forest Hill, London, S.E.; Hawkins & Bennett, Twickenham, S.W.; G. Edwards, Balham, S.E.; James Walton, Lee, S.E.; D. S. Thomson, Wimbledon, Surrey; F. & A. Smith, Dulwich, S.E.; J. Peed & Son, Roupell Park, Lower Norwood, S.E.; G. Brand, Winchmore Hill, N.; Hooper & Co., Covent Garden, W.C.; Lucombe, Pince & Co., Exeter; Edwin Cooling, Derby; T. Frost & Sons, Maidstone; W. C. Drummond, Bath; G. & W. Yates, Manchester; W. Bryant, Rugby; J. Stewart & Son, Dundee; J. Cocker & Son, Aberdeen; J. Charlton, Tunbridge Wells; Edwinson Bros., Dame Street, Dublin, &c.

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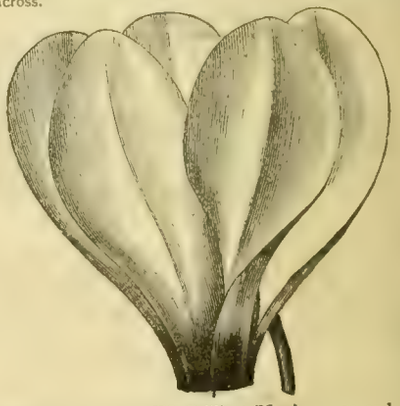

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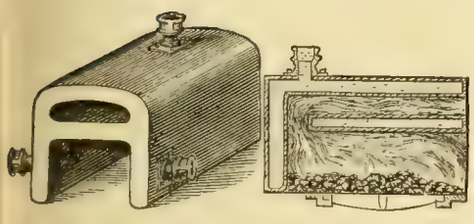

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THE

Gardeners' Chronicle.

SATURDAY, APRIL 3, 1880.

SIR TREVOR LAWRENCE'S ORCHIDS.

AMONG all the collections of Orchids that have been recently formed in this country there is none more extensive, none more interesting, none, without exception, better cultivated throughout than those located in the ten or dozen houses specially built for their particular wants at Burford Lodge. I have been a grower for about thirty years, and have had charge of one of the most wonderful collections of its time, and have also seen nearly everything that is good between '50 and '80, so that I am not writing at all haphazard. No doubt there are much better lots of Phalænopsis, better Vandas and Aerides, and possibly better Saccolabiums, but I must stop short here, for as regards other groups and species, with their infinite variety, I do not know a collection that will fairly rival this. Over and above all this, there is apparent a system of cultivation which every Orchidophilist would do well to imitate. There is absolute order throughout — no filth, no smut allowed to rest in the leaves and pseudobulbs, not a single dirty pot or pan, no uncomfortable wading through water at any period of the day; a most satisfactory atmosphere even in the tropical houses—keep away one of the little experimental houses, which is treated evidently to the full glare of the sun, a practice initiated, if I recollect right, by my friend Mr. Denning, and which I have always been sceptical about; an exceedingly pleasing promenade for all such as can appreciate the beautiful or grotesque forms which are impersonated in this rapidly-growing-into-favour order of plants. This, of course, is attained and attainable by allowing sufficient hands to do the work; and it does not require an expert to tell that, if there is to be satisfactory remuneration at all in the way of a return, be it either substantial or problematical, this is the best way of getting at it.

No. 1 House.

To proceed, then, to details—the first house we note is one of the north-exposure houses for Masdevallias. This is a small house with a path next the wall, and the front stage occupied with about four rows of really well cultivated plants, comprising ignea, Veitchiana, Harryana, in several of its forms, chief among which may be noted the "bull's blood" variety, which yet is unequalled.* Along with these were fine plants of Lindeni, Trochilus, a most remarkable macrura, which seems to revel in the cold, as its leaves were not unlike a fair-sized Cos Let-

* As there have been several queries about the nomenclature of this particular form I may as well here explain it. Among the original lot of Masdevallias introduced, and before Harryana was known, Mr. Stuart Low, in writing to me of the merits of this particular form, said that his collector advised him of one of extraordinary substance and brilliancy, which by the natives was singled out with some idiom of their own—which I hope Mr. Low will endeavour to recollect if this should catch his eye—meaning "bull's blood." I flowered what I considered to be the variety at Meadowbank, and named it as such. It was sold as such when the late Mr. Dawson's collection was broken up, although I have found in my peregrinations several spurious varieties bearing that name.

tuce; the pretty Estradæ, the new Restrepia Falkenbergii, and many others. They were potted in peat and sphagnum, and looked nicely finished on the surface. To keep down the raids of slugs they were placed on inverted pots, and had their leaves well up to the glass horizon.

No. 2 House.

This may be said to be the first house of No. 1 range, which stands north and south, and has of course an east and west exposure to the full influence of light, subject of course to the ordinary rules of shading from solar power. It is about 50 feet long by 10 feet wide, with path up the centre and 3 feet tables on either side, built as low as practicable for convenience of walking and for giving head-room to the plants on either side. The stages are slate supported with a framework of iron, over which is a wood lattice-work raised about 6 inches from the slate slabs for resting the pots upon. This gives a space for the disposal of waste water, and with the gravel underneath holds moisture to disperse as the pressure of sun-warmth or pipe-warmth demands. In addition to this, as a feeding moisture-medium, there is a great deep tank about 30 feet long underneath the ground floor, which is an exceedingly valuable help for promoting atmospheric moisture to these greedy moisture-seeking plants. What adds to the general appearance, both path and floor under the stages are laid with encaustic tiles, and are always dry-like and comfortable—the needful moisture being held *in retentis*, as above mentioned, in the space between the lattice-work stage and the slate slabs, together with the great tank underneath all. This, in my opinion, is the best prepared house for cool Orchid culture I ever saw, and one which might advantageously be imitated by any gentleman building such a structure.

Proceeding then to detail, the plants here are quite without a flaw, no matter whether it be Odontoglossum Alexandræ, Andersonianum, Pescatorei, nebulosum, cirrosum, maculatum, cordatum, gloriosum, coronarium, or even Phalænopsis. Of the latter it must be known that it is only recently taken from a warmer house to summer along with the others. I presume the batch of vexillarium has been also so removed. Speaking of the latter, they are a magnificent lot of about a dozen plants in what might be called specimen size, nearly quite perfect in foliage—two of them particularly conspicuous, and said to be the fine variety of vexillarium roseum, which is remarkably scarce. Along with these stands the very rare and beautiful O. Warscewiczii, which, like all white Orchids, is greatly admired. The O. Phalænopsis, of which there are scores here, are in fine order, none of them very large plants; indeed it is no advantage having this too large, as it builds up its pseudobulbs so much together in the centre as to weaken its power as a flower-producer. Notwithstanding its congeners—which, for the sake of distinction, should be ranked among the section Euodontoglossum—it is one of the loveliest of them all. Passing from these, we admire greatly one grand form of O. Pescatorei, which Mr. Spyers says yielded 100 flowers to the raceme! This is a giant bulb, with faint tiger-spots; indeed, I have always looked to this species as one of the most admirable of Orchids, it is such a laster, and when in cultivation, such as we have seen it elsewhere, Trentham in particular, it has absolutely no rival. O. Andersonianum is here in several varieties, one the very fellow which I have noted as Ruckerianum elsewhere. It is in several varieties in another house, which shall be noted as we proceed. One very grand form of O. nebulosum is flowering: it is the best form of pardinum I have yet seen—quite a florist's flower, looking to the segments and the spotting of that rich sienna which is a prominent colour in many Orchids. By far the most striking plant of O. coronarium stands *vis-a-vis* to the spotted nebulosum. Its wandering rhizomes have taken possession of an oblong box 3 feet long, and its growths have finished off with stronger pseudobulbs than its native-made ones. It has flowered hitherto, and is showing flower raceme again. O. nævium majus is also throwing up its charming arching racemes. When in great health and in full floresence this is a most exquisite Orchid: it is just expanding its flowers. A beautiful little fellow for this is O. roseum, the one purity itself, the other a captivating ruby. It requires to be seen with a dozen of racemes to show its merits, and it is here fully developed, suspended near the glass, and in every respect a gem. Among the many Alexandræs here we have the type which the late Dr. Lindley evidently had before him in a dried state when he named the species crispum. The petals of many of the sorts are very effectively crisped, and some of the tepaline segments are crisped as well, indeed in many of the forms they are uniformly wavy. One variety which I called crispum album was particularly noticeable. The whole of its segments were as white as paper, and the lip as well, with the exception of the modulated yellow crest and a crowd of irregular spots at its base. Nor must the much-abused gloriosum be omitted, for in several varieties here it is a distinct and estimable subject. O. Rossii in its major variety was finely developed, and the ruddy-red rare Cervantesii roseum was in bloom. O. cirrosum, like a wanderer from home, is a grand Orchid in many of its forms, but its leggy panicles mar much that is beautiful about it. Mr. Spyers avers that it becomes tractable after a few years' culture, assuming the dumpy form which is clearly desirable.

Where all the Odontoglots specially named were doing so well it is very desirable to know the company they keep. Well, first and foremost, Dendrobium infundibulum and Jamesianum were finding a suitable home in this climate. Many hundreds of these plants have been sacrificed in Indian temperatures, and I am glad to see the plants rescued from durance vile. That they will continue to grow and prosper there is no manner of doubt, as I have proved satisfactorily fifteen years ago, subjecting them to a sunless climate. Another gem which has all but been decimated by submitting it to too great heat is Pleione humilis. It is in this climate in perfection, with over a score of flowers—and such flowers, too! with segments of pale lilac softening almost into white, and prominent fringed labellum, with a network of lilac lining and spotting in the interior. This will stand nearly as much cold as a Disa grandiflora, and if it is placed in proper temperature in summer any one will see numerous filaments springing up from the bulbils. Then such Masdevallias as like a little more winter heat are here, and in great health. M. Chimæra, Backhousiana, with a raceme the remains of which showed it to be five-flowered; bella, with its fungus-like labellum, a great beauty; nycterina, after the same order, but smaller in every way; the beautiful Restrepia antennifera, with a labellum not unlike a punt in form, and of those velvety and Indian-red colours suffused as to make it a veritable gem among the grotesque forms of Orchids. Then splendidly cultivated Epidendrum vitellinum majus, in half-a-dozen plants without a spot or speck, brings up the rear of a lot of unexceptionally well cultivated, splendid-looking groups of plants.

No. 3 House.

This may be called an intermediate-house, loftier than No. 2, and about twice its width. Judging by the eye, one would put it about 20 feet square, having a central table, a path all round, and the ordinary side stages. It is finished in the same style in every way as No. 2, only underneath the stages is a groundwork of Selaginella. The plants here are meant to rest with their pots on the gravelled slate slabs, but the career of woodlice and their likings for the roots of many Orchids have compelled, not only standing on inverted pots, but these pots again being placed in saucers of water. These pests would require to add to their creeping powers the art of swimming, which is evidently too much for them, as the healthy roots of Oncidium crispum bear testimony. Until this was done Mr. Spyers tells me he could not get a healthy root kept entire.

The first plant that attracts attention in this house is an immense Lælia cinnabarina. I have seen and grown this species for years, but I never saw a giant like this, and the home bulbs plumped up and larger in dimensions than the native ones—a beautiful variety, too, in flower. The plant would bear thirty to forty pseudobulbs, the biggest of them being like a good-sized Parsnip set on end, but a little more cylindrical in form. This is a handsome growing plant when in vigour like this. Cattleya Regnelli, too, was in great style, struck into 10-inch pots with the Fern-blocks on which they had been tied. The very rare and pretty Epidendrum Wallisii was in bloom. The plant bears long linear pseudobulbs multitudinously spotted, and at its apex comes a short raceme of yellow-limbed flowers, the lip being broadly ovate, ground colour white adorned with faint lilac lines. A few Cypripediums are grown here, chief among which is Boxallii, Darwinianum, Harrisianum, &c. Chief among Lælias is the elegans var. Turneri in strong plants, one plant of which is very conspicuous from an immense growth which it has finished, which might do duty for a walking-stick—not to a 6-feet Highlander certainly, but to some of the members of the *genus homo* which I have seen walking about since I came to the metropolis. It is remarkable how this very fine type varies in growth: one very excellent plant assumed a good deal of the habit of growth of C. maxima, with its leaf erect on the bulbs instead of horizontal. C. Leopoldii, too, in specimen size and with leaves as stiff as a piece of sole leather, were quite beautiful to look upon; indeed, the whole of the Cattleyas and Lælias in this house were striking plants. The very handsome Cœlogyne Lemoineana was here in specimen size—it differs from its congener cristata in having segments much broader, which, instead of being nodding, stand flat with a good lip more lemon than orange crested, and blooms much later than the one to which it is compared. The Bolleas in this house were quite a treat to look at, very few being affected with spot or disfigurement of any kind. Bollea cœlestis as a specimen was a marvel. It filled quite a No. 1 pot, and its leaves were as strong as a finely grown Calanthe veratrifolia. This and the blue-tipped B. Lawrenceana were in grand order, and so were many of the Pescatoreas with which they were associated.

Up above these was a splendid pair, one in particular, of Cypripedium superbiens or Veitchii. This is a grand slipper, not too frequently seen in fine condition. Miltonia cuneata, with its clean-looking labellum and its sienna-blotched segments, was finely in flower. What struck me much was the excellent style in which Oncidium crispum, Gardnerianum, and Marshallianum were cultivated. Every one knows how difficult it is to get rid of that pulpy orbicular spot that attacks the leaves. In one or two instances here it is entirely absent, and the young growths are forming into bulbs larger than the native ones. This is due, looking to the plants, to keeping them in limited pot space, and in conserving the roots from wood-lice in the manner already detailed. Another group of plants alongside of these was Vanda cœrulea, and if anything merits compliment these plants do—they are the picture of health, growing on Teak-rafts or canisters or boxes just as one likes to call then. One of the growths had twenty-eight leaves, one or two of which had been partially amputated, but not to disfigure the plant. A group coming up in ten growths was quite a treat to look at—not grown cold, nor subjected to more air than usual for such a house, and yet the condition all but as perfect as possible to command. A great Cœlogyne cristata in a No. 1 pot raised up pile after pile of bulbs to form a cairn, such as one sometimes sees a collection of fruit at a local show raised on a round basket. Another very noticeable example of superb cultivation was Cymbidium eburneum, in fine flower, with about eight leafy growths without a speck of disfigurement. Singularly enough this plant was grown in pure loam, and the leafy growths bore testimony to its effects upon them; they were of a pale green, stiff and stout—not dark green like those grown in peat and sphagnum and charcoal: this indeed was a striking example of a terrestrial Orchid being treated in the way that it ought to be. There were quantities of Pilumna nobilis, Trichopilia fragrans, crispa, and the rare and beautiful lepida in one or two plants. Here also was a group of so-called Lælia anceps Dawsoni: if they be true they will in time be beautiful subjects.

But I have already gone over much space, and must reserve much that I have to say till some other issue.

James Anderson, Meadowbank Nurseries, Glasgow.

Primula spectabilis. — This has been termed one of the finest of the alpine Primroses, and there is much truth in the remark. The leaves are somewhat thick and fleshy, rounded, and gathered together in the form of a rosette, and the flower-heads are produced on stems; a truss will carry several blossoms of a pleasing shade of rosy-purple. It is one of the hardy Primroses that appear to succeed best under pot cultivation, and all who are successful in blooming it will be vastly pleased with the floral treasure.

GARDEN GOSSIP.

By a Lady.—No. III.

An Alpine Garden (*continued from p.* 299.)—A few years' experience has convinced me that the best way to grow alpine seeds sent from abroad, is to sow them directly they arrive; if kept till the following spring but few will come up. I usually sow them in shallow pans and keep them under glass, but not in heat, till the following May, by which time the seedlings are probably fit to plant out. Some seeds seem to prefer being laid on the surface, refusing to germinate if covered with soil; many are very slow in germinating: it is therefore never wise to throw away the soil they were sown in. I usually, when in despair of seeing them come up, give them a last chance by spreading the earth that contained them over some part of my alpine garden.

When roots are sent from abroad in letters, they should be wrapped in oiled silk, to prevent evaporation, and a luggage label attached for the direction: this saves the plants from getting injured by the postman's stamp. On receiving such a parcel, if it be early in the season, I put the plants at once into my garden, in the places where I intend them to remain; but if it is late in the autumn, this plan does not answer, as they have not time to get established before the winter arrives; a frame is, therefore, needed for these, but not heat, nor must they be kept in the frame when the cold spring winds have passed away, for the earlier they are established out-of-doors the better will they thrive in the long run. But a large proportion of alpine plants die down in the autumn, and it is possible that in a late season (like that of last year) they may not have reappeared aboveground even in May. We must not, therefore, conclude that they are dead. I have often known a plant to reappear long after I had given it up for lost; or when in despair I have emptied the pan containing it, I have detected signs of life which have made me regret my lack of patience. For this reason alpines should never be wintered in frames that will be required for other purposes in the spring, unless they are in pots or pans that can be removed into the open air to await the protracted revival of their occupants; and this inconvenience makes me prefer to establish my plants at once in my garden if I can possibly do so.

Besides, if left through the winter in frames that are not under the care of an experienced gardener, many plants will probably be lost by "damping off," as to regulate properly the amount of air and light required in winter weather for hardy mountain plants deprived of their natural protection of snow is a task beyond the powers of most lady gardeners. Those who are fortunate enough to have a greenhouse accessible from a sitting-room will of course winter their newly arrived alpines there, where they will be under their own care, and if the house be not heated so much the better.

My readers will have observed that the principal quality necessary to make a successful alpine gardener is patience. Without this ingredient in their composition let no one hope to succeed. I have also great doubts as to whether some slight knowledge of botany is not essential to the full enjoyment of alpines; without it it is certainly best to trust to gardeners to supply plants, since a non-botanist collecting abroad will be sure to send over plants that could have been found at home, and the non-botanist on receiving them will not always be able to distinguish between treasures and rubbish.

To those who recognise beauty in colour alone many interesting alpines are unattractive, let such stick to bedding-out flowers and leave our "weeds" alone, for the alpine garden will never be gay enough to please them. To many it is an enigma how any one can care to grow "Buttercups and Daisies" in their garden, and a shrug of the shoulders is the only answer when it is pointed out to them that Geum montanum is not a Buttercup (fig. lower plant), and that Bellidiastrum Michelii is not a Daisy (fig. upper plant). The entirely white blossoms of the latter plant cannot wholly rival those of our "wee, modest, crimson-tipped flower," and the underside of the petals being as white as the upper surface, pressing down the blossoms, exposes no bright colour, so that had this been the Daisy of our fields Tennyson could never have written of Maud—

> "Her feet have touch'd the meadows,
> And left the Daisies rosy."

A. B.

Fig. 72.—Two Alpines.

CONCERNING FLOWER SHOWS.—IV.

(*Concluded from p.* 333.)

I do not know of a simpler or better system for the secretary of a flower show to adopt in registering and classifying the entries than that in use by the Royal Horticultural Society, and as this is not so generally known as it deserves to be, I shall do my best to describe it plainly in detail. The characteristics of any good system are fulness, accuracy, clearness, simplicity, and usefulness. Tried by these tests I do not think this will be found wanting in any respect.

Day by day as the entries are received they should be registered in the "Index Book" which as its name suggests is arranged like the index of a ledger—one or, if required, more pages being appropriated to each letter. The particulars registered about each entry are—date when it is received, name and address of the exhibitor, class exhibited in, number of passes allowed, and amount of prizes awarded. As an exhibitor usually makes all his entries for a show at the same time, these of course follow one another consecutively in the Index Book, but as additions or alterations may have to be made, it is advisable to leave a few lines blank between each entry. An alphabetical arrangement has the advantage of being the easiest for reference. Ultimately this book will contain a record of the amount of prize-money won by each successful exhibitor. Supposing entries are received on June 21 from ten exhibitors, and that five of them have names beginning with M, they will appear on the page M in the Index Book, as in the following example, which will show how the book is ruled.

Specimen Page of "Index Book."

Date.	Name.	Address.	Class.	No. of Passes.	Amount of Prizes.
1880.					£. s. d.
June 21	Melville, Geo.	Dulwich	1	4	10 0 0
	Ditto	Ditto	2	2	
	Ditto	Ditto	5		3 0 0
					13 0 0
,, 21	Mander, Edwd.	York	4		1 10 0
,, 21	Merton, Hy.	Yeovil	2	2	4 0 0
	Ditto	Ditto	3	1	
	Ditto	Ditto	8		1 0 0
,, 22	Ditto	Ditto	4	1	
					5 0 0
,, 21	Manton, F.	Hertford	3	1	4 0 0
,, 21	Ditto	Ditto	7	1	2 0 0
,, 21	Ditto	Ditto	10		
,, 21	Ditto	Ditto	12		
					6 0 0
,, 21	Merivale, Wm.	Bedford	6	1	
,, 23	Ditto	Ditto	1	4	

This specimen is filled up as it would be after the prizes are awarded, and it will be seen it contains a summary of information about every exhibitor. It shows that Geo. Melville made entries in three classes on June 21, that six passes were sent to him, and that he won £13 in prizes. It shows that Hy. Merton, on June 21, entered in three classes, and had three passes sent him; that he made another entry on the 22nd and had another pass, and that he won £5 in prizes. It shows that Wm. Merivale made one entry on June 21 and another on June 23, that he had five passes in all sent him, and that he did not win a prize.

The next step is to copy the entries into the "Class Book," which will have a page set apart for each class in the schedule, and I append a specimen of it in which one of the entries given above in the register is repeated along with others supposed to be made on other days besides that the records of which are given on the specimen page above. The following shows the number of the class in the schedule, the description of the class, the amount of prizes offered, the number of each entry, name and address of exhibitor, and the awards.

Specimen Page from "Class Book."

CLASS I.

Collection of Twelve Stove or Greenhouse Plants.

Nurserymen. £10, £9, £8.

Entry No.	Name and Address of Exhibitors.	Prizes Awarded.	
			£ s d.
1	Burton, J., Barmouth		
2	Melville, G., Dulwich	1st	10 0 0
3	Carter, L., Leighton		
4	Nokes, S., Hertford	2d	9 0 0
5	Oliver, T., Burton-on-Trent ..	3d	8 0 0

Each class will be treated in the same way, and the exhibits will be numbered consecutively, commencing with 1, in the order they are received.

The exhibitors' cards for each entry are then written from this book, and the simplest form is the following :—

Exhibitor's Card.

ROYAL HORTICULTURAL SOCIETY.

CLASS I.

COLLECTION OF STOVE OR GREEN-HOUSE PLANTS.

NURSERYMEN.

Exhibited by

Mr. J. Burton,
Barmouth.

On the back of this card will be placed the number of the class and the number of the entry in it :—

Back of Exhibitor's Card.

CLASS I.

No. 1.

Until the judges have made their awards these cards are placed face downwards, and Mr. Burton's exhibit will be known as No. 1 in class 1. When the awards are made the exhibitors' cards are placed with the side containing names, &c., uppermost.

The judges' books are next produced. The most useful form I know of is that called *The "Field" Duplicate Judging Book*, which can be purchased at 346, Strand, W.C., for 6*d.* each, or 2*s.* 6*d.* per half-dozen. Below I give a specimen page, filled up in duplicate after the awards are made. This book, when handed to the judges, is an exact copy of the Class Book, minus the names of the exhibitors, and enables the judges to identify the exhibits, the numbers given agreeing with those on the back of the exhibitor's cards. Thus, when it is seen that exhibit No. 2 is entitled to the 1st prize, the word "First" will be written in line 2 and in the corresponding line in the duplicate. When the awards are all finished the duplicate will be detached and forwarded to the secretary for use in preparing the prize-cards. Each page of the judge's book is perforated down the centre.

Judge's Book.

CLASS 1. *Collection of Stove or Greenhouse Plants.* Nurserymen.		CLASS 1. *Collection of Stove or Greenhouse Plants.* Nurserymen.	
3 Prizes.		[Duplicate.]	
Entry No.		Entry No.	
1.	Commended.	1.	Commended.
2.	First.	2.	First.
3.		3	
4.	Second.	4	Second.
5.	Third.	5.	Third.

This method, it will at once be seen, complies with the requirements set forth in my first paragraph. It gives the fullest details, it is accurate, clear, simple, and useful. If there are any advantages in the old-fashioned "close" system I think they will, on trial, all be found here; and what will certainly not be found here are the cumbersomeness and difficulties of that system. *G. E. R.*

ARTIFICIAL SOURCES OF HEAT AND LIGHT FOR PLANTS.

In experiments with electric and other artificial lights upon the growth of plants, it would be very desirable to ascertain what are the exact effects, in the first place, of the total amount of heat and light respectively emitted by the artificial luminaries, and, secondly, the relative effects of the different rays of their spectra. MM. Dehérain and Maquenne * have lately conducted experiments with the Drummond light and the Bourbouze lamp by allowing the rays to fall directly upon leaves, but first passing through water, benzine, and chloroform, respectively. Their results appear to show conclusively that in proportion as the obscure heat rays are cut off by those media, the deoxidising process is relatively enhanced, and *vice versâ*. They thus sum up their conclusions :—

"1. Leaves placed in tubes immersed in water and kept at a short distance from the luminous source decompose carbonic acid when they are exposed to the action of the Drummond light. 2. They decompose it still, but more feebly, when they are illuminated by the Bourbouze lamp. 3. When the leaves are protected by a layer of water decomposition always takes place; when they are enveloped in benzine, which is much more diathermic than water, decomposition is still sensible under the influence of the Drummond light, it is no longer so under that of the Bourbouze lamp; and one observes in general the inverse phenomena of absorption of oxygen and the emission of carbonic acid."

Assuming their results to be correct, they prove that for deoxidisation by green organs with artificial sources of light the reduction of the obscure heat is the chief point to be considered, inasmuch as respiration is increased by and is proportionate to increments of heat; and if this process is in too great activity, the chlorophyll granules cannot do their work of deoxidisation, the normal function of the green colour being to regulate respiration under sunlight, so that the assimilative power of the granules can now be in the ascendancy and deoxidisation of carbon dioxide effected.

When, however, the production of fruit is the point in question, then it seems desirable to consider the presence of heat as much as, if not more than, that of light. We have lately seen † how aromas, colours of flowers, leaves, and corn seeds are benefited by growing in northern latitudes where the light is more uninterrupted while the mean temperature is lower than in lower latitudes; but, on the other hand, sugar is proportionately diminished, as the formation of sugar requires not only additional water but apparently a relatively higher temperature.

With reference to this point, however, M. Gaston Bonnier's researches ‡ on the physiology of nectaries do not appear to corroborate those of Dr. Schubeler, for he finds that the volume of sugary fluid collected at the same hours upon flowers of the same age and of the same species has always been greater in Scandinavia than in France; and he adds that certain species, such as Potentilla Tormentilla, the nectaries of which do not produce over-much liquid in France, secrete it abundantly in Norway; and he concludes that "the external production of nectar appears to increase with the latitude."

However, as M. Bonnier shows that the production of nectar is influenced by various conditions, such as the amount of water absorbed by the roots, the hygrometric state of the air, &c., Dr. Schubeler's observations may have been made under conditions little favourable for the development of sugar. In whatever way these results may be harmonised, plenty of water is necessary for abundance of sugar, and probably a relatively higher temperature is required than for "greening" and deoxidisation.

Now, from Dr. Siemens' statement, it would seem that the electric light *alone* is not equal to sunlight, for he says: — "Those [pots] exposed to electric light only showed a light green leaf, and [but?] had sufficient vigour to survive. Those exposed to daylight only were of a darker green and greater vigour." I am told, however, by persons who *saw* the plants, that they did not perceive any appreciable difference between the pots. One would, therefore, be glad to know if Dr. Siemens himself, or Mr. Buchanan, could see generally any deficiency in the electric light *alone* as compared with sunlight *alone*, in producing the green colour. Here, then, is another point for investigation. For Wiesner has shown (contrary to the usual belief) that the blue rays are the most powerful to render etiolated plants green, though perhaps all rays may do it to some extent, for he says * that Trifolium pratense etiolated turned green after two hours' exposure to light transmitted through sulphate of copper, but was not visibly green after four hours' exposure to light passing through bichromate of potash; white parts exposed to diffused light had turned green. Now, as the electric light would seem to be particularly strong in the blue rays, one would infer from this that it would be proportionately powerful to produce a dark green colour. Yet, as Dr. Siemens says it produced a pale green, the conclusion seems inevitable (from Dehérain and Maquenne's results) that its obscure heat rays are too powerful, and so neutralise the full effect of the light rays.

In a subsequent report Dr. Siemens says :—"The Strawberries exposed to [sunlight as well as] the electric light have made extraordinary progress." One would be glad to have a report upon the *flavour* produced under electric light *alone*. Comparing the description of the "greening" with this latter observation, if the first does not read as being particularly satisfactory as far as the development of the plants is concerned, the latter statement appears to imply that the heat *per se* of the electric light was amply sufficient, and was, therefore, more potent in *both* cases than its light.

Hence, if this surmise be true, wherever it may be desirable or necessary to supply the electric light for vegetative growth, it would perhaps be desirable to cut off its obscure heat by passing it through a layer of water or alum in solution; but, on the other hand, for ripening saccharine fruits, it would be desirable to give them the full benefit of its heat as well.

When the plant has sunlight by day and electric light by night (which will probably be the condition of things if it ever becomes useful in horticulture), the conclusion seems inevitable that the weakness of this light to produce chlorophyll will be compensated for by the light of the sun, so that an uninterrupted and vigorous growth is maintained; but when the fruiting time comes on, then the electric light will furnish an uninterrupted supply of heat necessary to develope the sugar, which the sun may in this climate often fail to do. *George Henslow.*

* *Ann. des Sci. Nat.*, sixième série, tome ix., p. 47.
† *Gardeners' Chronicle*, vol. xiii., p. 272.
‡ *Bul. de la Soc. Bot. de Fr.* 1878, p. 2[illegible].

* *Bot. Zeit.* 1874, p. 115.

BIARRITZ.

There is no dearth of flowers to be complained of now; the lovely Daphne Cneorum, with its sweet pink blossoms, is out in profusion; and the exquisitely coloured Lithospermum prostratum, more intensely blue than any Gentian. Both grow on rough ground, and those who pluck must be prepared to encounter "toothèd Briers, sharp Furzes, pricking Gorse and Thorns."

We spent one day at Monguerre, and came back laden with pseudo-Narcissus. They were only just coming into bloom, but the whole wood seemed made of them until close inspection showed that many promising clumps of leaves belonged to a variety of Asphodelus albus, black and ugly-looking when in bud, but handsome when it comes into full flower. On the other side of Biarritz grows Narcissus Bulbocodium, the Hoop-petticoat of vulgar tongues, and surely the prettiest and most graceful of all its family; the Saffran printanier, or Crocus vernus, and Scilla umbellata. These plants show not in units but hundreds on the spots they favour, for Nature is lavish in her breadths of colour—not dotting here and there after the manner of the usual herbaceous border, but making bold masses for the eye to rest on. How few carry out her teaching? Not one gardener in fifty, given bulbs of Anemone, or Narcissus, or Scilla, would plant after her fashion—the Anemones together, to bend in unison their slender stalks before each passing breeze, and raise at once their

starry heads when its breath has passed over them; "the Daffodils, that come before the swallow dare," showing clear yellow in the faint spring sun; the Scillas making soft lines above the ground. Rather they would be placed cheek by jowl in dabs of antagonistic tints, or a few here, a few there—irritating spots, to stab the eye used to Nature's painting, as the sound of a false note wounds the educated ear.

The Dog-tooth Violet grows near the cemeteries built in 1876, in memory of the officers who fell in the sortie from Bayonne in 1814. The resting-place of the 3d Dragoon Guards is well situated, looking down on a lake and Pine woods. There seems a shimmer of water everywhere, for the silvery glint of the sea and of the river show through the tree-stems. The Coldstreams lie in a parallel line lower down, and both God's Acres are bordered with broad bands of white Periwinkle, planted, I wonder, from the fancy of the name having to do with Vinco—to conquer the goal of the calling of the dead? Although the Italian name for this flower is "fior da Morto," I never remember seeing it in a burial ground before.

The most magnificent view in this country is from Mr. Hurt's house, who has taken the leading part in the making of these cemeteries, acting for Miss Holburne, at whose cost the patriotic work has been executed. You see the river from it, and the best part of the town of Bayonne, including the two spires of the Cathedral, and beyond the fine lines of the Basses Pyrenees. Banksian, and a delicious tea-scented white Rose covered the garden wall the day we were there, and the front of the house was smothered with Wistaria.

We learnt that the winter of 1878, so bitter in Great Britain, though excessively wet, was mild in these parts, and as a proof a Brugmansia, whose usual habit is to die down, omitted to perform that ceremony, and so husbanded its strength as to be able to flower three successive times last summer! This winter the plant followed its normal routine.

The memory of our day spent at Cambo drew us thither again, and if the place pleased us before vegetation had started, how much more must we have admired when the hedges were green, and the fruit trees all a-blow. Pears and Cherries weighed down with snowy blossom, the tender green of the Bramble straggling over Privet and Blackthorn in full flower.

Cambo is rich in scarlet Anemones, the double tassel-like Pavonina and the single fulgens, from which I fancy the former is only a sport; but they are very local, inhabiting only in quantity two fields. You pay a toll of 50 centimes, and then may pick at pleasure. The ground they grow in is ploughed over every year. Hepatica triloba is common about Cambo, and an Orchid showing like a purple Crocus above the ground: it was only by digging down with my knife that I discovered its nature. Ixia Bulbocodium is to be found, I am told, but I have not seen it, nor Serapias Lingua. Potentillas, yellow and white, make a great show; and Saxifraga Geum, with its beautiful red colouring of the under part of leaf. This we found in the wood at Cambo, growing in the drip of water on some rocks, which would have made the glory of a home fernery.

The river Nive ought to be a model fishing river, but it is very much poached; we ourselves saw more than one grab-all at work. Big salmon are caught in the weirs, and alas! little ones too, which are never thrown back to have a chance of growing; but they are not so bloodthirsty in the matter of slaying small birds as in most parts of France. I saw never a *chasseur*, and heard many a songster. *A.*

PINE CULTIVATION IN JAMAICA.

Successful Pine-apple cultivation in Jamaica, although at present on a small scale, is now an accomplished fact. On taking a general view of the suitability of the different elevations for Pine culture, the plains on the south side of the island are found to possess many advantages, which cannot be obtained in other situations of greater height. The soil required for their growth is best described as a sandy loam, containing quantities of decaying fibrous material. This is to be found on many of the estates situated in the Liquanea plains near Kingston, on parts of them called "ruinate," or lands long since abandoned, and now covered with bush, scrub, and native grasses. It is not intended to convey the idea that Pines will only do well in the class of soil indicated, for the Pine-apple is very accommodating in this respect, and will grow in soils of nearly opposite character, and produce good fruit; but for the general purposes of extensive cultivation the kind mentioned is, I think, the best, and Pines can be grown in it equal in size and flavour to any in the world.

The principal varieties cultivated are the Black Jamaica and the Ripley, which latter is of as fine a flavour as any in cultivation. It is said to have been introduced into Jamaica from Antigua, and there are two varieties of it (one of which I have lately found can be produced from the other, and *vice versâ*). The first is of very much darker colour and resembles the Black Antigua, while the other or lighter coloured variety is well known to English growers as the Ripley Queen; Charlotte Rothschild, Queen, Monserrat, and two varieties called locally "Sugar Loaf" and "Cow Boy," are also grown. Fruit of Charlotte Rothschild has recently been produced weighing 10 lb., without any special cultivation. The varieties to be cultivated have to be determined by the market for which they are intended, but for general purposes the Ripley and Black Jamaica answer best. The quality of Jamaica Pine-apples is now, however, becoming known in many foreign markets, and there is a gradual though small increase in the demand for them.

In planting the following method has been found very successful. The ground intended for planting is cleared of all surface accumulations, consisting of grasses, weeds, &c., which is arranged in rows 4 feet from centre to centre; these, when covered with earth from the interspaces sufficient to form a ridge 1 foot above the surface, are allowed to settle for a time to consolidate and allow the rankest of the weeds to decay in some measure. Suckers are then selected, which should be of good size, viz., about as large as a half-grown fruiting plant in English hothouses, and having had a few of their lower leaves removed, to give the rootlets in their axils ready access to the soils, they are placed in holes on the top of the ridges, 2 feet apart, and rammed firmly down with a wooden rammer, leaving a small basin-like cavity at the base of each stem to hold water sufficient to render the ground solid, and fix them firmly in their places. Water once or twice at the most is only necessary, except in cases of exceptional drought. Planting may be done at any time, but the most favourable periods are January and October, provided the weather is not too wet.

The fruiting season commences in April and May and ends in November; where, however, large breadths of Pines are planted they are never out of season the year round. It is found that after a season of wet weather those fruit nearest maturity are liable to become black or acid in their centre, even before the process of coloration begins. This will perhaps throw some light on the cause of the same fact occurring with British growers. It is also found that the more a fruit is shaded, or surrounded closely by its own leaves, the better the Pine colours; should the Pine happen to fall out of its vertical position it is often scorched, by the direct rays of the sun falling on it when covered with moisture.

It is to be regretted that more attention is not paid to the cultivation of this article of luxury in the island, for if well conducted nothing pays better. I know of no piece of ground larger than 2 acres in one lot exclusively devoted to their culture, and yet off one acre this year, within 6 miles of Kingston, the return has been £80 sterling clear of expenses—the owner having sold many in the home, but his principal sales going to the New York markets. Pine-apples can be grown here and sold at a good profit for 4*d.* each, weighing from 2 lb. to 4 lb. It is puzzling to find, that with such great facilities, given by the good steam communication now obtainable, for disposal of the produce, more has not been done in way of exporting this fruit, both in the fresh and also in the preserved state. No company at present exists in the island for preserving the fruit, the small attempts which have been made from time to time by private individuals meeting with but little success, from the desultory way in which the business has been conducted. This, now one of the minor products of Jamaica, would, if sufficient capital, energy, and perseverance were brought to bear upon it, become one of the staple articles of export. *J. H., King's House, Kingston, Jamaica.*

Eria extinctoria.—The Orchidists are not likely to go mad over this plant nor the Floral Committee to give it an award; nevertheless it is both pretty and interesting. The flat-cheese like pseudobulbs, the stiff wiry flower-stalks, and the single pale lilac flowers, are all points which a plant lover would appreciate. It is in bloom now in Mr. B. S. Williams' Nursery.

CINCHONAS.

In a previous communication (last May) I dwelt upon the success of the cultivation of Cinchona in Java, reserving what I had to say respecting the British plantations. I am now able to speak with certainty as to the yield of these latter for the year 1879, having before me a table compiled with great care by Messrs. Woodhouse, Mincing Lane, for private circulation, giving all particulars of the importations from every estate in India and in Jamaica. The total number of packages from the Government plantations at Ootacamund amounts to the following:—From Dodabetta, 429; from Nedivuttum, 779; from Pykara, 241. From Jamaica 16 bags are next recorded. From private plantations on the Neilgherries, 577; from Darjeeling, 1050; and from Ceylon, 6229.

The compilers say:—"In handing you the accompanying tables, we think it well to call the attention of planters to the following features:—In the first place, the extreme rates realised by the renewed bark, both crown and succirubra; the prices, as compared with the natural bark, being in most cases nearly double, and in red bark frequently more. This is to a great extent accounted for by the analysis. . . . The highest price paid during the year was 12*s.* 8*d.* per pound for eleven cases renewed crown, marked { W.R.A. Prospect. } The largest private estate appears to be in Darjeeling, which sent out 944 packages. . . . These realised full prices, the long selected quills being especially suitable for druggists. The chief feature in Ceylon descriptions is the very large proportion of twigs and shavings, amounting to 3089 packages out of a total of 6229."

The prices obtained for the bark from Ootacamund ruled much higher than those obtained for the Darjeeling lots, none of which fetched more than 2*s.* 10*d.*, but some of the Ceylon bark brought from 7*s.* to 8*s.* We may safely conclude that the introduction of the red bark (C. succirubra) has been quite a success, especially when the bark can be renewed according to the process of the late Mr. McIvor. The tree retains its peculiar properties as to chemical constitution under all circumstances.

The true C. officinalis var. Uritusinga has also prospered well at the Dodabetta plantation. A large portion of these trees, represented in my *Quinology of the East India Plantations*, are also producing excellent bark. They had attained an average height of 28 feet, with a girth of 22 inches, in 1878, or fifteen years' growth (*Ceylon Observer*, January 16, 1879), having been planted in 1863; and, according to the Government report, yielded 38,801 lb. of bark in the year 1877-78. The prices obtained were—for the natural bark 7*s.* 1*d.*, mossed bark 9*s.* 3*d.*, and renewed crown 10*s.* 11*d.*

A considerable number of these trees were the descendants of a plant, about 5 feet in height, which I presented to the Indian Government, having received the seed from the mountains of Uritusinga, near Loja, in South America. This small tree arrived April 18, 1862, at Ootacamund, in a languishing condition, but, thanks to the skill and care of Mr. McIvor, it began to recover; so that by May 31 it was possible to obtain some cuttings, and by Dec. 31, 1863, this one plant had produced 6850 new ones. At a subsequent period Mr. McIvor told me these had multiplied to more than 60,000, so that a considerable portion of the Dodabetta plantation must consist of its descendants. The bark of these trees given me by Mr. McIvor yielded 7.40 per cent. of fine sulphate of quinine. I have, therefore, recommended those who wish to plant crown bark, to obtain seed from this Dodabetta plantation. The habit of the plant may be seen from the accompanying woodcut (fig. 73) of one of the plants which I obtained from its native habitat, and have described in the *Nueva Quinologia*. According to its discoverer, Pavon, it grows to the height of 60 feet and more.

The narrow-leaved form which re-appeared in India, and produced nearly 10 per cent. of quinine, appears to have been considered by Pavon to be identical with this; so in my Pavon MS. it is written "olim angustifolia." The Uritusinga is described finally as "foliis lanceolatis," and "angustis." is (rightly) erased. I have seen the leaves vary on the same plant. The other variety (fig. 74), photographed from a plant in my conservatories, of the var. Amarilla del Rey, now called Bonplandiana, does not rise beyond the dignity of a tall shrub. I cut down the leading

stem, and this yielded on analysis quinine and cinchonidine in nearly equal proportions; also cinchonine; it is therefore a variety less adapted for cultivation, at least when the soil is rich, though it may be suited (as in Ceylon) for some exposed situations with shallow depth of earth. I have figured it in plate xi. of my *Quinology of the East Indian Plantations*.

It is very difficult to say what are the predominant species in cultivation in addition to those above-named, especially as we have no satisfactory report of the amount of hybridisation that may have occurred. All the Calisayas introduced by Mr. Markham perished, owing to the salt water having penetrated to the roots of the plants in passing down the Red Sea, and a like fate, though not from the same cause, befel most of the Ledgerianas raised from seed at Ootacamund. The climate may be too severe, as the neighbourhood is described (in the *Ceylon Observer*) as, in the language of one of our northern countrymen, the very "trysting place of the winds." The Pitayo barks have been introduced, and it is very desirable that their cultivation should be extended. I do not think that the true C. officinalis ever existed at Darjeeling or in Ceylon. The attempt to grow crown bark at the former place has been (as I understand) a failure; from the latter I have specimens of the angustifolia form, but not of the normal C. Uritusinga. C. Calisaya, from Darjeeling (as far as specimens have fallen under my notice), is very poor in quinine.

It is to be regretted that since Mr. McIvor's death, and the (not so very mysterious) disappearance of Mr. Broughton, there has been so little scientific guidance afforded to the cultivators. We are indebted still to Java for this.

Whilst I am writing there comes to hand the following comparative analyses, obligingly sent me by the Dutch authorities, from the same tree of C. Ledgeriana:—

Bark Dried in Sunshine.

Quinine	11.66
Cinchonine	0.32
Amorph. alk.	0.45
Total	12.43

Bark Dried by Artificial Heat.

Quinine	11.68
Cinchonine	0.31
Amorph. alk.	0.51
Total	12.50

I have under my eye a botanical specimen, sent by a planter in Ceylon, with bark for analysis. He says that it is pronounced by Dr. Thwaites "pure Calisaya," with which definition I quite agree, but the flowers are said to be white, which shows variety (in so far) from the α vera of Weddell. They are quite unlike those of the variety Ledgeriana. The bark gives a produce equal to 3.4 per cent. of sulphate of quinine. I think that this may be the same as the Darjeeling sort, existing under more favourable circumstances in Ceylon.

It appears from Dr. King's issued report on the Government plantations in Sikkim (*Ceylon Observer*, February 4, 1880), that the number of trees there planted out amount to more than 4,000,000. In Ceylon and other parts of India the cultivation is also being carried on with great vigour. Some of the planters are becoming alive to the necessity of care in selecting the best species, and the measure of success already attained with the Ledgeriana in at least one quarter, encourages the best hopes.

We find in the report of the Commissioner of the Neilgherries (no successor to Mr. McIvor having been yet appointed) much interesting information (*Ceylon Observer*, December 18, 1879). Under the head "nurseries" Mr. Barlow states that "604,855 plants were distributed to the public during the year, against 187,350 in the previous year. [The question arises, Of what kind, or form, or species were these?] The quantity of seed distributed was 1322 lb. against 326 lb. in 1877-78. Most of this seed was sent to Ceylon where I believe it is sown broadcast amongst old Coffee."

The Editor of the paper from which I quote remarks further:—"We have seen it stated that 80,000 seedlings is a fair average number to be expected from 1 lb. of Cinchona seed; although a planter at Kandapolla tells us he has got 250,000 from 1 lb. of C. officinalis seed from an estate in Dimbula. Practically, he reports every seed grows. . . . To return to the enormous quantity, 1648 lb., distributed, from the Neilgherry plantations, in India and Ceylon in two years! At the moderate average of 80,000 seedlings to 1 lb., the result would be no fewer than 131,840,000 plants from this source apart from seedlings from private plantations in India and Ceylon. This would probably raise the total to 200,000,000 of seedlings—about enough, one would think, to stock the whole of the hill countries of India and Ceylon."

Your readers will bear in mind that this is all theory, except, indeed, the fact that every seed placed in favourable circumstances may be expected to germinate. Fortunately for the planters themselves, no such calculation as the above holds good in reality. The world is in no danger for some time to come of being inundated with barks from India. The whole supply from all quarters probably would not suffice to keep the quinine manufactories at present existing in full operation.

But another factor in the calculation has to be taken into account—that in more than one quarter (as I have reason to believe) highly successful efforts are being made to cultivate the best sorts in their native climes in South America.

I will not add to the length of this paper by furnishing deductions which your readers can supply for themselves. I have sought to present facts, as far as space would permit, for the formation of a judgment on the whole subject. *John Eliot Howard, F.R.S.*

Fig. 73.—Cinchona officinalis, α Uritusinga.

Florists' Flowers.

The National Auricula Society's Show (Southern Section).—With reference to a proposition which has been made, that in place of the mid-day meeting, the members, friends and exhibitors of the National Auricula Society (Southern Section) should dine together on the evening of the 20th at the Horticultural Club, Arundel Street, Strand; as I am quite without the time or strength to engage in a long correspondence on the subject, will you kindly permit me to say there are insuperable obstacles in the way? In the first place a mid-day season of refreshment is a necessity: after the arduous labours of their several parts, the mortal coil of judges, exhibitors, and executives alike require some sustenance; and if that season be not utilised for a little social and floral communion, excepting for a very small proportion of those interested, the opportunity will be irretrievably lost. At the close of the show six-sevenths of the exhibitors are engrossed with the care of their exhibits, and all concerned in the show are certain to be jaded more or less with the labours of the day, and unfitted and indisposed to prolong its hours even for the gratification of the table or the greater pleasures of social and floral communion. To any friend or friends who may arrive in London on the evening of the 19th, as many will, I offer a hearty invitation to my house for such a season

Fig. 74.—Cinchona officinalis, var. bonplandiana. (see p. 427.)

of floral intercourse as time may allow, and it will be a sincere pleasure to me if a large circle is formed.

I am very happy to report, as my correspondence informs me, that we have the prospect of the largest and finest display of Auriculas yet attained. From several sides adjectives of very expressive character are used to indicate the state of the plants, and large expectation is based upon the anticipated appearance of new faces of a very high order of merit. In Polyanthus also emulation has been freely excited, and though it is not yet an open secret, there are confident predictions of many very beautiful new flowers being brought forward in this sometime neglected class. *E. S. Dodwell, 11, Chatham Terrace, Larkhall Rise, Clapham, S.W.*

Seasonable Notes on Hardy Florists' Flowers (*continued from p.* 408). — Pansies. — Those in the open ground are now making good growths; many of the varieties are in flower. Slugs are troublesome, and they sadly injure the flowers by eating them in bud. Pick them off at night, and destroy them; look out for the leather-coated grub at the same time. Keep the surface of the beds stirred as often as this is required, and also destroy weeds. Plants in pots are now rewarding the cultivator with plenty of most beautiful richly tinted flowers. The frames containing the plants should be kept well aired, as the Pansy is most impatient of insufficient ventilation. Pull the lights quite off in fine weather.

Pinks.

The forcing section, comprising such varieties as Lady Blanche, Mrs. Pettifer, Newmarket, Lord Lyons, Derby Day, and a few others, if they were placed early in a forcing-house will soon be in flower; ours are considerably advanced towards that stage—they had produced plenty of small side growths, and these were taken off, a dozen or fifteen of them inserted in 5-inch pots, and the pots were then plunged in a hotbed; a square of glass placed over the cuttings, and resting on the labels, is very desirable, as it retains the moisture sufficiently about them to prevent their shrivelling. The surface of the beds out-of-doors should have been dressed, but if this has not been done see to it at once.

Phloxes in Pots.

If two-year-old plants are being grown, and these have up to this time been in cold frames, they may now be plunged out-of-doors in an open position. Cuttings that were put into small pots a few weeks ago are now rooted; indeed, they have made considerable growth, and are now ready to be potted off. To save trouble, I pot them at once into their flowering pots, using rich soil and well-drained pots 6 inches in diameter.

Polyanthuses.

Although the season is early, these plants will not be in flower this year earlier than the Auriculas. I fancy that the flowers are not so large, nor are the plants so strong as last year, but the quality is certainly better. George IV., Lancer, Black and Gold, Pearson's Alexander, and a few others, are now showing flower, so that the probable quality of the whole collection can be very fairly judged from them. They require plenty of water at the roots now, and plenty of air, else the flower-stems will be weak.

Plants in Cold Frames.

Aquilegias are the most beautiful plants of this class that we grow in pots. They have usually been kept in the cold frames until the end of April or early in May, but we wanted the space for Auriculas, Carnations, &c., so that these and many other plants have been placed out-of-doors. The very beautiful pure white Anthericum Liliastrum and Trillium grandiflorum are very desirable plants to grow in pots; of each of the above there is a major variety which much surpasses the normal forms in size, and equals them in purity. Meconopsis nepalensis and many other scarce and beautiful plants that we grow in pots, have all been plunged out-of-doors to be placed in the greenhouse as soon as the first flowers open. All such flowers are greatly admired by visitors, and all the more so because very few of our visitors have seen them previously. Ixias and Tritonias have still been kept under glass, placing them very close to it, and ventilating freely. The secret of growing these very pretty flowers is to admit plenty of air and light to them; they require but little attention, and cannot bear coddling in a greenhouse far from the glass and shaded from the sun with blinds. This accounts for the failure of some people to grow them well,

Greenhouse Florists' Flowers.

Azaleas.—There is no difficulty in forcing these at this season of the year. What the plants require is a moderately moist atmosphere and to be syringed daily, or perhaps twice a day if the drying east winds continue. Inexperienced persons are apt to starve the plants for want of water at the roots, until the compost becomes so thoroughly compacted that water does not readily pass through it after it becomes dry. Water thoroughly every time the plants require it.

Begonias.

These showy plants are sure to become popular with those who have not sufficient knowledge to grow choice hard-wooded greenhouse plants. They grow rapidly, and soon fill up a large space. Early started plants are now growing freely, and must be potted on as they require it. Those that are started in a greenhouse temperature must be shaken out and potted as they start into growth. Give each plant sufficient space to develope itself, and place them near the glass, to promote a dwarf growth.

Calceolarias.

The instructions given at p. 302 apply now. The aim of the cultivator is to promote a healthy growth, and this can only be done by keeping the leaves quite clean, the roots well supplied with water, and the ventilation such that drying winds cannot blow directly upon the leaves.

Chinese Primulas.

Perhaps few flowers are more useful than those for the decoration of the greenhouse up to this time, considering the small amount of attention they require. It will now be time to attend to seed sowing. Choose a variety having flowers of good form, substance, and colour with the pin-like stigma protruding from the eye, cross it with pollen from a rich coloured variety that has the eye filled up with the anthers. The plants at this time should be near the glass in a light airy place.

Cinerarias.

Most of the specimens will now be at their best, and it is very desirable to continue them in this state as long as possible. Keep the house rather cool, but keep out the frost, which would be injurious; artificial heat will not be necessary now, but the ventilators must be closed early if there are signs of frost. Select the plants from which it is intended to save seed; place them on a shelf apart from the others. Give weak manure-water to plants coming into flower, but do not use this when the plants are in full bloom.

Cyclamens.

The general collection still continues in full beauty, and very delightful they are. If it is not intended to save seed pick off the flowers as they show signs of decay, pulling the stem quite out. The large-flowered varieties are now common and much prized; but Mr. Little informs me that, though they are useful as cut flowers, the plants do not make such good specimens as older varieties with smaller flowers. Something good might be obtained by crossing some of these large-flowered varieties that lack richness in the colour with the rich purple and crimson varieties exhibited by Mr. Little. Now is the time to attend to this.

Fuchsias.

Plants that have been started in a little heat and potted on will now be growing freely; allow them to have plenty of light; see that the plants do not suffer for want of water at the roots, and dew them overhead with a syringe. Young plants propagated from cuttings must now be potted off, each cutting into a small pot. No plant suffers more than the Fuchsia from any check to its growth, and this must be borne in mind from the beginning. They do well with a little forcing, but too much heat is injurious.

Hyacinths.

The remark was made at p. 302 that well-ripened bulbs the preceding year were essential to the production of good spikes. This year's bloom has shown us that this is so; although some good spikes have been exhibited, they are the exception, not the rule. Late-blooming plants that have been kept in cold frames should at once be brought into the house to succeed those that are now going off. The plants that have ceased flowering should have the old flower-stems cut off as soon as the flowers decay, but the leaves should be kept green and healthy until they decay naturally. The bulbs may be fairly well ripened even if the plants are merely placed in a favourable position out-of-doors when they have done flowering. I pot these bulbs three or five in 6-inch pots, and they can be forced early next year, or they may be planted out in the flower borders.

Pelargoniums, Large-flowered.

The plants are now growing very freely indeed. The earliest to flower are showing their flower-buds; it is needless to say that strict attention is necessary to see that the plants are well watered, and if the pots are well filled with roots a little weak manure should be occasionally used. Tie out the growths as they require it, and place sticks where they are required. The plants do not like to be placed in the full blaze of the sun, and if the house has a south aspect it will be necessary to shade from the direct rays of the sun for a few hours about mid-day. See that the foliage is kept clean and healthy; if the older leaves become yellow the reason must be either lack of water at the roots or exposure to the direct rays of the sun.

Zonal Pelargoniums.

This section is much more easily managed than the other; the leaves are not attacked by red-spider or greenfly, and their cultural requirements are very simple indeed. Often they are grown too strongly, at least the young plants; old specimens require a much richer compost to grow in. Place the plants quite near the glass, and continue to train out the shoots as they progress in growth. Young plants that are intended to flower early may be pushed forward with artificial heat, but the night temperature ought not to exceed 55°, and the ventilators should be opened a little at night but more fully by day. *J. Douglas, Loxford.*

Foreign Correspondence.

Broughtonia sanguinea at Home.—Having seen this lovely Orchid growing and flowering in profusion the other day in a wild state, I thought that a note on the conditions under which I thus found it might prove acceptable to a few of your readers. It is not found anywhere in the neighbourhood of Castleton, and I had to leave our rather mountainous district and ride a distance of 10 miles northward, to within 1½ mile of the sea, near to Annato Bay, before I got to its habitat. And a most interesting ride it was along the right bank of the Wag-water River, at first a wild and formidable mountain stream, but which, as it nears the sea, wending its way through the broad alluvial valley, assumes somewhat of the aspect of a quiet English river. Here the valley, which is in great measure devoted to the cultivation of Sugar-cane, is skirted on either side by low rounded hills, which, together with Palms and others, bear a fair sprinkling of Mahogany trees. But I fancy that Mahogany must at one time have formed dense forests on these hills, for I saw, near to an old dilapidated and deserted dwelling-house, a small clump of about forty good-sized trees, which seem to have been left for the shelter of cattle. The trees in no case exceeded 40 feet in height, and seldom over 2½ feet in diameter of trunk, with the general port of old English Ash trees in winter, for not one of them had a single leaf on it, and must have been denuded for nearly a month. They were thickly studded with their curious, rusty, hard-shelled, Pear-like fruit, now ripe.

I hope to be excused for so much talk about the Mahogany trees, because it was on the rather smooth bark of the larger branches of these that our Orchid was growing. Its close thatch of almost regularly imbricated, flattened, oval-shaped tubers, in many instances completely embraced the branches for a considerable length. The plants were in full flower, and be it remembered that, there being no leaves on the trees, they were fully exposed to the glare of a tropical sun. In a week or two they will have the advantage of the partial shade afforded by the young and growing leaves of the Mahogany, but with the exception of the nightly heavy dews they will receive only occasional showers up to the month of May, after which for a month or two they will most likely be deluged with rain. But our plant, unlike the majority of shade and moisture-loving Orchids, is, from the nature of its dense thatch of tubers, well prepared to retain all available moisture against a season of drought. While there at mid-day I did not think it very hot, and the nightly temperature is about 65° Fahr.

This Orchid does not seem to vary much, for the only deviation that I could find from the normally all-crimson flower was an exceptionally orange-tinted column. *George Syme, Castleton Botanic Gardens, Kingston, Jamaica, March 8.*

Garden Operations.

HARDY FRUIT GARDEN.

There is perhaps no more anxious time in the whole year than the brief period when fruit trees are swelling in the bud or in full blossom. Hope, it is said, springs eternal in the human breast; but he must be a sanguine person indeed who will expect a rich harvest of hardy fruits this season. The conclusion arrived at by all persons of practical knowledge as to the condition of fruit trees after last summer, or what was called by that name, is becoming more apparent every day, and it is quite evident that, except in favoured situations, the supply of Pears and Apples will fall far short of the usual demand, nor can we expect a golden harvest of stone fruits, notwithstanding that some kinds, notably Cherries, are now gay with blossoms, and if the weather remain as at present a fair set of fruit may be the result. It must not, moreover, be forgotten that imperfections arising from immaturity of the wood are always succeeded by shoals of fruit dropping shortly after they are set, so that we must not be too sanguine for the present, but endeavour, by artificial aid, to render the necessary protection to the blossoms while there is hope left. On the 18th of what will have to be called the past month when these notes appear, we registered 8° of frost in this low-lying district, and for several mornings afterwards the glass fell to from 3° to 4° below the freezing point, and I have reason to know that lower temperatures have been registered elsewhere. These figures and the fierce rays of sun succeeding them, together with alternate periods of keen east winds, will indicate the importance of using such remedies as are available to counteract the powerful influence that such extremes must have upon the tender organs of fructification. Perhaps the commonest mode of protection, and one that is easily procured anywhere except in the vicinity of towns, is the old-fashioned one of Spruce branches, which should be applied as lightly as possible consistent with circumstances. A very good way of adjusting it is by having upright poles placed against the wall, as described in my last Calendar, having a fishing-net spread over them and fastened at both ends to prevent the material from flapping about in case of wind; the Spruce branches are laid outside the netting and made fast to the poles. The lower portion of the wall is protected by working in a few light branches between the main limbs of the trees. Standard Cherries may be protected by forming a rude screen made of hoops something in the shape of a bee-hive around the tree, which can be covered with thin canvas as a protection against frost and cold winds, and afterwards with netting to save the fruit from being devoured by birds. Judging from present appearances the weather has settled down for a long period of drought, and in light soils plantations of Strawberries will be sure to suffer shortly through want of sufficient moisture at the roots if the surface of the ground be not heavily mulched. It is equally necessary to take the same precaution with heavy or wet soils, which crack on the surface, and thus open up channels whereby the moisture escapes into the atmosphere leaving the earth in an impenetrable and caky condition in which healthy root-action cannot take place in time to be of much benefit to the crop. *W. Hinds.*

FLOWER GARDEN, ETC.

Transplanted Trees, &c.—The parching winds that have now prevailed for a considerable time have so dried up recently-planted trees and shrubs, that watering of them has become a necessity; if they are to start into growth without a serious check, one thorough drenching and the immediate application of a heavy surface mulching of litter will probably be all that is needed to establish them in the new soil, after which they are not easily affected by drought. Similar remarks are applicable to recently transplanted Roses, as also to herbaceous, alpine, and rock plants that have been lately moved. Any of these latter yet to be rearranged or divided should have immediate attention, that the spaces remaining may be sown with the hardier

Annuals for Summer and Autumn Flowering.—Sweet Peas, Mignonette, Lupins, African and French Marigolds, Clarkias, Candytufts, and mand others, are amenable to this mode of sowing any culture. Stocks, Asters, Helichrysums, Zinnias, Dianthus Heddewigii, and Phlox Drummondi should now be sown in a frame, but have full exposure in

mild weather as soon as the seedlings appear. If sown thinly in drills, 4 to 6 inches apart, they will not need transplanting other than to their permanent positions in mixed borders, or for formal line planting for use as cut flowers, for which purpose they are deserving of extended cultivation.

Beds and Borders that are vacant should be got in readiness for planting, and the hardy plants may forthwith be got out. We are here now planting the raised edgings of the beds, some with Cerastium arvense, others with Sedum glaucum, Veronica repens, Sedum acre elegans, Sempervivum montanum, &c. Echeverias are this year with us to be discarded as edgings, and used only as groundwork plants for taller succulents; they are among the best of edging plants, but I have lately imbibed the notion that they have a too artificial appearance when so used; at any rate, the plants named as now being used for edgings have a more pleasing and natural effect. So soon as the edgings are all planted the beds should be marked out to the desired designs, of which I may say that the most simple are the most pleasing. All hardy plants may then be planted as opportunity offers, and much valuable time will thus be saved when the bedding-out season arrives. Sedum acre elegans is one of the brightest hardy plants we have for marginal lines, or for forming the framework in embossed, or what is more generally termed "carpet bedding," and this may at once be planted, together with Mentha pulegium gibraltaricum, Herniaria glabra, Ajuga reptans purpurea, and indeed all kinds of hardy plants that are suitable, or that can be made available, for bedding purposes, for it is in this direction alone that relief from the pressure of work bedding-out entails can be expected.

General Work.—The long-continued fine weather has helped to clear off arrears of work that the long winter had caused, so that all roads, walks, verges, and turf should ere this be in perfect order, the final touch of neatness being given by the mowing of the lawn, which now requires to be done before the coarser grasses get long and injure the finer by the exclusion of air, for if this be allowed to happen, the turf will be patchy, and will retain that appearance throughout the season. Frequent rolling and mowing at intervals of from eight to ten days are essential conditions to the production of a smooth velvety turf. Where new lawns are to be formed from seeds there should be no further delay in getting them in. Tread and level the surface, then sow the seeds, and afterwards rake and re-rake the soil to work the seeds in, and complete the process by a good rolling, which till germination takes place will require to be repeated after each frost, otherwise, through the upheaving of the soil, caused by frost, many seeds will perish. *W. Wildsmith, Heckfield.*

FRUIT HOUSES.

Vines.—The dry spring having been favourable, Grapes in properly ventilated rooms are keeping unusually fresh and good. It will be necessary to look over them once or twice a week for decaying berries, and when a portion of the bunches have been cut the bottles should be cleansed and refilled with fresh soft water, when a general change or turn over may be effected. In ordinary seasons we have to expel damp by means of fire-heat, but this spring we are obliged to close the shutters and keep the room as cool as possible to prevent the berries from suffering through getting too dry. Lady Downe's, Black Morocco, and Gros Colmar, are keeping well, and the latter is now but little if at all inferior to a good Hamburgh. To do this fine Grape full justice the Vines should be grown in a mid-season or early autumn-house in which the fruit will be quite ripe by the beginning of September, but the bunches should not be cut before the first week in January, by which time the berries will have lost the disagreeable taste of the soil so often met with in imperfectly ripened and prematurely used examples. Late houses now making rapid progress will require daily attention to disbudding, stopping, and tying, before the points of the young growths touch the glass. If the semi-extension system of training can be adopted, stop at the second or third joint beyond the fruit, and then allow the first set of laterals to extend until every part of the trellis is evenly covered with foliage. Train the shoots sufficiently wide apart to admit of the full development of the leaves, and allow the leaders to ramble along the back wall. Give the inside borders liberal supplies of tepid water. Shut off fire-heat early and use the syringe freely during the continuance of this bright weather. External borders which have been uncovered since the Grapes were cut in January will now require some kind of protection from drying winds, and to prevent the surface-roots from striking downwards in search of moisture. If the borders are poor they may be well mulched with rotten manure, but if rich and in good condition, fresh stable litter will best answer the purpose, as it will not completely shut out solar heat, and the heavy mulching will tell better after the Grapes are set. Muscats now in flower will require a high and moderately dry temperature with daily fertilisation to hasten their setting. With this fine weather there will be no great difficulty in running the house up to 90°, with air by day, and if the roots are warm and active the minimum temperature may stand about 70°, or 5° lower on cold nights. We are now thinning Muscats, which have set as freely as Hamburghs, and the night heat through the flowering stage ranged below 60°, but we were careful to secure the main point—a temperature of 60° at the roots. Where Vines are languid they may be greatly relieved by the removal of a portion of the surplus bunches before they reach the flowering stage; but in the event of the borders lying low, cold and wet, steel forks, new drainage, and fresh compost, will produce better results than high temperatures, which only aggravate the evils they are intended to cure. *W. Coleman, Eastnor.*

Melons.

As the roots push through the hillocks add thereto some more soil of about the same temperature as the house or frame in which the plants are growing. The stopping, thinning, and tying of the shoots must be regularly attended to now, for if neglected for only a few days the shoots would become overcrowded, which would be a state of things highly detrimental to the general progress and development of the fruits—in fact, such a state of things would tend to retard rather than advance the swelling off of the fruit, inasmuch as the energies of the plants, under such circumstances, would be wasted, instead of the sap being concentrated to its proper function—the development of the fruit and the consolidation of the necessary wood and foliage. Great care must be exercised in the putting on and taking off of air whilst these north and north-easterly winds continue, which, notwithstanding the presence of warm sunshine, are bitterly cold. Where plants are swelling off their fruits, shut up at 90°, with abundance of atmospheric moisture, and run up to 95°, which will be none too high a temperature for plants at this stage of growth. Continue to make successional sowings and plantings where necessary, and see that the linings of dung-frames are properly attended to by removing the partly-spent fermenting material, and replacing it with some hot dung and leaves from the reserve yard, where they had been turned over a couple of times preparatory to being used. *H. W. Ward, Longford.*

Cucumbers.

Where fine straight fruit is specially aimed at crop lightly, and place the fruit in glasses—specially made for the purpose—corresponding in size with the maximum length of the variety of Cucumber which they encase; give also liberal supplies of tepid liquid manure to the roots as they require it, and shut up early (about 3 o'clock) in the afternoon, using the syringe freely when circumstances necessitate it. Stopping, thinning, and arranging of the shoots will also require considerable attention. A good supply of fruit can be kept up where the demand is not very great with two or three 3-light frames by planting them in succession and cropping lightly. When the second frame comes into bearing thin out most of the old shoots, and induce the plants to make young wood, which will in its turn make a succession to the second or third frame, and so on with each succeeding frame. Make a sowing of Gherkins and Stockbridge for ridge cultivation. *H. W. Ward.*

PLANT HOUSES.

The present will be a very busy season in these, as besides the general overhauling and cleaning to which most plants should be subjected, there is much potting to be done; the first and most important requiring attention in this respect being the greenhouse hard-wooded subjects, which should be handled with great care. Before any interference takes place with them, it is a matter of the greatest consequence that the whole of the ball is in a properly moist condition, for if not in this state when shifted and surrounded with fresh soil, it is next to an impossibility to get it so after, and the longer a plant can go before being watered when repotted the better. The old practice was to give a thorough soaking immediately the latter operation was carried out, but by so doing the peat becomes so thoroughly saturated, that it is a long time before the delicate hair-like roots can take to it; whereas if not wetted they lay hold of it at once, and the plants, as a natural consequence, start away into free growth. It will be obvious to all acquainted with the cultivation of these, that the peat when used should not be dry, as, if it were, water would of course have to be quickly given; but in potting, the great thing is to have a store of soil in that happy medium when it may be pressed together and feel clean and elastic in the hand, and leave it without sticking or scarcely staining the skin. If it can be had in this state, there need be no hesitation in ramming it tightly around the old ball, which it will then almost form part and parcel of, and prevent a too rapid percolation of water without the inner portion getting its share. For the choicer kinds of greenhouse plants, such as Epacris, Heaths, Azaleas, and Aphelexis, it is advisable to take out a portion of the more earthy portions of the peat by means of a fine sieve, and to use only the best and most fibry parts, to which a good sprinkling of sharp sand should be added. Great care is necessary to work out the crocks without inflicting any damage by breaking the roots—the principal and most active feeders being generally centred there.

Next in importance to the use of sweet wholesome peat or loam in the culture of plants is the rule of having clean pots, all of which that have been previously in use should be thoroughly scrubbed both inside and out and placed in an inverted position to dry, as when filled before this has taken place, the earth clings to them, and the plants cannot be turned out again without seriously damaging the roots. Azaleas and Rhododendrons that have been forced, as well as Cytisuses, Coronillas, and others of that class that have done blooming, should be subjected to a moist growing temperature that they may have every assistance and encouragement afforded them to make their young wood betimes, but before starting them on the way for this the Cytisuses and Coronillas will require thinning and pruning in. Calceolarias of both the herbaceous and shrubby sections need much watching just now in order to keep them free of aphis, pests which it is a difficult matter to eradicate without injuring the delicate leaves. The only way to do this with safety is to fumigate lightly in quick succession for a day or two when the weather is dull, using good shop tobacco for the purpose, which is far more potent than the paper, the smoke from this being hot and destructive to the health of the plants. At the present stage of these a cold, moist frame suits them best, where, if the syringe is used sparingly over them just before closing, the bedewing will be a great help in preserving the foliage fresh, and assisting it to retain that pleasing green colour which is so effective an accompaniment to gay blooms. The present strains of Cinerarias are so good that it is seldom worth while to raise them in any other way but from seed, nevertheless it occasionally happens that a few among those so obtained show such extraordinary fine properties that the possessors of them become desirous to perpetuate them, which may be done, and good plants obtained, by encouraging a free growth of the suckers which emerge from the base of the old ones as soon as they have ceased flowering. It will be found that these side-shoots start more readily if the plants are knocked out of the pots and plunged in leaf-mould at a depth sufficient to partly bury the crown, when the side-shoots will form roots quickly, especially if the frame in which they are placed be shaded and the interior kept moist by frequent syringing. In cases where the stock is raised from seed the present is a good time to sow for the main batch, as also Primulas—the semi-double varieties of these being so exceedingly serviceable for cutting and general decorative purposes, as to render them of special value in most gardens. Those having really double flowers can only be propagated by means of cuttings, or rather division of the old plants, and to be successful it is necessary to keep these a little dry some time previous to making a separation of the parts, that they may be a little hardened and the sap reduced, otherwise, when a severance is effected, they are apt to rot and be lost. In taking the cuttings it is important to get as much of the base with them as possible, which should be trimmed and freed of all loose parts, and each cutting then inserted in separate pots in sharp sandy soil, and stood in a warm house under the protection of handlights till they strike, which they soon do if duly shaded and kept from flagging by giving an occasional bedewing overhead, but this must not be heavy enough to run into the hearts or to wet the soil much till the wounds are all healed.

Azaleas.—The earlier kinds of Azaleas that have been forced and have become denuded of bloom should at once have their seed-vessels picked off, and be placed where they can enjoy a good brisk temperature to help in completing their growth that they may be of service for starting again at the end of the year; and the same with Cytisuses, Acacias, Rhododendrons, &c., all of which require special attention just now to insure good growths and to keep them shapable by the requisite pruning and thinning.

Pot Lilies, so useful for conservatory decoration, will now be pushing through the soil, at which stage the shoots elongate at such a rate if far from the glass as to cause them to become very long-jointed and weak; to prevent which it is advisable to remove the whole stock to some pit or frame where they can be stood on a damp bottom and have the lights tilted high or removed altogether whenever the weather is suitable. Lachenalias like the same kind of situation, as also Tritonia aurea and the Ixias, all of which are impatient of confinement or artificial warmth, and only succeed well when they can have plenty of air. *J. Sheppard, Woolverstone.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	April 5	Sale of Imported Orchids, at Stevens' Rooms; and of Established Orchids and Bulbs, at the Mart, by Protheroe & Morris
Wednesday,	April 7	Royal Caledonian Horticultural Society's Show (two days). Sale of Imported Orchids, at Stevens' Rooms.
Thursday,	April 8	Sale of Established Orchids, Lilies, Tigridias, &c., at Stevens' Rooms. Sale of Carnations and Picotees, Roses, Shrubs, and Fruit Trees, at 38, Gracechurch Street, by Protheroe & Morris.

We have already alluded at some length to the experiments made by Dr. Siemens and his gardener with reference to the use of Electric Light for Forcing, and we have been furnished by Dr. Siemens himself with full particulars of the experiments so far as they have gone. The matter is of such great importance that we revert to the subject for the purpose of showing the manner in which the experiments have been carried out, for the opportunity of doing which we are again indebted to Dr. Siemens and his gardener, Mr. Buchanan. Our illustration (fig. 75), drawn on the spot, though not strictly accurate, as the Melon-house is a span-roofed house, will at least serve to show the plan of arrangement. The light has been used in the interior of one house, and has also been placed on the outside of a Melon-house between it and a Strawberry-pit, as shown in the figure. The house within which the lamp was placed is a small oblong conservatory, some 24 feet by 16 feet. The lamp was placed at a height of about 8 feet from the floor. In this house the plants nearest to the light were accelerated in their growth by some ten to fourteen days, and in some cases the leaves, as of a Banana, were scorched by the rays. The lamp was used at night in this house for some three weeks, and in it were grown the Arums and Roses exhibited at the Royal Society and at the Royal Horticultural Society. Near to this house are situated the Melon-house and the Strawberry-pit shown in our sketch (fig. 75). Two posts will be observed, the lamp having been suspended, first on the one, then on the other, in such a way that the light fell on one end of the Melon-house and then on the other end, the Strawberry-pit being lighted at correspondingly different parts of its length in the same manner.

The nature and general results of the experiments have been already detailed, but we may mention one case in which the results were very striking: three pots of Potatos were forced, the advantage being wholly in favour of that grown under electric light by night and solar light by day. The experiment was, however, vitiated by the injury done to the plants, which had to be covered up in the day. With reference to the Melons it was observed that when the light was shifted from one end of the house to the other the progress of the plants which had been subjected to the ray was visibly checked. Another significant circumstance is that leaves grown under the electric light, when deprived of that source of illumination for one night only were unable to bear the sunlight next day but became flaccid as if growth had been imperfect under the electric light and there had been no time to consolidate the tissues or to pump up or to store sufficient water to compensate for the evaporation.

Having seen the actual working of the apparatus and its results hitherto we are more than ever convinced of the great boon which the electric light will in the future offer to gardeners in the dull winter months when heat and moisture can be controlled, but when the gardener sighs in vain for light. For Cucumbers, Melons, Vines, Strawberries, and various flowers—for all early forcing work, in fact—we feel convinced the light will ultimately prove very beneficial; and even the question of cost (4*d.* to 6*d.* per hour for a light of 1400 candles) need not deter the gardener called on to produce some of his choicest products at the most unseasonable times.

It must be remembered that the light is not likely to be of practical use except in the winter months, for as the sun gets increased power the advantage of the electric light seems to be proportionately lessened. It must also be remembered that the whole thing is in its infancy, and that a series of well devised comparative experiments must be carried out ere the matter can be looked on as anything but a very promising experiment. Melons or Cucumbers, or other annuals, are specially suitable for the experiments, because the whole cycle of growth, from the seed to the seed again, can be watched under the light. Such plants would grow and manufacture as they grow under the light. In the case of a Vine or a Strawberry plant the manufacturing process has been to a large extent got through the season before, and the heat, light, and moisture do but set the plant to work, and in so doing it, at least at first, avails itself of the stored material made the season before.

The machine by which the light is produced at Tonbridge Wells is worked by a small gas engine, which latter is so very convenient in its action that we are surprised such engines are not more frequently employed where gas is to be had. There is no lighting fires, getting up steam or stoking—the engine begins to work immediately.

As to the electric light it is not needful for us to go fully into a matter that could only be explained by a professed electrician, and comprehended by one familiar with that branch of science. Suffice it to say that the principle of the light rests upon the sudden combination of two opposite electrical currents and the conversion of one sort of "force" into other forces—magnetism, or magneto-electricity into heat and light. There is a magnet which by "induction" imbues with its own properties a second electro-magnet made to revolve with great rapidity, by means of the gas engine, in close proximity to the first. The result is that the electro-magnetic force is greatly intensified, and is made to travel along the conducting wires to the lamp, placed at any convenient distance—the "positive" current by one wire, the "negative" by the other. The lamp consists of two charcoal "candles," placed with the ends near to each other but not touching. A clockwork apparatus ensures the progressive onward movement of the candles at one end as they get consumed at the other, so that the distance between the two points remains the same, although the positive candle is more rapidly consumed than the negative. When the electricity, generated in the manner above-mentioned, traverses the wires, it suddenly comes to a standstill at the end of the charcoal candles; there the two opposite currents, positive and negative, meet, rush at one another as it were, owing to the great affinity of positive for negative. The result of this combination of opposite electricities is called the "discharge" or spark, here represented in the incandescence of the charcoal and the production of light. What was electricity or magnetism is now represented by light and heat.

The whole thing is a most curious exemplification of the relation between "forces." First the sun-force produced the wood, which ultimately became coal, and in which the gas is imprisoned. The gas thus indirectly produced by sunlight and sunheat is liberated by heat in the furnaces of the gasworks, and made to work the engine. Great mechanical force is thus produced: that force transmitted to a magnet induces two opposite electric currents, which, recombining, reproduce, as it were, the sunlight and sunheat from which they were primarily derived, and now in their turn serve to help the plants submitted to their light to grow and give out and drink in gases, as the plant from which the coal was produced did in its time, how many ages ago we cannot even guess.

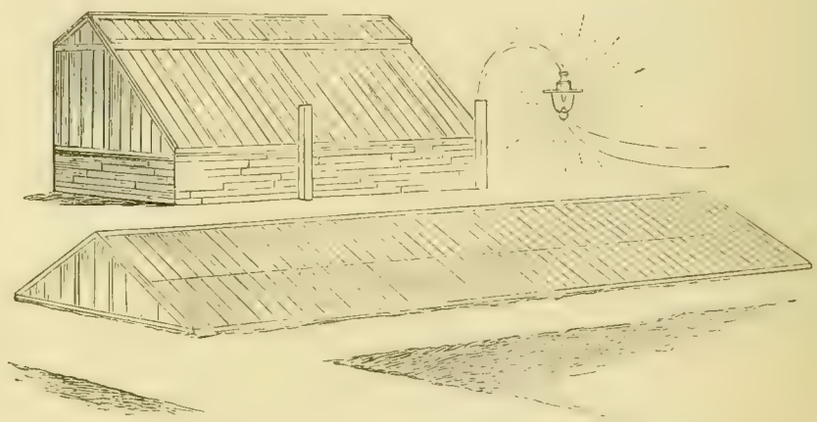

Fig. 75.—Forcing by the Electric Light.

—— Xerophyllum asphodeloides.—Probably because the plant had never before been a candidate for the honour, this very old inhabitant of our gardens did not receive a First-class Certificate till it was shown in June last, before the Floral Committee, by Mr. G. F. Wilson. It is a plant of the Colchicaceous division of the great Lily family, with a tufted habit and very numerous crowded roughish leaves. From the centre of the tuft rises a tall flower-stem with small linear lance-shaped bracts below, and a dense many-flowered raceme above. The flowers are whitish or yellowish-white. As our figure shows (fig. 76), it is a stately plant for the herbaceous border, though it is said not to flower freely. Mr. Wilson, however, seems to have found the secret, and is too good a plantsman not to reveal his method of growing the plant. It is a native of the South-eastern States of North America, whence it was introduced as long ago as 1765.

—— Croton Warreni.—Under this name Mr. B. S. Williams proposes shortly to issue a fine Croton with long narrow leaves twisted like a corkscrew; the ground colour is dark green edged with crimson, and with irregular orange blotches. It is a robust-looking variety.

Fig. 76.—Xerophyllum asphodeloides. (see p. 432.)

—— Botanic Garden Seed Lists.—We have received catalogues from the Botanic Gardens of Vienna, St. Petersburgh, and Palermo.

—— Easter Monday at South Kensington.—The Royal Horticultural Society's Gardens were thrown open to the general public on Easter Monday, at an admission fee of 2*d.* each, and 10,089 persons passed through the turnstiles, so that the Society's treasury was benefited to the extent of £84 1*s.* 6*d.*

—— Anemone blanda—Mr. Ingram, writing from Belvoir, says :—"I do not know a more charming spring flower than Anemone blanda ; of a more intense shade of blue and preceding in flowering A. appenina by at least a month, for the earliest section of the spring garden it is invaluable. It is most fortunate that for purposes of propagation it produces seed freely, and its seedlings exhibit a decided tendency under cultivation to vary from the normal type, but still preserving their precocious habit. Amongst the seedling varieties I possess are flowers almost twice the size of the ordinary form, and varying in colour from white, light blue, to the intense hue of the parent : some of these I send for your inspection."

—— The Effects of the Winter on Vegetation.—The Scientific Committee of the Royal Horticultural Society, having appointed a committee to collect evidence and report the effect of the past severe winters and cold summer on trees, shrubs, and plants, will be glad of the co-operation of all horticulturists interested in the subject, whether members of the Society or not. Forms are in preparation for filling up, and may be had on application to the Secretary, South Kensington.

—— Defoliated Vines.—Those of our readers who may be interested in the fate of the Vines which were defoliated at Chiswick last autumn will be pleased to hear that the canes in question are breaking about the same as usual.

—— Sydney International Exhibition.—A telegram has been received at the International Exhibition Offices, Castle Street, Holborn, stating that a Gold Medal has been awarded to Messrs. J. B. Brown & Co., 90, Cannon Street, London, for their galvanised wire netting.

—— The Late Mr. Maxwell.—"A few weeks ago," writes Baron von Mueller by the last mail, "death carried very suddenly away Mr. G. Maxwell, at King George's Sound. He was found dead in his bed. Although he felt ill the evening before in Albany, he rode back to his place in the country, commenced his work in the morning, and sent a native away on some trivial business only an hour before. He was found to have expired from apoplexy. He had attained the age of seventy-five years. Only two years ago I made long journeys with him over rough country for several days on horseback to collect plants and seeds, and he was then as enthusiastic as ever, being able to endure great fatigue till the last of his bush life. More than thirty years ago he conducted Mr. Drummond through the Stirling ranges in the journey which proved so memorable in the discovery of many splendid plants. He was nearly always in the bush, and engaged in procuring seeds, botanical and entomological specimens, in which pursuit he is succeeded at King George's Sound by Mr. W. Webb. After the death of his wife he lived even without a servant in the roughest style, quite by himself. Encouraged by myself he undertook several extensive journeys over then untrodden ground, eastward as far as the Great Bight, and thus found many new plants, and enabled us to extend the known limits of the range of many rare species, as recorded in the *Flora Australiensis.*"

—— The San Donato Sale.—Prince Demidoff's gardens at St. Donato, near Florence, are among the most richly endowed in Europe. For some time they were under the charge of Mr. Goode, who had been with Mrs. Lawrence at Ealing Park, and at one time a catalogue, which was in its way a model, was prepared by Professor Planchon, now of Montpelier. When at Florence at the time of the Botanical Congress in that city, many of our readers had the opportunity of inspecting these gardens, and we were at that time enabled to give illustrations of some of the fine specimens it contained. The

collection was got together by Baron Hügel, and is contained principally in one long range, 400 metres long by 8 to 10 metres in breadth. In fulfilment of what seems to be inevitable destiny, the contents of this fine garden are to be disposed of by public auction at Florence, from the 23d of April to the 4th of May next, and a catalogue has been drawn up by M. Lubbers of the Botanic Garden, Brussels. As to the catalogue we cannot more appropriately describe it than by citing Sheridan's description :—"You shall see a beautiful quarto page where a neat rivulet of text shall meander through a meadow of margin."

—— Davidsonia pruriens.—Respecting this curious and beautiful plant, figured at page 819, vol. vii., 1877, we find the following interesting note in a recent number of the *Belgique Horticole*:—The plant assumes the dimensions of a tree, and produces a succulent fruit about the size of a Magnum Bonum Plum. The flavour is somewhat rough, but excellent preserves are made from it.

—— Manchester Botanical and Horticultural Society.—At the very successful spring show held by this Society on March 17 and 18, the Society's Silver Medal was awarded to William Leach, Esq. (Mr. Swan, gr.), for a miscellaneous collection of plants; and Cultural Certificates for Dendrobium crassinode to Mr. William Leach; Hyacinths, Messrs. Dickson, Brown & Tait; Hyacinths, Messrs. Wm. Cutbush & Sons, Highgate; Cyclamens, Mr. B. S. Williams, Holloway; miscellaneous plants, Messrs. G. & W. Yates; miscellaneous plants, Mr. S. Schloss, Bowdon; Lilacs, Lily of the Valley, Violets, and miscellaneous plants, Messrs. John Standish & Co., Ascot.

—— Orchids in Flower.—Mr. Bull has an especially fine display of Orchids in flower just now, of which we append a list. Some of the varieties of Odontoglossum triumphans are of great beauty, but perhaps the most noteworthy plant of all is a grand specimen of Ada aurantiaca with nineteen spikes of flowers :—

Acropera luteola
Ada aurantiaca
Anguloa Clowesii
Calanthe Masuca
Cattleya Loddigesii
,, Mossiæ aurantiaca
,, species nova
,, Trianæ
,, ,, splendens
,, ,, tyrianthina
Cœlogyne Lowiana
,, ocellata
Cymbidium eburneum
,, ,, maculatum
Cypripedium barbatum pictum
,, Boxallii
,, Dayanum
,, Harrisianum
,, villosum
Dendrobium chrysotoxum
,, crassinode Barberianum
,, Cambridgeanum
,, crystallinum
,, densiflorum
,, Devonianum
,, Findleyanum
,, Freemanni
,, luteolum
,, nobile
,, ,, Wallichii
,, Pierardi
,, sulcatum
,, thyrsiflorum
,, Wardianum
Epidendrum cuspidatum
,, fuscatum
,, macrochilum
,, paniculatum
Lycaste Harrisoniæ
,, Schilleriana
,, Skinneri
,, ,, purpurata
,, ,, rubella, and many vars.
Masdevallia amabilis
,, bella
,, civilis
,, Estradæ
,, ignea
Masdevallia Harryana
,, ,, cœrulescens
,, ,, splendens
,, lilacina
,, Lindeni
,, peristeria
,, oculata
,, Veitchiana
,, violacea
Odontoglossum Chestertoni
,, cirrosum
,, ,, Klabochorum
,, citrosmum
,, ,, roseum
,, cordatum
,, crispum (Alexandræ)
,, ,, roseum
,, gloriosum
,, ,, superbum
,, Hallii
,, luteo-purpureum
,, maculatum
,, ,, Domianum
,, membranaceum
,, nebulosum pardinum
,, pardinum
,, Phalænopsis
,, Pescatorei
,, ,, nivale
,, Roezlii
,, ,, album
,, sceptrum
,, triumphans, several vars.
Oncidium Cavendishianum
,, cheirophorum
,, cucullatum
,, Forbesii
,, fuscatum
,, Kramerianum
,, luridum
,, reflexum
,, sarcodes
,, serratum
Phaius Blumei
Pleione humilis
,, ,, tricolor
Sophronites grandiflora
Vanda striata, a rare species.

—— Lælia flava is now in bloom at Mr. B. S. Williams' at Holloway. Its peculiar yellow flowers, with their narrow oblong segments, render this a valuable plant for variety sake.

—— Potatos for Ireland.—The shipments of Potatos from the Clyde to Ireland for the past five or six weeks have been beyond all precedent. The tubers have been received in Glasgow and Greenock from all parts of Scotland, the remote Highlands contributing thousands of bags, these coming sometimes from places previously known only as localities where the native supply was so small as to require supplementing. It is feared that in certain remote parts the suicidal policy has been followed of disposing of the seed Potatos to the merchants; and if this is the case, the scene of distress may before long be transferred from Ireland to the Highlands of Scotland. *Irish Farmers' Gazette.*

—— Arisæma concinnum.—Thirty-two years ago this handsome Aroid was discovered in the forests of the Sikkim Himalaya, at elevations of 6000 to 10,000 feet, by the present Director of the Royal Gardens, Kew. The credit of its introduction in a living state to our gardens is due to Mr. Gammie, formerly of Kew, now of the Cinchona plantations at Darjeeling. The solitary leaf has an erect petiole, from 1 to 2 feet in height; its base sheaths the scape, and is itself sheathed by successively longer membranous bracts. The blade of the leaf is made up of ten or twelve lanceolate, entire, light green leaflets, which radiate from the top of the petiole like the spokes of a wheel. The spathe is convolute, tubular at the base; its upper portion bent over at the mouth, and gradually narrowed into a tail-like appendage about 3 inches in length. The spathe of the female plant is longitudinally barred with white and green, the latter colour being replaced with blue-purple in the male. This species is now in flower in the T range at Kew.

—— Calcutta Botanic Garden.—We regret to hear of the decease from cholera of Adolf. Biermann, the Curator of the Royal Botanic Garden, Calcutta.

—— Pittosporum Tobira.—"G., Bath," writes:—"This New Zealand plant has here stood the last winter unprotected, and uninjured." We may add that it generally does so on the south coast.

—— Mr. Edward Hewitt.—The death is announced of Mr. Edward Hewitt, of Eden Cottage, Sparkbrook, Birmingham, one of the oldest, best known, and most respected judges of poultry.

—— Picea polita.—In our recent notice of this noble Spruce we omitted to state that we had received cones from Messrs. Charles Lee & Son, and which had been produced in their Feltham nursery. Some, indeed, were exhibited by Messrs. Lee before the Royal Horticultural Society. Messrs. Lee, we are glad to learn, have raised numerous seedlings from these cones. It is a noble-looking species, and perfectly hardy.

—— Effects of the Winter on Plants.—The Hon. Mrs. Hope informs us that in her garden at Belmont, Murrayfield, Mid-Lothian, a large tree (on a south wall) of Loquat has been very hard hit this winter, as has been Blue Gum, Garrya elliptica, and Acacia affinis—the latter may come away from the ground; while on the same wall a Magnolia conspicua is quite safe and covered with flower-buds. Choisya ternata has stood quite well, and Stauntonia latifolia (which had had a branch of Spruce Fir covering it), though cut by the frost, is breaking well.

—— Odontoglossum Pescatorei.—We have received through Messrs. Veitch some blooms of this useful Orchid, from the gardens of Mrs. Burnley Hume, at Winterton, near Great Yarmouth. The plants have been in bloom throughout the winter in a greenhouse at no higher temperature than 40°, and Mr. Murrell, the gardener, states that their cultivation demands no greater skill than that required by a Pelargonium. No two flowers of those sent us were alike in their markings.

—— The Genus Crocus.—A good monograph, on no matter what subject, is always a satisfying and a satisfactory performance. It is an evidence of hard work thoughtfully directed—always a pleasant thing—while its well-arranged, carefully manipulated details, are of cardinal importance to the student. Such a monograph lovers of the Crocus may look for at the hands of Mr. George Maw. A specimen sheet is before us, a goodly quarto, with a well-executed engraving of a "chine" in the Pyrenees, and a thoroughly useful, well-drawn coloured plate, representing the structural details of one of the species. The text comprises the whole history of the species—its name, position in the genus, literary history, synonymy, diagnoses, description, geographical distribution, life-history, and garden culture. When completed the work will consist of two royal quarto volumes, including about eighty coloured plates from drawings by the author, and some five hundred pages of letterpress, with numerous wood engravings. The number of species is about seventy—double the number that Herbert knew in 1847. Of these the majority are in cultivation in the author's garden, while he has himself collected a large portion of them in their native habitats. We await with great interest the completion of this excellent monograph.

—— Anchomanes Hookeri.—In the warm compartment of the T range at Kew there is a good flowering specimen of this peculiar and beautiful Aroid, which, on account of its striking foliage and the colour and graceful form of its spathe, is certainly worthy a place in any collection of stove plants. The slender, prickly petiole is 3 feet in height, and bears on its summit the horizontal blade, about 3 feet in diameter; this is divided into three primary divisions, which are again cut up into several leaflets, the largest of these being toothed. The scape is also prickly, like the petiole, and a little shorter than it. The spathe is of a pale purple colour. A native of Western Tropical Africa.

—— The Border Counties Flower Show, which will be held at Carlisle at the same time as the Royal Agricultural Show—opening on the Tuesday and closing on the Friday, July 13 to 16—promises to be very extensive. There will be upwards of 1000 feet of marquee and 4000 feet of tabling. The show of Roses in particular is expected to be one of the finest ever held out of London. All the principal Southern horticulturists have promised to compete.

—— Basingstoke Horticultural Society.—The fourth exhibition of this Society is announced to be held on August 24, at Goldings, the residence of S. Field, Esq.

—— Kew Gardens.—The number of visitors to Kew Gardens on Good Friday was 15,875; and on Easter Monday, 32,753.

—— Anæctochili.—These are so difficult to manage that, beautiful as they are, we seldom see them. Mr. Williams lately showed us a frameful in beautiful order, comprising several of the species. Is it that they are usually too much coddled? At any rate Mr. Williams is not afraid to give them plenty of air.

—— The Pea Weevil in Canada.—It is estimated that the damage done by the Pea weevil last year in Middlesex County, Canada, was not less than 100,000 dols., and the local agricultural society, believing that the total omission of one crop would give at least temporary riddance of the pest, "strongly recommend the Legislature of Ontario to pass an Act permitting County Councils to prohibit the sowing of Peas in those counties that are infested by the bug." *New York Tribune.*

—— Publications Received.—*The London Market Gardens.* By C. W. Shaw (37, Southampton Street, W.C.)—*The Indian Forester.*—*Seventh Annual Report of the New Jersey State Board of Agriculture for the Year* 1879.

—— The Weather.—General remarks on the weather during the week ending March 29, issued by the Meteorological Office, London:—The weather, though cloudy, hazy, or foggy at times, has been generally fine, bright, and very dry over the whole country. The temperature was equal to the mean in "Scotland, W." and "Ireland, N.," and slightly above it in "Ireland, S.," but in all other districts it has been a little below the mean value. The highest of the maxima (63° to 65°) were registered at most stations on the 25th or 26th, while the thermometer very frequently fell during the night-time below 30°, and at Rothamsted in the early morning of the 29th reached the very low reading of 21°. The wind until the 28th was generally moderate from east in the south, fresh from south-east in the west, and light from the southward in Scotland. Towards the close of the period, however, very variable airs were prevalent all over the United Kingdom. The rainfall was scarcely measurable in any district.

—— Gardening Appointments.—Mr. Richard Spinks, late Gardener to W. L. Childs, Esq., Kinlett Hall, Shropshire, has been appointed Gardener to Lady Henry Somerset, The Priory, Reigate, Surrey.

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Home Correspondence.

Gardeners' Troubles. — Since writing the Calendar on hardy fruit for the present week, we are again visited this morning (March 29) with a sharp frost, accompanied by a dense fog, which must tell disastrously on the feeble blossoms of ill-ripened wood struggling between a roasting day temperature and drying winds and the chilling effects of dense fog and frost. The glass fell with us on the date above mentioned at 6 A.M. to 25°, or 7° of frost. The weather is everything that can be desired for pulverising and preparing the ground for the reception of all kinds of seeds, and gardeners may look forward hopefully to a good supply of vegetables for the forthcoming season. But, alas! for those poor enfeebled trees upon walls depending for protection upon such *impromptu* shelter as can be rendered by means of Fir branches and other contrivances of a similar nature. Really the summing up of the whole business is, to say the least of it, a vast amount of labour, which means money all but thrown away, so far as any return that we have had of late years, to say nothing of the first cost of walls, trees, and formation of borders, the material of which amounts in many cases to a good round figure. I think upon the whole there is no remedy likely to yield satisfactory results short of glass protection, and I do not think there is any suggestion having taken a practical shape before the horticultural public to equal that given in the *Gardeners' Chronicle* of May 29, 1879, at p. 624, by Mr. Henry Howlett, who, being a practical gardener himself, knows how important it is to combine the greatest number of advantages to the gardener at the lowest minimum figure consistent with appearance and durability. *W. Hinds.*

Artificial Lighting.—An elucidation has happened to me on the subject of forcing by electric light. Why should not other and cheaper lights have a considerable effect on vegetation? In my parlour I have a lovely group of Crocus blooms in water, which scarcely open in the daytime, but when the gas is lighted in the evening out they come as in sunshine. [Effect of heat. Eds.] In November last I brought two Strawberry plants out of my greenhouse that were flowering for the second time, having been forced in May. They were in bloom, and had a fruit or two colouring. They were placed on the sideboard at the farthest end of the room from the windows in the day, and were placed on the dining-table at night under the gas. They lasted three weeks, in which time they set and ripened, every fruit with a very good flavour and colour, and the leaves were quite fresh at the end of this time when they were turned out-of-doors. Many ladies who partook of the fruit when calling, can testify to the delight they experienced. Will some rich amateur have the gas laid on outside his forcing-house next winter, and enlighten the public on the results? *C. Lee.*

Spiræa palmata.—Lovers of herbaceous plants who do not possess this would do well to add it to their collection. The foliage alone should be a sufficient inducement, and the flowers add much to its beauty. I find them retain the colour longer by being planted in partial shade. There can be no doubt of its being hardy, as it has stood the two past winters here in a shrubbery border without protection, and it is now shooting up strong. *W. Divers, Wierton, Maidstone, March* 27.

Cultivation of Molinia cœrulea.—In reply to some of "Ebor's" questions, I beg to say that the grass can be best cultivated as a material for the papermaker (its pernicious character at certain seasons renders it unfit for feeding purposes) by planting the roots a foot, or at the most 18 inches, apart every way. Any waste ground may be made use of, by preference undrained, seeing that the more moisture there is in the ground the longer and stronger is the fibre in the flowering stem, which is the part best adapted for manufacture. The crop should be collected in July, or early in August, and may be gathered as children gather rushes. The flowering stem gives way very readily just above the only knot, so that the material would appear in the market without any knots. Papermakers will be able to appreciate this very great advantage. As the grass attains its greatest luxuriance in the open and wet parts of woods, proprietors in planting might form alternate strips of wood and grass, the former being on the higher and drier ground, the latter on the low and wet places. If the planting take place in October, I believe a crop might be got in July or August, and that for a series of years, provided the leaves remain untouched, as they would be by the method of collection I propose. If I mistake not, it would take several years to raise a crop from seed, but as the plant is largely distributed, there need be no difficulty in obtaining roots. There is not the slightest doubt that this is the only crop which could be raised on many of our waste lands as they at present exist. The 6,000,000 acres in Ireland referred to by the *Times* correspondent might be made use of in this way, with advantage to the country and the paper manufacture. I shall be glad if I can give any further information in regard to this matter. *A. Craig-Christie, Edinburgh, March* 30.

Trapa natans.—Although one of the most interesting of aquatics, and a cultivated edible fruit in the South of Europe under the name of Chataigne d'eau, this plant is rarely to be seen in garden aquaria. Its seeds are peculiar, and have been called "Water Caltrops," since the seeds as they rest on the ground always present a spine upwards, as in the caltrops formerly used in warfare to impede the progress of cavalry. Some weeks ago Messrs. Vilmorin-Andrieux, of Paris, kindly sent me seeds of this plant, and as the germination of these is rather peculiar, I beg to send a not respecting it. The first evidence of germination is the protrusion of a white tigellum, which grows erect, its length varying according to the depth of the water. In shallow water the tigellum bends horizontally on reaching the water level, and from the angle the true plumules rise. From the portion beyond the plumules rootlets are protruded, which gradually take hold of the soil below, and eventually the tigellum decays as the roots acquire the power of supplying the full supply of nutriment. An excellent wood engraving of the plant was published in the *Gardeners' Chronicle* (see p. 213, vol. x., 1878). *B.* [The full history of the germination, with numerous figures, is given in the *Annales des Sc. Nat.*, 3d ser., p. 9, t. 12—15. Eds.]

Sussex Trug or Trug Basket.—Mr. Shirley Hibberd asks, "Why trug?" and then proceeds to answer the question himself. As Sussex is my county I resent the slur of bad pronunciation. "Why trug?" Because that is the name by which it is known among the people of Sussex, and handed down to us by our fathers and forefathers. Trug, not truck; for truck, as applied to our trug, is a foreign innovation. We of Sussex will not truckle to London. If London is the salt of the earth in the way of pronouncing words properly, why do the Cockneys go to 'Amsted in a wan? As to the people of Sussex not being able to click the *k* properly, such an assertion is wrong. We all like our own names. As trug is a Sussex basket so let it remain. *Henry Eldridge, The Gardens, Chesterford Park, Saffron Walden.* [Our correspondent further sends us some rhymes, which we do not deem it necessary to publish. He reminds Londoners that the word "trug" rhymes with the name of an insect sometimes found in London beds. Eds.]

—— The German word trug is the imperfect of the verb "tragen," to bear or carry. The "trug basket" is, therefore, a basket to be used for carrying anything in—*Anglice*, a hand-basket. *G., Bath.*

Broccoli and the Frost.—All through this neighbourhood the complaint is a general one, that nearly all are killed. The sorts planted here were Veitch's Autumn and Winter, all dead; Adams' Early, all dead; Daniel's King, and Hammond's Imperial, very few escaped; Cattell's Eclipse, two-thirds dead; Carter's Champion, and Burghley Champion, about equal, but most of them are killed; Purple Sprouting Broccoli, two-thirds dead. All other sorts of greens have been much injured. Brussels Sprouts were not hurt, but a slight crop; Early Ulm Savoy was not injured, while Cottager's Kale were more than half killed. Of the Green Curled or Scotch Kale none were killed. This is a very nice sprouting green, and in a season like the past invaluable for garnishing purposes when Parsley is scarce: an old Cabbage bed gave us a good supply till after Christmass. Many growers make a mistake in destroying the bed after the Cabbages are cut. After forty years' experience I find it of great advantage to leave them till the ground is wanted for another crop and other greens are more plentiful. A great many Cabbage beds, planted for the spring, have all been cut up, and plants are very scarce and weak. This failure, added to the loss of the Broccoli crop, must seriously affect the supply of vegetables for some time to come. The soil here is a light sharp loam, and rather dry; the aspect due south and sheltered. *W. Divers, Wierton Place, near Maidstone.*

Aaron's Rod (see p. 408).—Miss Pratt in her work on *Wild Flowers* gives the scientific name of Aaron's Rod as "Solidago virgaurea," "Woundwort," and the only British species. "The genus derives its name from 'solidare,' to unite in healing wounds." It is also mentioned by Gerarde. But has not the name "Aaron's Rod," and also the picturesque distinction of "High Taper" been applied to the common Mullein, so familiar in old gardens? There is an interesting bed of Solidagos in the Botanical Gardens, Edinburgh, where the writer verified last summer an old favourite, feathery and golden-yellow, as S. viscosa. It is common in farmhouse gardens in the Midlands, and the colour is especially pure and beautiful. *H. M. E., March* 29.

—— We had a plant known by this name in our garden at Sedbury Park, West Gloucestershire: I believe it was a variety of the Lysimachia vulgaris. The flowers were of a deep golden colour, growing in great quantities on a strong upright stem. It had a much more sturdy growth than the ordinary wild plant. I have never seen it elsewhere, unless in the herbaceous ground at Kew [and along the towing path. Eds.]. *G. E. O.*

Acalyphas as Table and Room Plants.—No plants of modern date present greater advantages to the gardener who has a stock of plants to propagate and grow annually for table decoration and house furnishing than these Acalyphas. They are easily and rapidly grown, as all plants that are employed for decorative purposes in winter should be, and they have a charming effect when the colour is well up in the autumn. The three varieties that we grow here, viz., macrophylla, musaica, and Macafeeana, bear large massive-looking leaves of a reddish-chocolate tint, which renders them amongst the most stately subjects that can be used for the centre of a small table or arranged in conjunction with groups of other plants. Plants that are intended for special decorative purposes are best cultivated with a view to simplify the work of arrangement hereafter. For instance, if decoration is carried out on an extensive scale, a number of plants should be grown in pairs to match, so that a properly balanced arrangement can be effected with the least amount of trouble. Odd plants of anything seldom work in harmoniously except as isolated objects standing by themselves or in forming the centre of a group. Another point of importance to be kept in view is the size, colour, and variety of the vases to be used. A plant may be splendidly grown and richly coloured, and yet be a ridiculous choice as a table or room plant. No man with half an eye would think of putting one of these beautiful Acalyphas in a vase of the same colour or in a room where the predominating colour tended to the same shade, but given a silver vase and a light groundwork, either white or something approaching white, with the surroundings also tending to a light shade, and you produce an effect which few plants will surpass. Acalyphas are raised from cuttings and from eyes. The plants are not hardy enough to stand the atmosphere of a room for long without suffering, but by way of compensating for this defect the tops root freely and the stems, cut up into small pieces below every eye, take root in a short time either by inserting them singly into small pots filled with sharp propagating material, such as is ordinarily used, or by putting half-a-dozen or more into a 6-inch pot. The pots containing the eyes or cuttings should then be plunged in a gentle bottom-heat, where fermentation has not at any time become violent, and where the material has not ceased to give off a gentle steam when the lights are closed; here they will take root in a fortnight or three weeks, and be ready for potting off into 60-sized pots or those of a size larger, according to the strength of the plants. Plants propagated from cuttings any time during the month of April, or even early in May, will make fine samples by the end of the season. They require generous cultivation, and a stove temperature with shade during the growing season. Towards the end of August the shade should be gradually reduced, and ultimately dispensed with altogether, in order to have the plants fully coloured early in the autumn and hardened sufficiently by a free admission of air, so that they will stand the wear and tear of furnishing treatment without receiving permanent injury. *W. Hinds.*

Charcoal Dust.—Last season I applied a good dressing of charcoal-dust to some of my Peas at the time of sowing. These grew very strong, and resisted mildew entirely, while those sown in the usual manner were a total failure, or nearly so, the mildew attacking them as soon as they were in flower. The charcoal I used was the refuse of chemical works, which can be obtained almost anywhere at little trouble or expense. Charcoal decomposes so slowly that it ought to be used in as fine a state as possible, otherwise it will not decompose at all, unless directly exposed to atmospheric influences, and then so slowly as to be of very little benefit to fast-growing plants or crops. It is well known that a small piece of charcoal will remain in the earth unchanged for years. Although I am an old subscriber, I do not recollect seeing this subject discussed in your pages, and I think that it would be interesting to your readers if some of your correspondents would kindly give the results of their experiments upon the growth of plants with charcoal, as it is such an essential element in the physiological economy of plants. *A Pembrokeshire Gardener.*

Chimonanthus, Non-flowering. — As it has been suggested by your correspondent, on p. 372, that it would be interesting to know how the above has flowered in other districts than his own, let me

say that here (about 12 miles south-west of Basingstoke) I have two good-sized plants of Chimonanthus fragrans, and have not had one flower this season. Magnolia Exmouth var. has nearly every point dead for several inches, although sheltered. *H. W. Warren.*

—— This plant has failed to bloom here this season. It bloomed profusely last season, and has a quantity of old fruit still hanging to the tree with perfect seeds in them. I have never succeeded in striking cuttings of this plant, but this difficulty is of very little importance, as it is easily raised from seeds; and if any of your readers desire a few I shall feel it a pleasure to send them. *W. Bishop, Taversham, Norwich.*

Hardiness of Lilium giganteum.—I was somewhat surprised to find, after such a severe winter, numbers of this fine Lily coming up strongly through the soil (a stiff loam approaching clay) in the well-furnished gardens of J. H. Oakes, Esq., of Newton Court, near Bury St. Edmunds. Each of the patches there are literally capped with a layer of soot, as Mr. Oakes had discovered that the snails and slugs were exceptionally fond of this fine Lily. Many of the shoots are of flowering size, and will have a magnificent effect among the shrub masses, and herbaceous plants, among which they are placed. Quantities of Lilium auratum were also left out without any protection, and were coming through on March 16. These looked healthy, though not very strong. Three years ago we tried a hundred bulbs of auratum in a lighter soil at Hardwicke—within a mile of Newton—and the frost or the slugs, or both, made an end of them, though on the same border we have one of the finest rows of the common white Lilium candidum to be seen anywhere. *D. T. Fish.*

Camellias and Azaleas Out-of-Doors.—The past winter has been severe enough to try the hardiness of most plants, and I am glad to find that Camellias and Azaleas have stood the cold and intense frosts better even than the Sweet Bay and other evergreen shrubs, for while many of these are cut about and sadly disfigured the above-named plants appear little the worse. The Azalea seems the hardier subject of the two, as one we had turned out last spring has all its leaves as fresh and green-looking and free from injury as any of those in the houses. Its present condition may, and no doubt is, in a measure, owing to the exceeding stillness of the weather and the somewhat sheltered situation in which it is placed, as cutting winds cannot get at it, and yet near by Laurustinus have suffered much and Euonymus are killed altogether, although just as favoured in every respect. Azaleas may, therefore, I think, be regarded as the most enduring of the three, and any one having old spare plants would do well to plant them out for cutting from, as they would come in late for that purpose and save the necessity for disfiguring those in pots. The Camellias alluded to are growing on a north-west wall, where they have not yet had a fair chance owing to having been disturbed in having been dug up from a border in a corridor, from which they were taken when of large size without a particle of soil, and laid in for some time during alterations till their present position was ready for them. From this disturbance they have not yet fully recovered, but for all that frost has had no bad effect on them beyond browning a few of the older leaves, as the buds are plump and fresh, and the young foliage, wood, and bark too in the same satisfactory condition. In another part of the grounds we have a plant of the single kind that has been out many years, and if it were only for the sake of their deep glossy leaves Camellias are quite worth growing in the open; but besides the richness and beauty of these, they expand flowers in districts where the spring is not ungenial, and the position is such as to afford them some amount of protection. In Devonshire they do remarkably well, as also in Mr. Rogers' nursery near Southampton, and the wonder is that a shrub so hardy, and which has been so long in the country, should be almost entirely confined to greenhouses, when, so far as growth is concerned, it will do just as well outdoors. *J. S.*

Potatos.—The time to plant Potatos is upon us, therefore it behoves all growers to examine their seed and ground and make every preparation they can, so that nothing will interfere to prevent the work being expeditiously finished. I am aware that a great number of Potato growers consider from the middle to the end of April the best time to plant, but unless the weather is exceptionally unfavourable I always endeavour to finish by the end of March. We did all our planting last year in that month, and I believe all will admit that a worse season for early planting can hardly be expected, but looking at the bad crops around us—most of which were planted late—we had every reason to be satisfied with the returns our early planting gave us. I am of opinion that nothing tends to court and encourage the Potato disease so much as strong manure used at the time of planting, as it was patent to all last year in this district that where the greatest quantity of manure had been used the disease appeared in its worst form, and destroyed the crops to such an extent that the sound tubers lifted were less in quantity than the seed planted, whereas those grown with little or no manure to a great extent escaped. We see numerous advertisements and reports relating to various artificial manures specially prepared for growing Potatos entirely free from disease, and we have frequently brought to our notice testimonials from gardeners and others giving such wonderful accounts of the quantity and quality of Potatos quite free from disease grown by the aid of one or more of the said manures, that one is tempted to enquire why the good things named in these testimonials have not been introduced to the notice of the people in Ireland in order to lessen the distress now annually borne by the poor through a partial or total loss of the Potato crop. What has become of Salus, about which so much was written some time back? I am afraid it has proved similar to other disease annihilators that we hear of—worse than useless. To grow Potatos of the best possible quality, and the least liable to disease, I find no treatment so suitable as planting medium-sized tubers entirely without manure in a light soil, newly trenched, out of which the tubers come with skins as clean and smooth as note-paper. Snowflake, grown in this way, forms medium-sized tubers of splendid quality, but grown in rich land the crop is enormous, but flavour shocking. I have heard of Potatos being so strong that pigs refused to eat them, which is not to be wondered at, considering the quantity of dung some people use, simply because they consider a large Potato denotes good culture—a mistake often fallen into by judges; but I maintain that to grow a good one is of more consequence, and am persuaded that if growers would use less manure the disease would be less frequent. *A. L. H., Norfolk.*

Mr. Carmichael's Seedling Azaleas.—On calling at Newton Court, the seat of J. H. Porteus Oakes, Esq., near Bury St. Edmunds, I was much struck with the novelty and beauty of some of his seedling Azaleas. Mrs. Carmichael, already in commerce, is a decided hybrid between amœna and Stella. It retains a good deal of the character and size of amœna, with somewhat of the substance, colour, and size of Stella. Mr. Carmichael is also a decided cross between amœna and Flag of Truce. Another decided step has now been made by using the pollen of the fine double variety, President Edward de Walle, a fine double rose-coloured variety, richly marked with crimson on all the petals, on Mrs. Carmichael. Several of the plants from this cross are now in flower. They vary in colour from the lightest rose to the richest purple, two of them being so dark as to look as if they had a dash of blue in them. The flowers are mostly double or semi-double, of small size and the most exquisite shapes, more like a fancy Pelargonium in form and size than the ordinary run of Azaleas. They are also of good substance, and will be likely to prove invaluable for buttonhole and other bouquets. They will probably soon be exhibited, and, if I mistake not, certificated in London. Several crosses have also been effected between the Indian and sinensis sections, and Mr. Carmichael is sanguine of his ultimate success in originating a race of Indian Azaleas hardy enough to stand through the severities of our winter in the open air. *D. T. Fish.*

Plants and the Frost.—Now that the frost has apparently left us, at least for a time, its effect on shrubs and other descriptions of plants is becoming apparent, and, judging from the weather-beaten dejected look of many, it is to be feared that losses amongst them will be something considerable. The number of killed it is impossible to estimate just yet, as they are very deceptive, for it will be found that some of those which look green and all right at present will succumb and dry up when they get the drying winds coursing through their branches. As to the wounded and hard-hit, they are to be seen on all sides, and many, in their feeling of commiseration for these, set about amputating the frost-bitten limbs, which operation at this early period is a great mistake, as, half-naked though they be, the little foliage and twiggy shoots they have on are at least some protection against the blasts, which even in ordinary seasons are so trying to vegetation. This being the case, it will be seen how important it is that they be left intact at present, and the more so as one cannot see with any certainty where to cut; but later on, when the buds start, the living and dead portions may be detected at a glance, and the knife guided accordingly. The kinds of evergreens that have suffered most with us are Euonymus and Laurustinus, the former, although protected, being much cut about, and the latter, judging from their offensive odour, having fared but little better; which is not to be wondered at when we consider how sappy and full of growth they all were in the autumn. Strange to say, Sweet Bays have stood the ordeal remarkably well, a plant 20 feet high that was killed down to the ground in 1860 being, so far as can be judged now, but little the worse. Magnolia grandiflora on a south wall is sadly browned, and Garrya elliptica has the points of the young shoots damaged, but Rhododendron Falconeri is quite untouched, thus showing conclusively how hardy it is. Bambusa Metake is still as green as a Leek, and from what I have seen of this highly ornamental plant, I believe it will endure any amount of frost; and Chamærops Fortunei is sufficiently enduring to be trusted in any ordinary situation where it can get a little shelter from rough winds, as I find those we have that are so favoured are not affected in any way by the cold. I am hopeful that Areca sapida may be sufficiently hardy to stand our winters, and shall be glad to hear if any one has tried it, and with what success, or whether there are any other Palms that will bear 20° or 30° of frost without suffering, for if so they will be valuable acquisitions in all out-door ferneries. Pampas-grasses where unprotected look sadly bleached, and I would advise those who have plants of these to leave them just as they are, without any trimming—the dead parts forming the best shield that can be provided for the crowns, which but for such friendly shelter will be left much exposed, at a time when they are the most tender. In the case of any deaths occurring among these highly ornamental plants, their replacement should be deferred till May, as at best they are ticklish things to move, and to do so before there is any growth in them, and now that they are so much injured, is only to court failure, for, being without life in the leaves, it is impossible for the roots to make any headway. Evergreens of all descriptions are also best left till near the same time, especially as the season is likely to be backward; but the thing with these is to catch them just as they are on the move, when if transplanted with care during a showery or dull time, success is certain. *J. S.*

A Caution: Vines Killed by Frost.—"Vines killed by frost! Where? Under what circumstances? Radically wrong management, that's certain!" I can imagine some such exclamations as the above may be indulged in when the heading of this letter catches the eye of the reader; and justifiably so, too—for at first sight it certainly does look like wanton neglect, or inability and inexperience on the part of the grower, under whose charge Vines are destroyed by frost; but if you will suffer it, I will try to explain to your readers how this misfortune happened to me, and if I cannot entirely extricate myself from blame or want of foresight, I may at least be able to show that the mishap which I have experienced might also have befallen the most able gardener similarly circumstanced. Last spring I had occasion to plant two vineries respectively with Hamburghs and Muscats in external borders, not because we prefer them outside, but, owing to circumstances which I need not here bring forward, it was considered unadvisable to plant inside. Early in April, at the time of planting, the Vines had burst their buds, and commenced to grow; they were very promising, being in a most satisfactory condition, and we were enthusiastically anticipating great results, having gone beyond ordinary trouble and expense to ensure success: yet we were doomed to disappointment, for all our care and coaxing would not entice them into an early free growth; no matter what we did, it was of no avail, for we were absolutely helpless, with the elements against us. A continuance of cold, wet, sunless weather unprecedented in my memory, kept the borders too cold to excite root-action, and until this was free it was simply useless to try to force by giving a high atmospheric temperature, as this would have made a bad case worse, by causing a weak attenuated growth, and speedily defeated the object in view, that of laying the foundation of fruitful permanent Vines. Day after day, and week after week, we looked for a favourable change in the weather, but remained ungratified, and it was June and July before the Hamburghs and Muscats respectively grew away satisfactorily, consequently they did not reach the tops of the rafters and fill the trellises with laterals until late in the season; nevertheless in November they were in every respect all that could be desired but for the unmatured state of the wood. This was of course an irremediable and serious defect, the foliage of the Hamburghs had yellowed, but that of the Muscats, although the wood was nicely browned, was comparatively green and imperfectly finished. They were in this condition when the unexpected frost occurred, which suddenly defoliated them in various districts. No wonder it alarmed the gardeners, and caused comment in your columns, coming as it did so unusually early, immediately after a cold, moist summer—if summer it could be termed, with everything in the vegetable kingdom in such an unprepared state to meet it. How did the frost act on them? may be asked. I admit I am not a little mortified in having to own it killed the Muscats. The Hamburghs were par-

tially defoliated, but they are apparently little if at all injured; their roots are all safe, while those of the Muscats are dead. It is apparent in our case that the mischief was caused by the portions of stems exposed outside, where they passed through the wall, being frozen through, as in the case of those described in the *Gardeners' Chronicle*, in December, by Mr. Culverwell and others; and there is no question that had these been effectually protected the Vines would have been saved. I am also of opinion, that if the top growth had been restricted by confining it to half the length of the rafters, thereby discouraging late root-action and checking the flow of sap, the wood would have matured more perfectly, and consequently not have been so susceptible to the injurious effects of frost. But it is easier to see preventives, or imagine we see them, after mischief is done, than to foresee the nature of the weather and prevent its influence. I have experienced a humiliating and dearly bought lesson, which will not be readily forgotten; its publicity may be of service as a caution, but I fear our case is not exceptional, and it is in a great measure for those who may be unfortunately situated in like manner to myself that I have written, for although no one would wish for others to meet with like misfortunes to himself, yet there is a kind of consolation in knowing you are not alone. Fortunately I am favoured above many in having employers who can meet failures in a reasonable and practical light, and I would that all gardeners were so placed. If you think it likely to be interesting to any of your readers I will, at some future time, send a note describing the manner in which the Hamburghs behave after the partial defoliation. [Please do so. Eds.] *C.*

Fir-tree Oil. — Still another insecticide, which, if its qualities are at all like those enumerated in the pamphlet now being circulated, must cause it to be in great request, but, unfortunately, like quack medicines sent out to cure all diseases, these wonderful antidotes do not generally effect what the vendors claim for them, or mealy-bug, the scourge of plant-houses, would long ago have ceased to exist. Paraffin is the best remedy I have met with up to the present time in dealing with these pests, and it has the recommendation of being cheap, which, as there is in most gardens such frequent use for it, is a great consideration, especially where expenses are expected to be kept down to the lowest point possible consistent with cleanliness and good order. Insecticides are generally a very heavy item in garden accounts, and if they cannot be made and offered cheaper it would be a great boon if we could only get tobacco for fumigating purposes duty free, as the majority of the paper sold for the same purpose is mere rubbish, the smoke from it being more unpleasant to the unlucky individual who has to watch it being consumed than hurtful to the aphis. These only get a little stupefied under its influence, which soon wears off after a little fresh air is admitted, when the insects become as lively and troublesome as ever. It is not the manufactured tobacco that is wanted, but the common leaf, just as imported, which might in some way be made obnoxious to all fond of puffing the fumes from a pipe. *J. S.*

The Time to Plant Tree Pæonies.—On visiting Newton Court the other day my attention was specially called by the proprietor, J. H. Porteus Oakes, Esq., a keen horticulturist, to the state of many of the Tree Pæonies, of which there are a great many in his well well-furnished garden. These looked, and were, quite dead to the ground—the result, as he assured me, of spring planting. These plants should never be disturbed, unless in the autumn—immediately after the fall of the leaf being the best of all seasons for transplanting or dividing Tree Pæonies. It is surprising that these handsome flower are so seldom grown. As single plants in the centre of beds of herbaceous plants, or at the back of widish borders, or in groups in the fronts of shrubberies or on lawns, there are few plants so showy or so useful as these magnificent Pæonies. *D. T. Fish.*

Heeling-in Broccoli.—There has been much written from time to time against heeling-in Broccoli, but where this has not been done few will be found to have escaped the severity of the winter, as not only are the greater part of these killed, but even old Cabbage stumps and other of the hardy Brassicas are destroyed in like manner. Vegetables of this class must therefore be very scarce and dear for a long time to come. No doubt those in gardens have suffered more on the whole than those in fields, which partial immunity arises from two different causes, the one being that those in fields are at all times subjected to more air, and are consequently endowed with a hardier constitution; and the other is the different system pursued by the market growers, who do not stir the soil so deeply before planting, and who also take more out of it, on which account the growth at no time is so quick and gross—which is a great gain, as the plants, instead of being soft and sappy when winter sets in, have hard fibry stems that are in a measure proof against frost. Another point in their favour is that the plants are generally pricked out, instead of standing in the seed-beds to draw, which helps materilly in inducing a dwarf sturdy habit—qualities that Broccoli in walled-in gardens seldom have unless similarly treated and cared for. The advantage of heeling-in Broccoli is, that when the snow and cold weather come, instead of the leaves dropping down with the weight or action, and leaving the hearts exposed, they enfold those vital parts and lie flat on the ground, where Nature's covering renders all safe from the action of cold. The heeling in, however, should take place earlier than is generally done, the end of August being the best time, as the roots then get fresh hold of the ground; and every one knows how much better prepared a plant is to battle with changes such as have to be encountered in winter, when the food supply is not entirely cut off. *J. S.*

Rapid Rise of the Sap in Vines.—At p. 341 "F. C." records what may be considered rather an unusual occurrence in the rise of sap in Vines. Something similar has happened here. When I took charge of this place on the 1st ult. the Vines in the late house (to which no fire-heat has been applied) appeared to be pushing away very nicely and by the 12th they were what may be termed well broken; on that date they suddenly commenced to bleed at the extremity of the rods, and so rapidly did the sap run that in a very short time the canes were wet right down to the stem; the greatest flow of sap coming from the strongest canes. I have no doubt the sudden change in the weather, with powerful sunshine occasionally acting on what is in all probability imperfectly ripened wood, is the cause of the bleeding. After four days' hard bleeding the flow of sap has stopped without any artificial help—a fact, in my opinion, which proves the weather's influence, seeing that it has again changed to bitter cold by day and sharp frost at night. This bleeding is very easily prevented by applying at pruning time a good dressing of Thomson's Styptic, a preventive I have never known to fail. *W. Comfort, Knowle Hall, Warwickshire.*

Dendrobium infundibulum.—This Orchid is a most desirable one, on account of the durability of its lovely white flowers. I know of nothing short of the everlastings to rival it in this respect. If the blooms are picked as soon as they open, and kept in water (which should be renewed now and then), with a little charcoal added, they will retain their beauty over two months. *W.*

Early Vegetables.—Every one who has a garden essays to get early vegetables, and this season they will not have an imaginary value, as the great dearth of all kinds of edibles in that line will make them more acceptable than ever. None are prized more highly, perhaps, than new Potatos, and it is surprising the shifts some put themselves to to produce these in the absence of frame accommodation, but if there happens to be a low wall or close fence of any description facing south, a temporary contrivance may be quickly improvised that will ensure the safety of the tops, and secure a crop at a modicum of cost and trouble. The simplest and cleanest way, if it can be effected, is to run a wide board or two along the front of the border, and support them in an upright position with stakes, and if from these some rods are run in a transverse manner, they will form a resting-place for mats, or anything else to be laid on as a covering. Reed or straw hurdles answer admirably for this, as they can be lifted on and off easily and quickly, and there is no fear of them being disturbed or displaced by wind as mats are apt to be. To get the Potatos in as advanced a state as possible before putting them out, it is a good plan to start them in small pots or boxes of leaf soil; but if this is done they should not be subjected to much warmth, but stood somewhere under glass where they can have plenty of air. So favoured, their shoots will come sturdy and strong, and there will be little or no check in transferring them from one position to the other when planting takes place. To make the most of the room, the sets need not be more than 9 inches apart, and the rows will be far enough from each other at a foot, as the good old Ashleaf or Myatt's, which are the best for this kind of work, do not run to too much top. The space between will come in of great use to prick out and nurse on Cauliflower, Lettuce, and Celery, that have been sown some time since in boxes, as they can stand there and grow till they are large and strong enough for their final positions outdoors. In preparing such a border for the above-named uses, or to grow Kidney Beans, it is necessary to make it both light and rich, which may be done by working in plenty of leaf-mould, or the rakings and trimmings from shrubberies, the refuse from the potting-bench, or any rubbishing soil of that kind to hand for the purpose. A single row of Potatos may be got very early by simply planting tolerably close to a raised bank, a south wall, or boarded fence, where by night the tops can be protected by sticking in a few evergreen branches in front, and removing them again in the morning, as by their aid frost is warded off and the Potatos made snug against any change in the weather. *J. S.*

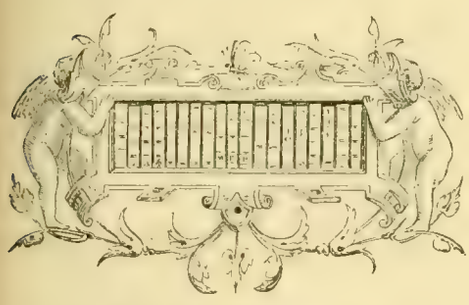
What to Plant.—The planting season, though far advanced, is not yet at an end, for, according to the old adage, planting may safely be done in all months of the year that contain the letter *r*. This being so—or at least there is sufficient truth in it to make it of general acceptance—there is thus a full month before us to carry on the work to satisfaction. What should I plant for game covert, as plants safe against the ravages of ground game? What should I plant in severe sea exposures? What should I plant upon light sandy moorlands? What upon strong tenacious clay soil? What upon flow and peat soil, or peat moss, &c.? These are the kinds of questions put in some form almost daily, and although apparently very simple, are yet after all not so easily answered with certainty, for it is not one simple and single difficulty that has to be met and provided against, but, as the doctors have often said, there is a complication of diseases, and what would cure one aggravates another. With many trials and attempts, some successful, but many more failures, I give the following as the best and most reliable information and directions for the most general and important departments.

Game Covert.—1st. As to what species of plants to plant for game covert. These unfortunately are very limited in variety. There is only the Rhododendron in all its varieties, which may with all safety be relied upon as proof against both hares and rabbits. They never touch these, however much exposed, not even during intense frost or snowstorm. The common Box-wood, whether in the tree or dwarf form, is perfectly safe, and may be relied upon as game-proof however severely exposed. The Butcher's Broom, Spurge Laurel, and Juniper, are respectively suitable for game covert, and their leaves are so distasteful to ground game that they seldom interfere with them, and certainly never eat their leaves as food. In planting a group for game covert, to do without any protection, I would recommend as trees the Abies Nordmanniana, planted at 15 feet apart, or say 200 trees per acre, and the intermediate space filled up with a mixture of Rhododendrons and Box-wood to 5 or 6 feet apart. I find the Abies Nordmanniana quite distasteful to rabbits, so much so that during the whole winter of 1879 a considerable number of trees completely exposed to ground game escaped without injury, whereas every other plant near them, except Rhododendrons and Box-wood, were less or more destroyed.

Sea-side Planting.—2d. What to plant in extreme sea exposures. In forming an outside belt on the exposed side of a plantation next the sea, I would plant a double row, in zigzag form, 4 to 5 feet apart, of Sea Buckthorn, and keep it low and bushy, or trimmed in hedge fashion. Next to this I would plant another row, but twice as wide as the former, consisting of Elder. This is such an accommodating plant that it can be made subservient to almost any purpose. It may be cut and kept low and bushy, or it may, as should be for this purpose, allowed to grow to a considerable height—indeed as high as possible—so as to shelter the next and succeeding rows, which should be Sycamore, either planted simply as a protection to the succeeding belt, or with the view of producing useful timber. As evergreens I would plant Silver Fir and Cupressus Lambertiana: they, in this district, which is probably as much exposed as any in Scotland, are decidedly the most vigorous and healthy. The Cupressus Lambertiana is not to be relied upon as a timber tree, but spreads and flourishes so well that it forms an admirable shelter to other trees, and endures the sea exposure better than any other evergreen except the common Silver Fir. With these fine species of plants there is no difficulty of forming an excellent shelter-belt in the most severe sea exposure, and if they do not succeed no others need be tried, at least so far as my experience goes.

On Light Soil.—3d. Upon extremely light, thin, and poor ground—care being taken that it is rendered perfectly dry by drainage if required—I would plant common Beech, bushy, well-rooted, not too large plants, and amongst the Beech a mixture of Mountain Willow, Birch, and Aspen Poplar. Silver Firs may also be planted as a variety, and for the sake of winter appearance. If these do not succeed nothing probably will.

On Heavy Soil.—4th. In planting strong heavy clay soils the great difficulty is to get the plants to start growth, and in order to do this it is often necessary to put in a spadeful of sandy loam to each plant. I would plant such ground with a mixture of common Oak and Silver Fir, allowing either to have the pre-eminence as is found desirable. Strong clay soil produces the very best quality of Oak, and the Silver Fir also flourishes upon it, and if closely grown so as to properly check the growth of the branches, it attains to valuable timber. *C. Y. Michie, Cullen House, Cullen, March* 29.



Notices of Books.

The Botany of Central America and Mexico.

On more than one occasion we have alluded to Mr. W. B. Hemsley's labours in preparing an enumeration of the plants of Central America and Mexico for Messrs. Godman and Salvin's *Biologia Centrali-Americana.* At pp. 149—150 of vol. x. (new series) will be found some information respecting the scope and character of the work, and in vols. xi. and xii. we printed Mr. Hemsley's preliminary list of Orchids. The publication of the botany and zoology was simultaneously commenced last year, the first part of each subject having appeared in September. Three parts of the botany have already appeared. The work is in a quarto form and printed in bold type, being uniform in this and other respects with the zoology. It is questionable whether, considering the inevitable incompleteness of the botanical portion, the Editors have not too strictly adhered to uniformity, for they might have published the botany in a less expensive form, and it would have been equally useful. But on this point the Editors were fully entitled to exercise their own discretion, and botanists will not be disposed to grumble because the author has not critically elaborated the enormous amount of material lying in European herbaria. Indeed it is impossible that one person could within a reasonable period write a complete Flora of the vast area under consideration, and it was a wise resolve on the part of those concerned to keep the work within manageable limits, as there is all the greater probability of its being completed. As explained in the place quoted above, the primary object of the Editors was to collect together the material for a comparison of the laws governing the distribution of the plants and animals inhabiting the country. After the work had been some time in hand, an opportunity occurred of including an important collection formed by Drs. Parry and Palmer, which was almost exhaustive of a certain region. This somewhat extended the plan of the work, and besides adding a large number of new species, it resulted in a considerable amount of revision, especially in many of the larger genera characteristic of the flora. The plan and scope of the work is briefly this:—A complete enumeration of all the species in the Kew Herbarium, giving the localities, altitudes, collectors' names, numbers, and other useful information. The names found in the Herbarium are often adopted without verification, and apparently distinct unnamed specimens are cited for the sake of their localities. In addition, all published species, not represented in the Herbarium by named specimens, are given with references to their places of publication. At least it is intended to include all such species, but as they are scattered through so many books it is not surprising that some have been overlooked. For example, we miss Calandrinia micrantha, Schlechtendal, *Hortus Halensis*, p. 10, t. 5. Besides the Kew collections, those formed by the French Scientific Commission have also been consulted, and Mr. Hemsley has described a large number of new species; so that the work, although not a critically elaborated descriptive Flora, is something more than a skeleton or simple list. It brings together an immense amount of material for monographers, and in all probability it presents a tolerably accurate view of the composition of the vegetation, susceptible to modification only as regards the number of species.

Horticulturists as well as botanists will recognise the liberality of the Editors, inasmuch as Mexico and Central America contain a vast number of ornamental plants not yet introduced into, or no longer existing in, our gardens. When we mention that the country included stretches through 24 degrees of latitude, and rises in some places to an altitude of nearly 17,000 feet above the level of the sea, some idea may be formed of the extent and variety of the flora, especially when we add that many districts are exceedingly rich in forms. The natural orders, Cactaceæ, Orchideæ, Compositæ, and Leguminosæ; and the genera, Agave, Bouvardia, Cuphea, Dalea, Echeveria, Fuchsia, &c., abound in forms. The three parts published carry the work from the Ranunculaceæ, as far as the genus Desmodium in Leguminosæ, and consist of 280 pages of letterpress and fifteen plates. Of the latter we shall have more to say anon. Exclusive of the Leguminosæ, forty-five natural orders are represented, and altogether there are 354 genera, comprising upwards of 2000 species, or about one-sixth of the estimated number of flowering plants and Ferns inhabiting Central America and Mexico. Up to the Leguminosæ there are about 1600 species, and the author thinks that a careful elaboration of the material would probably reduce the number by about 200; but on the other hand, judging from recent investigations, further exploration of the countries would result in the discovery of many new species. The reductions would be by no means equal in different orders, inasmuch as some have been recently monographed, whilst the species of some others are in a state of great uncertainty and confusion. With regard to undetermined species, we may assume that they will be much less numerous in succeeding parts of the botany, for the reason just adduced. Thus, among the Polypetalæ, the Mimoseæ and the genus Cassia have been recently monographed by Mr. Bentham, the Melastomaceæ by Dr. Triana, the Passifloreæ by Dr. Masters, the Cucurbitaceæ by M. Cogniaux; and the orders below, generally speaking, are in a more manageable state for purposes of compilation. Therefore we may conclude, from the plan adopted, that the early parts of Mr. Hemsley's work will constitute its weakest point.

Now, with regard to what the book contains. In the first place we note that all the natural orders preceding the Leguminosæ, with the exception of twelve, half of which are small and unimportant ones, are represented in the flora. Of these exceptional orders, Canellaceæ, Sarraceniaceæ, and Calycanthaceæ occur in the immediately surrounding countries, and may possibly yet be discovered within the limits of the work. A representative of the Elatineæ has been received since the publication of part i., and it is quite likely that the Chailletiaceæ are not wholly absent from Central America. This leaves only the Pittosporeæ, Tremandreæ, Dipterocarpeæ, Chlænaceæ, Humiriaceæ, Stackhousieæ, and Moringieæ. Of the new species described, we observe that a large proportion are inconspicuous, though none the less interesting, plants from the temperate and subtropical regions; few of them are really showy plants. This is what one would have expected, considering the large number of collectors who have visited the country. Nevertheless, there are hundreds of showy plants not yet introduced into cultivation.

A word respecting the plates, and we must conclude. They are by Fitch, and add greatly to the embellishment of the work. A few, we are informed in the prospectus, will be coloured from Mrs. Salvin's drawings, executed on the spot, but only one (Cochlospermum hibiscoides) has yet appeared. Of the more interesting figures we note Thelypodium petiolatum, a distinct Crucifer; two species of Cerdia, an obscure genus of Caryophyllaceæ, Marcgravia nepenthoides, Pelliciera Rhizophoræ, a remarkable Mangrove; two species of Ayenia, a most singular Buettneriaceous genus; and Dalea insignis, so distinct from all other species of this large genus (which numbers about 100 species in this flora) that one would take it to belong to a different genus.

Variorum.

Eucalyptus rostrata.—This species, our famous "Red Gum-tree," is perhaps the most important of the whole genus; although surpassed in celerity of growth by E. globulus, it is of higher value for the extraordinary durability of its timber, having in this respect perhaps a rival only in E. marginata of South-west Australia, but excelling that celebrated tree in increased rapidity of growth and in the greater ease with which it can be reared even in grounds with stagnant humidity. It never becomes so tall as the surpassingly gigantic states of E. amygdalina, E. diversicolor, or E. obliqua; but often attains a height of over 100 feet, and is said to have reached, under particularly favourable circumstances, even more than double that height—250 feet, according Mr. Falck. The stem is proportionately stout, yielding a great bulk of timber, a diameter of 14 feet being on record. The bark is smooth, ashy-grey, or whitish, or occasionally in part slightly brownish, from early decortication of its darker outer layers, unless it should remain persistently rough on the base of the stem, or should in trees growing exceptionally on dry ridges be more persistent and less smooth. The tree will live even in permanent shallow swamps. As this tree, on account of its incomparably valuable timber, will be made the subject of many cultural efforts and experimental tests here and abroad, many additional observations concerning this species will probably be instituted for many years to come, which may in time also be collected in supplementary pages for these Eucalyptus decades. Even in California, where the indigenous forests supply the most magnificent timber Pines of the globe, it is found far more advantageous to rear Eucalyptus wood for fuel and for many other purposes for which it is adapted, than to grow Fir wood. E. rostrata carries with it the recommendation of being one of the best of its congeners to resist wet tropical heat. Thus in Mauritius it grew 50 feet in sixteen years. The vernacular name of "Red Gum-tree" is derived from the dark reddish-brown colour of the wood, the specific appellation from the beak-like pointed lid of the calyx. . . . E. rostrata supplies our well known Red Gum timber, which is so highly prized for its unsurpassed durability, especially underground; it is very dense, and in its grain flexuous but comparatively short, bearing an enormous downward pressure, and is but slightly subject to longitudinal shrinking; it remains for very long periods indestructible in fresh or salt water, or in wet ground. Its principal uses are for railway-sleepers, telegraph poles, fence and other posts, piles, bridge-planks, culverts, wheelwright's work (especially felloes), engine-buffers; shipbuilders employ it extensively for main-stem, stern-post, inner post, dead-wood, floor-timbers, futtocks, transoms, knighthead, hawse-pieces, cant, stem, quarter, and fashion timber, bottom-planks, breasthooks and riders, windlass, bowrails, &c. It should be steamed before it is worked for curving. Next to the Jarrah from West Australia it is best suited to resist the attacks of the Teredo and Cherula, and Termites. It takes a good polish, and may thus be used for furniture, though it is rather heavy and difficult to work on account of its great hardness. The specific gravity of Red Gum wood ranges from 0.858 to 1.005, or from 53¼ to 62½ lb. per cubic foot. Mr. F. Campbell found the tensile strength to be equal to a pressure of 14,000 to 21,500 lb. per square inch. A ton of dry wood has yielded as much as 4 lb. of pearlash or 2¼ lb. of pure potash. *From Baron von Mueller's "Eucalyptographia."*

Giant Gum Trees.—The ranges are covered with a dense forest of Gum trees, in many places of enormous height, standing with their smooth trunks close together and running up often for a height of 200 feet without giving off a branch. The light coloured stems are hung with rugged strips of separated bark. The great slenderness of the trunks of these giant Gum trees in proportion to their height is striking, and in this respect they contrast most favourably with the Californian big trees, which in the shape of their trunks remind one of a Carrot upside down, so disproportionately broad are they at their bases. The large species of Gum tree, the tallest tree in the world, is Eucalyptus amygdalina. As Baron von Müller says, "the largest specimen might overshadow the pyramid of Cheops." *Notes of a Naturalist on the "Challenger."*

Malachra Fibre.—In the Paris Exhibition was shown a sample of a fibre named Malachra rotundifolia sent from Bombay. The plant is, however, only found in South America—at least so says Dr. King, to whom the supposed Malachra rotundifolia was sent for identification, and he states that it

is Malachra capitata, not Malachra rotundifolia. As a fibre, be it what it may, it undoubtedly deserves attention, for it is said to be quite equal to Jute. The following is the description given of it :—"The fibre is in length from 8 feet to 9 feet, has a silvery appearance, with a peculiar lustre, and is almost as soft as silk. In passing the fibre through the machinery damped with oil and water, as is commonly done with Bengal and Koukan Jute, yarn was produced strong enough and nearly equal to that made from the second quality of Bengal Jute. If the plant were carefully grown and well looked after, the fibre would no doubt rank fully equal to Bengal and Bombay Jute. Owing to the high prices ruling for Jute in Bengal and elsewhere, the new fibre, if carefully prepared, would command a ready sale at 3.12 rupees to 4 rupees per Indian maund." There appears to be no difficulty in growing this plant, which belongs to the natural order of Malvaceæ, in Bengal, marshy places within the tropics being considered favourable to its growth; and there is, therefore, every reason why a fair trial should be made of its apparently valuable properties. The fibre is prepared in precisely the same way as Jute, but requires to be steeped directly it is cut, as exposure to the sun dries and hardens the stems, preventing the easy removal of the bark from them, und rendering the fibre itself coarser in quality than it would otherwise be. *Times.*

Bee Keeping in Ireland. — A Dublin correspondent writes :—"The visit of the Irish deputation to the Royal Agricultural show at Kilburn last year has already in various indirect ways been productive of substantial good, and it is interesting to note at least one beneficial result which may, if turned to practical account, prove of considerable advantage to the Irish agriculturist. There is an organisation known (unpretending to a degree) as the British Beekeeper's Association. This Association has been eminently and deservedly successful in its efforts to encourage a taste for bee culture and honey cultivation in England. They are about to send their travelling tent over to this country, in order to disseminate a more perfect knowledge of this useful art amongst the people than they at present possess. The first appearance of their 'tent' here will be at the Belfast Horticultural show in September next. It will be accompanied by a competent staff of operatives and exponents, and can scarcely fail to concentrate a large amount of public interest. The distinguished President of the Beekeepers' Association (the Baroness Burdett Coutts), at a recent meeting of that body, volunteered a statement regarding the proposed visit of the 'tent' to this country, in which that lady was very sanguine as to the results of the introduction of this comparatively new means of obtaining wealth and pleasure into this country. And further, by means of communications with Colonel King-Harman and Canon Bagot, she has taken prompt and practical steps for imparting reality to the project."

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
For the Week ending Wednesday, March 31, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
Mar.	In.	In.	°	°	°	°	°	°	°		In.
25	29.91	+0.13	64.6	32.2	32.4	47.0	+ 4.7	36.4	67	E.S.E.: S.E.	0.00
26	29.90	+0.13	66.0	38.5	27.5	49.2	+ 6.7	39.9	70	E.	0.00
27	30.00	+0.23	46.8	32.4	14.4	39.0	— 3.7	36.0	90	E	0.00
28	30.01	+0.24	50.0	34.0	16.0	39.7	— 3.3	36.0	87	N.E.: E.: S.	0.00
29	29.84	+0.08	56.1	27.3	28.8	39.8	— 3.5	34.0	80	S.S.E.: E.N.E	0.00
30	29.76	0.00	59.1	37.1	22.0	45.6	+ 1.9	39.6	80	W.: E.S.E	0.00
31	29.28	—0.47	56.5	34.0	22.5	45.2	+ 1.2	39.8	82	S.S.W.: S.W.	0.10
Mean	29.81	+0.05	57.0	33.6	23.4	43.6	+ 0.6	37.4	79	E.	Sum 0.10

March 25.—A very fine cloudless day. Cold in early morning; warm about mid-day.
— 26.—A very fine bright day. Sky clear. Mild, but cool east wind. Cold at night.
— 27.—Generally fine but cloudy. Cold east wind. Overcast at night.
— 28.—A fine day; bright at times, but rather dull and cold. Little fog at night.
— 29.—A fine day, but rather cloudy and gloomy. Fog in morning. Cloudless at night.
March 30.—A fine day, partially cloudy. Milder. Cloudless at night.
— 31.—Fine in morning, dull after. Strong wind. Rain fell frequently after 1 P.M.

London: *Barometer.*—During the week ending Saturday, March 27, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.32 inches at the beginning of the week to 30.29 inches by the afternoon of the 21st; increased to 30.36 inches by the morning of the 22d; decreased to 30.32 inches by the afternoon of the same day; increased to 30.36 inches by the morning of the 23d; decreased to 30.08 inches by the afternoon of the 25th; and increased to 30.24 inches by the end of the week. The mean reading for the week at sea level was 30.22 inches, being 0.03 inch below that of the preceding week, and 0.26 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 66° on the 26th and 64½° on the 25th, to 44¾° on the 22d; the mean value for the week was 54¼°. The lowest temperatures of the air observed by night varied from 27° on the 24th and 30° on the 23d, to 38½° on the 26th; the mean value for the week was 32¼°. The mean daily range of temperature in the week was 22°; the greatest range in the day was 32½°, on the 25th, and the least 12¼°, on the 22d.

The mean daily temperatures of the air and the departures from their respective averages were as follows :—21st, 41°.7, — 0°.1; 22d, 37°.8, — 4°.1; 23d, 38°.6, — 3°.4; 24th, 42°, — 0°.1; 25th, 47°, + 4°.7; 26th, 49°.2, + 6°.7; 27th, 39°, — 3°.7. The mean temperature of the air for the week was 42°.2, being the same as the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 130° on the 24th, 127° on the 25th, and 117¼° on the 21st; on the 22d the reading did not rise above 55°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 24½° on the 24th, and 26° on the 23d; the mean of the seven lowest readings was 28½°.

Wind.—The direction of the wind was E., and its strength strong and biting.

The weather during the week was fine, bright, and very dry.

No *rain* fell.

England: *Temperature.*—During the week ending Saturday, March 27, the highest temperatures of the air observed by day were above 63° at Bristol, Blackheath, Cambridge, and below 49° at both Sheffield and Hull; the mean value from all stations was 56¾°. The lowest temperatures of the air observed by night were below 28° at Blackheath, Bristol, Cambridge, Wolverhampton, Nottingham, and Hull, and above 34° at Plymouth, Norwich and Sunderland; the mean value from all places was 30¼°. The extreme range of temperature in the week was above 36° at Bristol, Blackheath, and Cambridge, and below 17° at Sheffield and Sunderland; the mean range from all stations was 26¼°.

The mean of the seven high day temperatures was above 53½° at Bristol, Blackheath, Leicester, and Cambridge, and below 46° at Sheffield and Sunderland; the general mean from all places was 50¼°. The mean of the seven low night temperatures was below 33° at Bristol, Blackheath, Leicester, Cambridge, and Wolverhampton, and above 39½° at Truro and Plymouth; the mean value from all stations was 34½°. The mean daily range of temperature in the week was above 22° at Bristol, Blackheath, and Cambridge, and below 10° at Sheffield and Sunderland. The mean daily range from all places was 15¾°.

The mean temperature of the air for the week from all stations was 41°, being 6½° higher than the value for the corresponding week in 1879. The mean temperature of the air was above 44½° at Truro and Plymouth, and below 39° at both Sheffield and Hull.

Rain.—Very little rain was measured, except in Devon and Cornwall. At Truro 1.03 inch was measured, and at Plymouth 0.43 inch fell; at almost every other part of the country no rain fell.

The weather during the week was fine, bright, and dry, with cold east winds.

Scotland: *Temperature.* — During the week ending Saturday, March 27, the highest temperatures of the air observed by day varied from 51½° at Glasgow to 47° at Dundee, Leith, and Perth; the mean value from all places was 49¼°. The lowest temperatures of the air observed by night varied from 28° at both Paisley and Leith, and 28¼° at Edinburgh, to 35° at Aberdeen; the mean value from all stations was 30¼°. The mean range of temperature from all places was 18¾°.

The mean temperature of the air for the week from all stations was 39½°, being 5° higher than the value for the corresponding week in 1879. The mean temperature was the highest at Aberdeen and Glasgow, both 40¾°, and the lowest at Leith and Perth, both 38½°.

Rain.—The weather during the week was fine and dry, and no rain was recorded to have fallen.

JAMES GLAISHER, F.R.S.

Obituary.

Numerous friends will regret to hear of the death of Mr. Thomas Maude, on March 24, at the Gardens, Tong Hall, near Leeds, where he had resided and acted as gardener to the present and late Colonel Tempest for the long period of fifty-two years.

Answers to Correspondents.

Aaron's Rod: *W. E.* The question is, What is the plant called Aaron's Rod?—not the Golden Rod; we know all about that.

Boiler: *C. Z.* An ordinary horticultural builder should be able to give you the information desired better than Mr. Baines, who is not in the trade. Such firms as the Thames Bank Iron Company supply piping, and the cost of the same depends upon the price of iron at the time of purchasing. The cost of making such boilers, and also of the brickwork, will depend entirely upon the cost of labour in the locality in which the work is done.

Carpet-Bedding: *Connon & Reid.* We do not know of any scarlet or yellow-flowered plants that would answer your customer's purpose. If he will be satisfied with coloured foliage only, we would recommend one of the brightest of the Alternantheras, and Mesembryanthemum cordifolium variegatum.

Clovers: *Connon & Reid.* We know of nothing more trustworthy, or so readily obtainable, as the articles in Morton's *Encyclopædia of Agriculture.*

Cinerarias: *F. & A. Smith.* The selection of blooms comprises many richly coloured varieties of refined quality, not over large in size perhaps, but having the telling property of the dark disk surrounded by a ring of pure white. The maroon and pucy crimsons passing off to magenta next the white, are very rich looking. We are glad also to see some of the blue-purples amongst them, these being very telling for decorative purposes, and having been somewhat neglected of late.

Diseased Lime Trees: *W. G. C. & S.* The Lime twigs seem affected in the same way as Apple twigs from canker, but whether from the same cause or not it is difficult to say. It is possible that some fungus may be involved in the matter. Cut off some of the larger shoots and put them in a shady spot, and perhaps the fungus may be developed in the autumn. I will treat the specimens you have sent in this way. *M. T. B.*

Dyeing Ferns: *W. H.* It is a very unnatural process, and the colours are seldom such as would be seen on the living plant. We suppose Judson's dyes would answer the purpose.

Grafting Camellias: *W. H.* The process is the usual one, but should be carried out in a close, warm house, till the union is perfect. The stock may be in active growth, but the grafts themselves should not have started.

Insects: *W. C.* We fear the breaks of your Cattleya have been gnawed off either by the weevil (Otiorhynchus), or the hothouse cockroach (Blatta). The small flies found in one of the breaks belong to the parasite family Chalcididæ, and were described in the *Gardeners' Chronicle*, 1869, p. 1230, under the name of Isosoma Orchidearum. We believe they must have fed in the larva state on the larva of some beetle or other insect which had burrowed into the break; but it seems to be now clearly proved that some of these Chalcidides feed on vegetable matter, in which case their destruction would be advisable; whether, however, these Isosomæ are amongst these phytophagous insects remains to be determined by those who have large collections of Orchids, and time for the investigation. *I. O. W.*

Luculia gratissima: *Subscriber.* If you have a greenhouse or an intermediate-house the best thing you can do is to plant it out in some good sandy loam, taking care that it has a good range of root space.

Names of Plants: *George Wall.* 1, Helleborus orientalis; 2, Scilla bifolia; 3, Erica carnea; 4, Asarum europæum. Is this last wild?—*R. F.* We cannot name the plant from the scrap sent. It is probably an Aster, or some nearly allied plant. — *M. M.* Andromeda floribunda.—*F. Freeman.* Ruscus aculeatus.—*C. W. Dod.* Scilla bifolia, var. alba.—*T. Beauchamp.* The green-leaved plant is Asarum europæum—a by no means common British plant, though perhaps not of much commercial value. The Moss you send under the name of Stag's-horn is Lycopodium clavatum. The other moss is Leucobryum glaucum.—*R. Masters.* We do not recognise the plant. Could you not try to flower it under glass?—*W P. D., Weston-super-Mare.* Griselinia littoralis. Hardy to the extent that in favourable situations it will stand ordinary winters.—*J. Simonds.* 1, Linum trigynum; 2, Pentas carnea; 3, Lygodium japonicum; 4, Selaginella apus; 5, Camptosorus rhizophyllus; 6, Cyperus alternifolius.—*C. R.* 1, Polystichum angu-

lare; 2, Cyanotis vittata, also known as Tradescantia zebrina; 3, not recognisable.

Phloxes and Pæonies: *H. W.* Twelve good Phloxes of the P. decussata, or late-flowering type, are—Coccinea, J. K. Lord, La Candeur, Lothair, Lucien Tisseraud, Madame la Comtesse de Turenne, Madame Moisset, Mons. Doronaud, Mrs. Laing, Richard Wallace, Roi des Roses, and the Queen. Twelve good varieties of Pæonies:—Alice de Julvecourt, Belle Douaisienne, Bossuet, Charles Binder, Duchesse de Theba, Eugène Verdier, Leonie, Madame Chaumy, Monsieur de Villeneuve, Prince de Salm-Dyck, Reine des Roses, and Souvenir de l'Exposition Universelle.

Plans: *T. F. Webb.* We know nothing of the book you allude to. Perhaps the book of Garden Plans published at the *Journal of Horticulture* office, 171, Fleet Street, would meet your requirements.

Plants Figured: *W. H. O.* The plants you name will no doubt soon be in the Catalogues. Such things require some time to get up stock.

Rhododendrons: *E. Perkins.* A slightly spotted white arboreum, handsome, as most of the kinds are, but not so effective as the forms with richer spotting, or the species with larger flowers. It is, of course, a tender kind.

Seakale: *Mrs. C. B.* The rotting of the roots after sprouting is probably owing to their immatured state, owing to the late wet ungenial season, or to a deficiency of drainage, or both.

Seeds: *J. Steele.* 1 and 2, seeds of different species of Eucalyptus, but whether of the species you name we cannot tell; 3, seeds of an Acacia—perhaps of the Black Wattle (Acacia decurrens), or A. mollissima.

Sulphate of Ammonia: *Amateur.* Sulphate of ammonia in a liquid form is a very valuable plant fertiliser, but requires great care in its use. It should never be made strong, and be given in the evening, instead of in the morning or daytime when the sun shines.

Verbena: *James King.* The Verbena of a straggling habit, with pink flowers, and deliciously scented, which was common twenty or thirty years ago, is no doubt V. teucrioides, one of the parents of the fine show flower now in existence.

Zonal Pelargoniums: *W. A.* For a scarlet with white eye take A. F. Barron, or Col. Seeley; for salmon with white eye, Fanny Catlin, or Nancy Lee; for a salmon bedder, Truth; for a rose, Jules Grevy. These are all good, but tastes may vary as to preferring them before others.

Catalogues Received:—Charles Turner (Slough), General Spring Catalogue of Plants,—Simon-Louis Frères (Metz), Catalogue of Plants.—V. Lemoine (Nancy), General Catalogue of Plants.—A. Lietze (Rua Ouvidor 47, Rio de Janeiro, Brazil), Price List of Seeds, Plants, and Tubers.

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Communications Received:—J. B.—T. McK.—J. O. W.—M. J. B.—J. T. B.—H. M.—A. S.—C. W. S.—E. B.—R. P.—R. B. (many thanks).—A. W.—E. C.—W. G. S.—W. B. G.—C. F. F.—W. B.—J McP.—J. C. & Co.—F. Wright.—J. Stewart.—W. S. (thanks).—W. D.—T. B.—Q R.

Markets.

COVENT GARDEN, April 1.

There is no improvement in trade, and prices remain steady at last week's quotations, with the exception of Champion Potatos, on which there is an advance of 10*s.* per ton. *James Webber, Wholesale Apple Market.*

Plants in Pots.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ficus elastica, each	1 6– 7 6
Azaleas, per dozen	18 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz. ..	6 0–18 0	Fuchsias, per dozen	9 0–15 0
Bouvardias, per doz.	12 0–24 0	Genista, per dozen ..	9 0–18 0
Cinerarias, per doz. ..	6 0–12 0	Hyacinths, per doz. ..	4 0– 9 0
Cyclamen, per dozen	9 0–24 0	Myrtles, per doz. ..	6 0–12 0
Cyperus, per dozen	4 0– 9 0	Palms in variety, each	2 6–21 0
Dielytra, per doz. ..	9 0–15 0	Pelargoniums, scarlet zonal, per doz.	6 0– 9 0
Dracæna terminalis	30 0–60 0	Primula, single, per dozen	4 0– 6 0
— viridis, per doz. ..	12 0–24 0	Spiræa, per dozen ..	6 0–18 0
Erica gracilis, per dozen	9 0–18 0	Tulips, 12 pots ..	6 0–12 0
— hyemalis, p. doz.	6 0–24 0		
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

Cut Flowers.—Wholesale Prices.

	s d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Narcissus, Paper-white, 12 spikes ..	1 0– 1 6
Arum Lilies, per dozen	4 0– 9 0	Pelargoniums, 12 spr.	1 6– 3 0
Azalea, 12 sprays ..	0 6– 1 0	— zonal, 12 sprays	0 6– 1 0
Bouvardias, per bun.	1 0– 4 0	Primroses, 12 bunch.	1 0– 1 6
Camellias, per doz. ..	2 0– 6 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	— single, per bunch	0 6– ..
Cyclamen, 12 blms. ..	0 4– 1 0	Roses (indoor), doz.	1 6– 9 0
Epiphyllum, 12 blms.	0 6– 1 0	— Roses, Fr., doz.	2 0– 6 0
Eucharis, per doz. ..	4 0– 9 0	Spiræa, 12 sprays ..	1 0– 2 0
Euphorbia, 12 sprays	3 0– 6 0	Tropæolum, 12 bun.	1 0– 3 0
Gardenias, 12 blms. ..	3 0–12 0	Tuberoses, per dozen	4 0– 6 0
Heliotropes, 12 sp. ..	0 6– 1 0	Tulips, 12 blooms ..	1 c– 1 6
Hyacinths, 12 spikes	4 0– 9 0	Violets, Fr., per bun.	1 6– 2 6
— small	1 6– 4 0	— English, p. bun.	1 0– 2 0
— Roman, 12 spikes	1 0– 2 0	White Lilac, Fr., per bundle	4 0– 8 0
Lily of Val., 12 spr.	0 9– 2 0		
Mignonette, 12 bun.	6 0– 9 0		

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve ..	2 0– 6 0	Oranges, per 100 ..	6 0–12 0
— American, barrl.	18 0–30 0	Pears, per dozen ..	4 0– 8 0
Cob Nuts, per lb. ..	1 0– 1 6	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb. ..	8 0–12 0	Strawberries, per oz.	0 4– 0 9
Lemons, per 100 ..	6 0–10 0		

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	10 0–14 0	Herbs, per bunch ..	0 2– 0 4
Asparagus, Sprue, per bundle ..	1 0– ..	Horse Radish, p. bun.	4 0– ..
— English, p. 100 ..	12 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— French, per bun.	7 0–25 0	Mint, green, bunch ..	1 6– ..
— French natural, per bundle ..	3 6– ..	Mushrooms, p baskt.	1 6– 2 0
Beet, per doz. ..	1 0– 2 0	Onions, per bushel ..	8 0– ..
Brussels Sprouts, lb.	0 6– ..	— Spring, per bun.	0 6– ..
Cabbages, per doz. ..	1 0– 2 0	Parsley, per lb. ..	1 6– ..
Carrots, per bunch ..	0 8– ..	Peas, per lb. ..	1 0– ..
— French, per lb.	0 6– ..	Potatos (new), per lb.	0 3– 0 9
Cauliflowers, per doz.	2 0– 5 0	Rhubarb (Leeds), per bundle	0 9– ..
Celery, per bundle ..	1 6– 4 0	Seakale, per punnet	3 0– ..
Chilis, per 100 ..	3 0– ..	Shallots, per lb. ..	0 6– ..
Cucumbers, each ..	1 0– 2 0	Spinach, per bushel	5 0– 6 0
Endive, per score ..	4 6– ..	Tomatos, per dozen	3 0– ..
Garlic, per lb. ..	1 0– ..	Turnips, new, bunch.	0 6– ..

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 160*s.* to 200*s.* per ton. German, 6*s.* to 7*s.* 6*d.* per bag; new English, 2*s.* per lb.

SEEDS.

London: *March* 31.—A daily increasing demand is now experienced for farm seeds. The very low rates which with scarcely an exception prevail this season in London for all the leading varieties, prove a source of satisfaction to the agricultural community, and will enable farmers to seed their land at a much less expense than usual. Canadian Clover seed, in particular, being this year exceptionally handsome and unprecedentedly cheap, meets naturally with growing favour. English Cow-grass is also now very reasonable. Superfine white is scarce, and comparatively dear. Trefoils are unchanged. Alsike keeps remarkably low in price. Italian Rye-grass is likewise exceedingly moderate. Sanfoin being in strong request and very scarce shows a further advance of 2*s.* per quarter. There is more inquiry for Timothy and Lucerne. Tares continue firm: of good clean ones there are not many here. Brunswick Gore Vetches sell at 49*s.* per quarter; Hemp seed 31*s.* *John Shaw & Sons, Seed Merchants,* 37, *Mark Lane, London, E.C.*

CORN.

Monday being a statute holiday no business was transacted at Mark Lane. On Wednesday the trade in Wheat was decidedly quiet, with a slight tendency towards rather lower prices. Not much business, however, was in progress. Choice barley was firm, but for other kinds the trade was slow. Oats were firm at full quotations, the recent improvement being supported. Beans and Peas were steady, but the flour trade was quiet. —Average prices of corn for the week ending March 27:—Wheat, 47*s.* 3*d.*; Barley, 34*s.* 5*d.*; Oats, 22*s.* 10*d.* For the corresponding period last year:—Wheat, 40*s.* 8*d.*; Barley, 33*s.*; Oats, 20*s.* 8*d.*

CATTLE.

At Copenhagen Fields on Monday trade in beasts was not brisk, but prices were quite as good as of late, with a fair clearance. The supply of sheep exceeded the demand. Prices were lower, and several lots unsold. There was a reduction in the price of lambs, although the supply was short. Calves were rather lower.—Quotations:—Beasts, 4*s.* 4*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.*; calves, 5*s.* 6*d.* to 7*s.*; sheep, 5*s.* 2*d.* to 5*s.* 6*d.*, and 5*s.* 10*d.* to 6*s.* 4*d.*; lambs, 8*s.* to 9*s.* per 8 lb.—On Thursday the cattle trade was dull in tone. Supplies were short, but equal to the demand. Beasts sold slowly at about the above rates; sheep dull and drooping, lambs decidedly easier, but calves steady.

POTATOS.

The Easter holidays interfered, as usual, with business, but prices have not varied much from those last reported, except in the case of Champions, which have improved. —The imports into London last week were extensive, comprising 157,536 bags from Hamburg, 15,008 Bremen, 6586 Danzig, 5928 Harburgh, 2970 Rotterdam, 1464 Harlingen, and 23,865 sacks from Stettin.

HAY.

From Thursday's Whitechapel Market report we learn that with a good supply of hay and straw on sale the trade was very dull for inferior kinds. Quotations:—Prime Clover, 100*s.* to 132*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 102*s.* 6*d.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 38*s.* per load.—Cumberland Market quotations:—Superior meadow hay, 98*s.* to 105*s.*; inferior, 40*s.* to 75*s.*; superior Clover, 120*s.* to 132*s.*; inferior, 80*s.* to 100*s.*; and straw, 36*s.* to 40*s.* per load.

COALS.

The prices current at market during the week were as follows:—Bebside West Hartley, 13*s.* 9*d.*; East Wylam, 15*s.*; West Hartley, 13*s.* 9*d.*; Walls End—Hetton, 14*s.* 6*d.*; Hetton Lyons, 13*s.*; Hawthorns, 13*s.* 3*d.*; Lambton, 14*s.*; Wear, 13*s.*; South Hetton, 14*s.* 6*d.*; Tunstall, 13*s.*; Vanes, 13*s.*; Chilton Tees, 14*s.*; Tees, 14*s.* 3*d.*; Radford Navigation, 15*s.* 9*d.*

Government Stock.—The closing price of Consols on Tuesday was, for delivery, 98 to 98⅛, and for the account, 98 1/16 to 98 3/16. On Wednesday the figures were 98⅛ to 98¼ for both delivery and the account. The final quotations on Thursday were, for delivery, 98⅛, and for the account 98 1/16 to 98 3/16.

New Crimson-Scarlet Fringed Primula.

F. AND A. SMITH can supply the above (the same colour as exhibited by the Royal Horticultural Society at South Kensington) in 2*s.* 6*d.* and 5*s.* packets. Also their well-known strains of other sorts of PRIMULA, CINERARIA, and CALCEOLARIA, &c. LIST on application. The Nurseries, West Dulwich, S.E.

To the Trade

EXTRA CHOICE MIXED FRINGED PRIMULA, from a splendid strain.

E. WILSON SERPELL, 21, Cornwall Street, Plymouth, begs to offer the above to the Trade at 30*s.* per ¼ ounce, or 100*s.* per ounce. Retail packets 1*s.* and 2*s* each post-free.

TO THE TRADE ONLY.

SPECIAL OFFER of YOUNG CONIFERÆ.

CONIFERÆ, half a foot high.

12*s* per 100, 17 of each of the following six sorts.
£5 per 1000, 170 of each of the following six sorts.

CUPRESSUS Lawsoniana argentea
" " compacta
RETINOSPORA filifera
RETINOSPORA pisifera
" squarrosa (Veitch)
THUJOPSIS dolabrata.

CONIFERÆ, one foot high.

25*s.* per 100, 17 of each of the following six sorts.
£6 10*s.* per 1000, 170 of each of the following six sorts.

CUPRESSUS Lawsoniana argentea
" " glauca
RETINOSPORA filifera
RETINOSPORA plumosa aurea
" squarrosa (Veitch)
THUJA Vervaeneana

A. M. C. JONGKINDT CONINCK,
TOTTENHAM NURSERIES,
Dedemsvaart, near Zwolle, Netherlands.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,

3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
H. G. SMYTH,
10, Castle Street, Endell Street, Long Acre, London, W.C.

COCOA-NUT FIBRE REFUSE.—Useful at all seasons. Largest makers in the Kingdom. 1*s.* per bag, 30 bags £1 (bags included), truck 25*s.* free to rail; 5*s.* van-load, at Works, Janet Street, Millwall, E. P.O.O. payable at General Post Office, London. Orders to be addressed to A. FOULON, Fibre Merchant, 32, St. Mary Axe, London, E.C.

COCOA-NUT FIBRE REFUSE at Reduced Prices, as supplied to Messrs. J. Carter & Co., High Holborn, W.C.; at the International Agricultural Exhibition, Kilburn; and all the Principal Nurserymen and Seedsmen in England. In 4 bushel bags at 1*s.*, bags included; 30 bags, bags included, 20*s.*; or truckload of about 250 bushels, 25*s.* (truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1*s.*; 30 bags (bags included), 20*s.*; truck free to rail, 25*s.*
T. RICH (late Finlayson & Hector), Cocoa-Nut Fibre Works, 24 and 25, Redman's Row, Mile End Road, London, E.

COCOA-NUT FIBRE REFUSE.—INVALUABLE for FORCING, PLUNGING, FERNERIES, &c.
4-bushel bag, 1*s.*, bag included; 30 bags, bags included, 21*s.*; truck, free to rail, about 250 bushels, 25*s.*; cartload at Works, 6*s.* Prompt cash. Post-office Order payable at Greenwich.
CHUBB, ROUND AND CO.,
Fibre Works, Westferry Road, Milwall, E.

PEAT.—Superior Black or Brown Fibrous Peat, for Rhododendrons, Azaleas, Orchids, &c., as used by all the noted Growers. Trucks containing 6 tons loaded at Bagshot or Camberley Stations, S. W. R., £4 4*s.* Address, W. TARRY, Bailiff, Golden Farmer, Farnborough Station.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per bag.
WALKER AND CO., Farnborough Station, Hants.

EXCELLENT PEAT FOR SALE, on the Mount Mascal Estate, within a mile and a half of the Bexley Station of the South-Eastern Railway. The Peat stands within a few hundred yards of the road, and there is a cart track to it in good order. Price per cubic yard, as it stands ready dug, 7*s.*; or delivered at Bexley Station, 9*s.*; other places, at special rates. For particulars apply to
Mr. C. BOXALL, North Cray, Kent.

An Important Discovery.

SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1*s.* 6*d.*, 2*s.* 6*d.* and 12*s.* 6*d.* each. Special quotations for large quantities.
London Agents: HOOPER AND SONS, Covent Garden, and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

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AMIES' MANURE

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ALL HORTICULTURAL PURPOSES.

Amies' Anti-fungoid Potato Manure

Is a great Preventive of the Potato Disease.

For prices and particulars

Write for our NEW PAMPHLET, post-free.

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GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

Manure.

THE NEW WESTMINSTER BREWERY CO. (Limited), of Earl Street, Westminster, will be glad to RECEIVE OFFERS for the MANURE from their Horses, from April 9 next.

Particulars can be had by personal application, or by letter addressed to the Manager.

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For Lawns, &c.

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For Edgings Round Flower Beds.

W. CLARK'S PATENT GRASS CUTTER,
For Trimming Ivy, Creepers, and all kinds of Shrubs.

W. CLARK'S PATENT GRASS CUTTER,
Is used for trimming where the Lawn Mower cannot reach.

W. CLARK'S PATENT GRASS CUTTER.
No garden is complete without one.

W. CLARK'S PATENT GRASS CUTTER,
is patronised by H.S.H. Prince Teck and the Metropolitan Board of Works.

W. CLARK'S PATENT GRASS CUTTER,
is sold in three sizes.

PRICES.

The 8-in. machine, complete, with roller and tray ..	21s.
Ditto, without roller and tray	18s.
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Ditto, without roller and tray	24s.
The 16-in. machine, complete, with roller and tray ..	38s.
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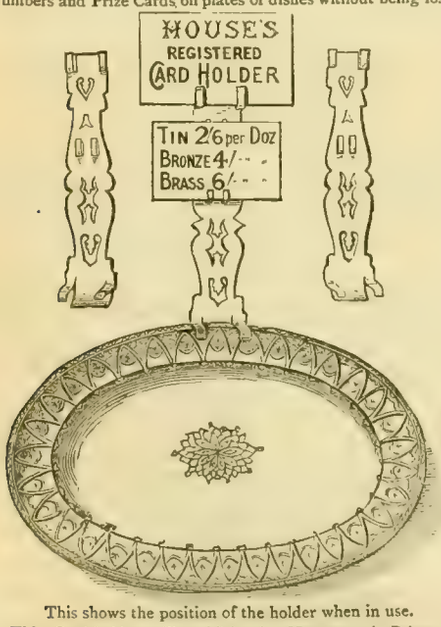

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The Trade supplied. Terms on application.

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are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

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Hurry's Daisy and Weed Extractor,

FOR LAWNS.

No one possessing a Lawn should be without this wonderfully useful little Invention.

The following particulars, from the *Gardeners' Chronicle* of August 2, 1879, will at once show the value of this useful, and comparatively costless, little invention, which can be used by ladies or children:—

"How to Extract Weeds from Lawns.—A short time since, when at Pampesford, we had an opportunity of seeing used and of using a gouge, which was very effectual in removing Plantains and similar weeds from lawns. By a slight twisting movement the gouge was inserted over the crown of the plant, which was quickly extracted. The soil, removed as cheese would be by a cheese-taster, is readily re-inserted in the hole, a little fresh soil being added, if need be, to keep up the level. By the use of this instrument a lad was enabled to clear a lawn very rapidly. It is the invention of Mr. ALFRED F. O'C. HURRY, of Pampesford, who has registered it."

Another great advantage of this tool is that the plugs of earth extracted can be re-inserted upside down, which not only fills up the hole, but destroys the weed effectually; the plugs discharge themselves, the second pushing out the first, and so on.

To be obtained of all Ironmongers and Florists. Price 3s. 9d. only. In Polished Wood, fancy handle, 4s. 6d.

Wholesale Agent: THOMAS TILLEY, 12, Walbrook, London, E.C. Cambridge Agents: G. BEALES & CO.;

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Samples and Price Lists free.

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WATERPROOF TREE and PLANT LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times. For sample and price apply to the Manufacturers,

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TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.

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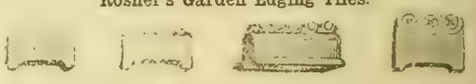
Rosher's Garden Edging Tiles.



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ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

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SILVER SAND, fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

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IN

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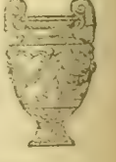

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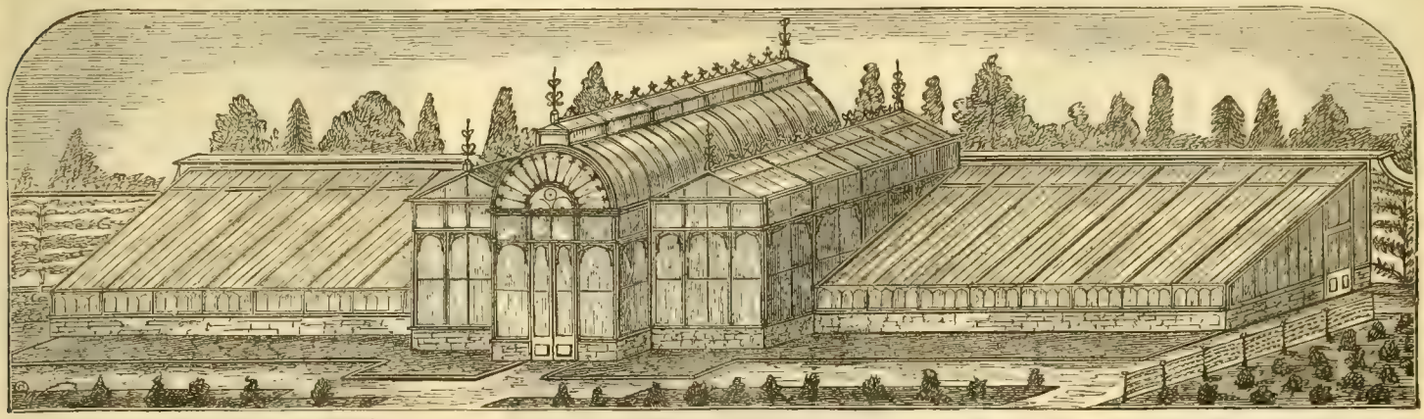

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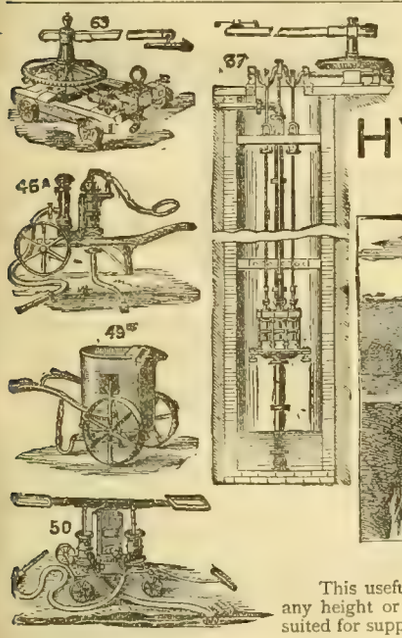

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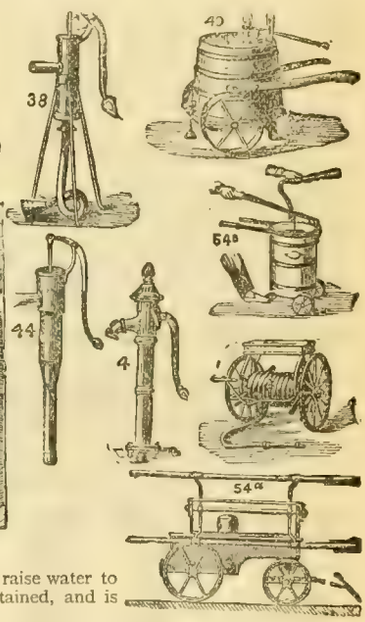
WHITEFRIARS STREET, LONDON, E.C.



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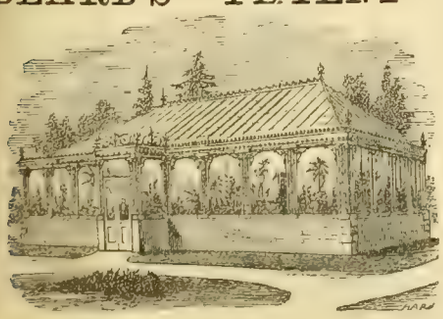

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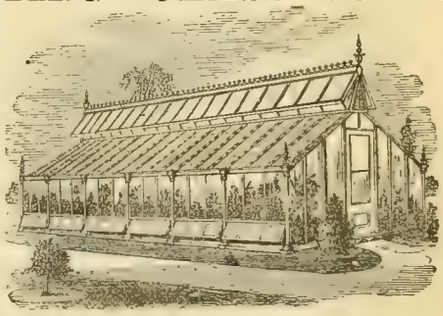

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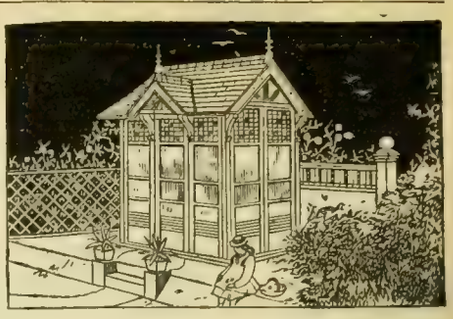

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Established 150 years.
WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses :—

Inches.	Inches.		
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21-oz., Orchard House, 20 × 12,	20 × 13,	16s. 6d., 19s. 3d., 20s., 21s.	
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15-oz., for Cutting up, 35s., 39s., 46s., 50s. per 300 feet case.
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LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.
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NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards 20s.; 4 yards wide, 6d. per yard, or 50 yards 20s.
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s. per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.
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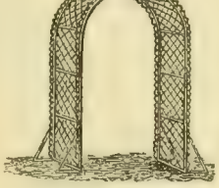

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GREAT SUCCESS.
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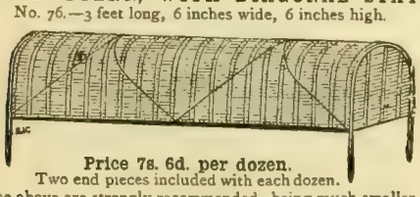
NEW PATTERN, WITH DIAGONAL STAYS.
No. 76.—3 feet long, 6 inches wide, 6 inches high.



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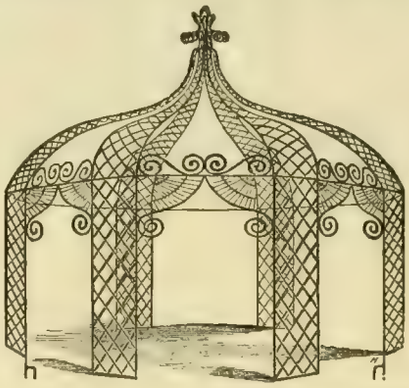

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GARDEN NETTING for Sale, in small or large quantities, for Protecting Fruit and Wall Trees, and Seed and Strawberry Beds from Birds, Blight, Frost, &c., 2 yards wide, 1d. per yard; 4 yards wide, 2d. per yard, and any quantity of Netting required will be forwarded on receipt of Post-office Order made payable to
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Estimates given free of charge for Espalier Trainers for Fruit Trees, &c. The Espalier can be easily fixed, wood or stone blocks being unnecessary. In writing for estimates please give exact lengths required, with a rough sketch showing angles, if any.
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NETTING—No. 1, 4d. per square yard; No. 2, 3½d. per square yard; No. 3, 4½d. per square yard; and No. 3, 2 yards wide, 7½d. per run.
HOTHOUSE SHADINGS.
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SHAW'S TIFFANY.

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The Cheapest House in the Trade for
HOT-WATER PIPES and CONNECTIONS.
F. AND J. SILVESTER, Castle Hill Foundry, Engineering and Boiler Works, Newcastle, Staffordshire.

JONES & ATTWOOD.

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JONES'S IMPROVED EXPANSION JOINT.

THE BEST HOT-WATER JOINT.

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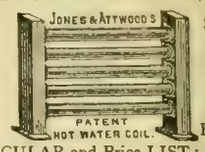
SIMPLE, DURABLE, NEAT, CHEAP.

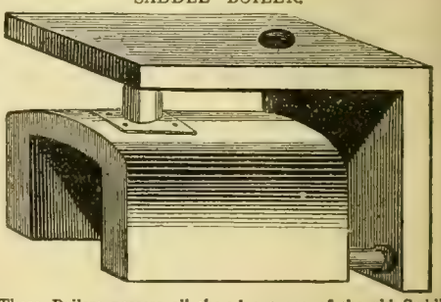


Specially adapted for CHURCHES, SCHOOLS, MANSIONS, PUBLIC BUILDINGS, &c.

Illustrated CIRCULAR and Price LIST; also Estimates for Heating with the most improved BOILERS, EXPANSION JOINT PIPES, or COILS, on application.

JONES'S PATENT "DOUBLE L"

SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes :—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1000	16	0	0
24 ,,	24 ,,	48 ,,	1400	20	0	0
28 ,,	28 ,,	60 ,,	1800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.
"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

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When ordering Boilers please refer to the above advertisement.

RANSOMES' LAWN MOWERS ARE THE BEST.

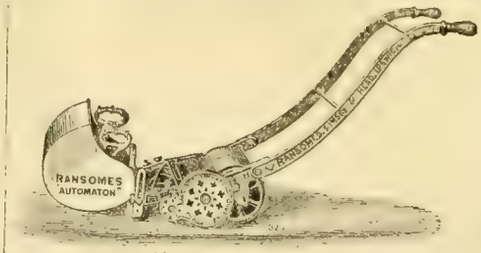
ARE SUITABLE FOR ALL GARDENS.

WILL CUT LONG GRASS, WET OR DRY.

All Sizes from 27s.

A MONTH'S FREE TRIAL ALLOWED.

Sent Carriage Paid.



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The best general purpose machine.

THE "REVERSIBLE,"
For Small Gardens and Borders.

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For General Purposes.

THE "GLOBE,"
An Anglo-American Machine.

THE "HORSE-POWER,"
For Large Lawns, Cricket Grounds, Parks, &c.

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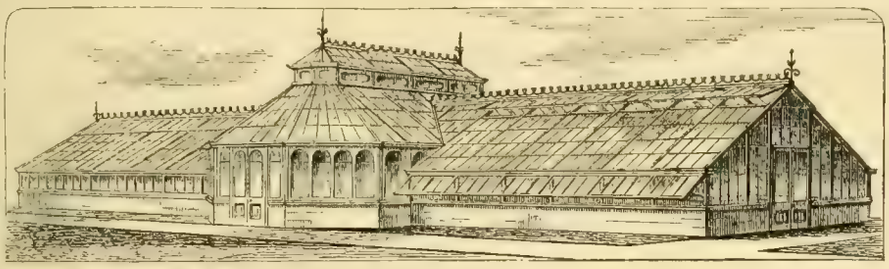
Two Gold Medals awarded to us by Royal Horticultural Society, at the



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Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very *best class of buildings* at an extremely *low price*. As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions.

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HOT-WATER BOILERS, PIPES, and CONNECTIONS,

And all CASTINGS for HORTICULTURAL PURPOSES.

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Hot-water and Hot-air Apparatus erected complete, or the Materials supplied.

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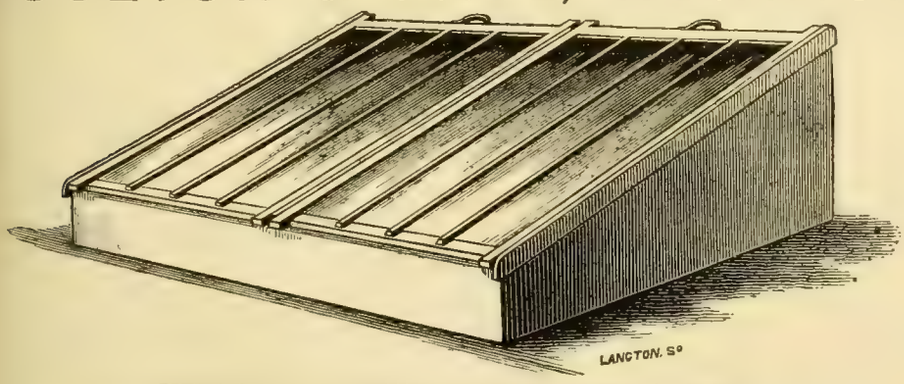

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1-light FRAME, 6 feet by 4 feet, .. £2 0 0 | 3-light FRAME 12 feet by 6 feet, .. £4 17 6
2-light ,, 8 feet by 6 feet, .. 3 7 6 | 4-light ,, 16 feet by 6 feet, .. 6 7 6

Made of the best seasoned red-wood deal. Glazed with English 21-oz. Sheet Glass. All painted three times in best oil colour. Iron Handle to each Light, and an Iron Cross Bar.

Carriage Paid to any Railway Station in England and Wales, also to Dublin, Edinburgh and Glasgow.

Any damage in transit made good, if advised immediately. Packing Cases not charged for if returned at once carriage paid.

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New and Improved Machines for 1880.

SAMUELSON & CO.'S
NEW
"VILLA" AND "FAVORITE"
PATTERNS ARE THE BEST.

London Agents: HILL & SMITH, Queen Victoria Street,
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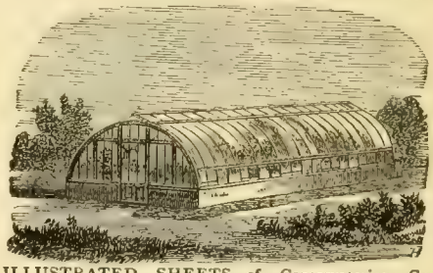
LEGION of HONOUR, PARIS EXHIBITION.



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The Patent Bent Wood Curved Greenhouses can be erected at the same cost as a Plain Straight one. They are much lighter, better in appearance, and can be glazed with straight Glass. For particulars apply to the Patentee and Manufacturer,

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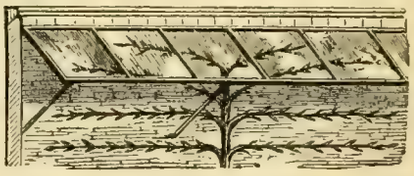
A Crop of Fruit in Spite of Frost.



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PEACH WALL COVERS,

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NOT WITH A PATENT SYSTEM OF GLAZING, by which all the glass has to be put in on the spot, and which is so easily taken out again that anybody can get through to the fruit without the gardener knowing it.

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Estimates given for Conservatories, Heating, &c.

GARDEN BROOMS, handles included, 3s., 4s., and 5s. per dozen; STABLE BROOMS, 4s. and 6s. per dozen; and all kinds of BROOMS and BRUSHES at low prices. Special terms to the Trade and large cash buyers. MANLEY AND CO., Long Lane, London, S.E.

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For Iron, Wood, Stone, Stucco, or Cement Work.
Ground in Oil. No Dryers required.

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Thinnings required: Two gallons to 1 cwt. of paint, 3s. 6d. per gallon. Kegs and Cans charged and allowed for when returned—1 cwt. kegs, 2s. 6d.; 1 gallon cans, 1s. 6d.
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DRY COLOURS and BRUSHES at cheap prices. Cash only.

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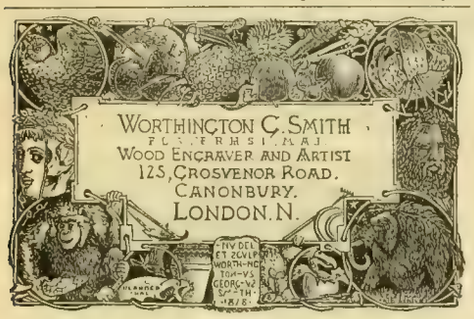

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NOTE.—The "Archimedean" was specially selected from the Mowers exhibited at Vienna for constant use in the Exhibition Grounds, and gave great satisfaction; and we have pleasure in calling attention to the following Testimonial, received from the Inspector of the Royal Gardens, Schönbrun, Vienna :—

"Your 'Archimedean' Lawn Mowers have been used for some time past at the Imperial Gardens, and I have great pleasure in stating that they have given perfect satisfaction. Their quick and good work prove them to be the best and most efficient machines of the kind."

OPINIONS OF THE PRESS.

"The quickest, most simple, and most efficient Mower ever used."—*Gardeners' Chronicle.*

"Far superior to any of ours."—*The Field.*

"Remarkably easy to work."—*Gardeners' Mag.*

"We feel bound to recommend it to our readers as one of the best Mowers we have as yet made acquaintance with."—*Floral World.*

PATRONIZED BY

HER GRACIOUS MAJESTY THE QUEEN,
HER IMPERIAL MAJESTY THE EMPRESS OF GERMANY,
THE LATE EMPEROR OF THE FRENCH,
HIS ROYAL HIGHNESS THE PRINCE OF WALES,
HIS IMPERIAL MAJESTY THE EMPEROR OF AUSTRIA,
THE VICEROY OF EGYPT,
And many of the Nobility and Gentry of Great Britain.

CHIEF ADVANTAGES.

They are extremely LIGHT IN DRAUGHT, SIMPLE IN CONSTRUCTION, WELL MADE, and NOT LIKELY TO GET OUT OF ORDER.

They Cut LONG or SHORT, WET or DRY Grass, and do not clog.

They have no ROLLERS in FRONT of the Cutter, and therefore Cut the Grass as it GROWS, and do not miss the BENTS.

They work well on SLOPES, STEEP EMBANKMENTS, UNDER SHRUBS, and Close up to Trees, &c.

They can be USED either WITH or WITHOUT GRASS BOX, as may be desired.

TESTIMONIALS.

From A. F. Barron, Esq., *Royal Horticultural Society, Chiswick Gardens, W.*

"Gentlemen,—We have now had your 'Archimedean' Lawn Mower in use for several months, and without hesitation I can truly say it is the *best* and *most efficient* implement of the kind we have ever used."

From Shirley Hibberd, Esq., F.R.H.S., *Editor of the "Gardeners' Magazine."*

"The 'Archimedean' Lawn Mower has been in constant use in our experimental garden since Midsummer last, and has done its work remarkably well. It is a good sign when the men who have to do the work take to a thing of this sort without any persuading, and my men evidently regard it as a magical means of making mowing an amusement, for they fly through the work and enjoy the perfect shave quite as much as I who look on, and wonder we have so lately attained to real simplicity."

From the Rev. A. McAllister, *Plumstead Vicarage, London.*

"I have the pleasure of forwarding a cheque for the 'Archimedean' Lawn Mower which I had from you, and which does its work admirably."

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6-inch, Suitable for Small Grass Plots	£1 5 0	14-inch, Suitable for a Man	£5 5 0
8 " " " "	2 2 0	16 " " " on Level Lawns	6 6 0
10 " " a Lady or a Boy	3 3 0	18 " " " and Boy	7 7 0
12 " " " "	4 4 0	20 " " " "	8 0 0

Grass Boxes for Collecting the Cut Grass, 5*s.* extra.

DELIVERED CARRIAGE FREE AT ANY RAILWAY STATION IN THE UNITED KINGDOM.

NO CHARGE FOR PACKING CASES, which are most convenient for storing the Machine during Winter.

EVERY MOWER IS WARRANTED TO GIVE AMPLE SATISFACTION,
And if not approved of may be returned within a Month, and the amount paid be refunded.

Before purchasing a Lawn Mower send for Catalogue, containing Opinions of the Press and Testimonials from Gentlemen of high position in the Horticultural World, Noblemen, Clergymen, and others.

WILLIAMS & CO. (Limited), Manufacturers and Patentees.

Selling Agents { JOHN G. ROLLINS & CO., Old Swan Wharf, Upper Thames Street, London, E.C.
WALTER CARSON & SONS, La Belle Sauvage Yard, Ludgate Hill, E.C.; and 21, Bachelor's Walk, Dublin. } **Selling Agents**

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Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of those already published:—

1879.—October	11.	1880.—January	10.
,,	25.	,,	24.
November	8.	February	7.
,,	15.	,,	21.
,,	29.	March	20, 27.
December	13.	April	3.

Price 5d. each, post free 5½d.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral at 11 A.M., Scientific at 1 o'Clock—Ordinary Meeting for Election of Fellows at 3 P.M., on TUESDAY NEXT, April 13. Admission, 1s.

ROYAL HORTICULTURAL SOCIETY.—The NATIONAL AURICULA SOCIETY will hold its ANNUAL EXHIBITION of AURICULAS in the Society's Conservatory at South Kensington, on TUESDAY, April 20. Band of the Duke of York's School from 3 o'Clock. Doors open at 1 o'Clock. Admission 1s.

HORTICULTURAL GARDENS, South Kensington, S.W.

EXHIBITION of DAFFODILS, on TUESDAY, April 13, and following days, by Messrs. BARR AND SUGDEN.

CRYSTAL PALACE GREAT ANNUAL FLOWER-SHOW, SATURDAY, May 29; GREAT ROSE SHOW, by the National Rose Show Society, July 3. Schedules now ready, apply to Mr. W. G. HEAD, Superintendent of Gardens, Crystal Palace, S.E.

To the Trade.

POLEMONIUM CŒRULEUM VARIEGATA, 15s. per 100.

HOWDEN AND CO., Nurserymen and Seedsmen, Inverness, N.B.

Vines.

WM. PAUL AND SON have still a fine lot of Fruiting and Planting Canes of Black Hamburgh and other Vines.

PAUL'S Nurseries, Waltham Cross, Herts.

Gentlemen's Gardeners, Amateurs, and Others

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GARDEN POTS of best quality, are requested to send their orders to J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List on application.

APPLE TREES with MISTLETO growing on them. Price from 7s. 6d. to 21s. each.

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THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

To the Trade.

MANGEL SEED.—CHAMPION YELLOW GLOBE MANGEL WURZEL. Guaranteed stock at low price.

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For Sale, Drumhead or Cattle Cabbage.

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CUCUMBER PLANTS.—Telegraph (true). Strong, healthy plants now ready. Apply to A. WATKINS, Hockerill Nursery, Bishops Stortford, Herts.

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LONDON WHITE COS, strong and healthy plants, in large or small quantities: may be seen at any time.

H. THONTON, 1, Maxwell Road, Fulham, S.W.

EARLY ROSE POTATOS.—A few tons of the above for Sale. Apply to W. W. JOHNSON AND SON, Seed Merchants and Nurserymen, Boston.

MAGNUM BONUM and CHAMPION.—The two best disease-resisting Potatos in cultivation. Stock of the former, from Messrs. Sutton, 1878; latter from Scotland last spring. Sample hundredweight bags of Magnum Bonums, 14s.; and Champions 10s.; also, Early Rose, at 7s. Will be put on rail on receipt of Post-office Order and address. J. T. SMITH, Potato Merchant, Wisbech, Cambridgeshire.

Floral Commission Agency.

NOTICE OF REMOVAL.—W. CALE begs to state he has taken larger and more convenient Premises. All Letters and Consignments to be addressed 4, Tavistock Row, Covent Garden, W.C.

WANTED—1000 HOLLIES, Green; 1000 AUCUBA JAPONICA; 1000 YEWS, Common; 1000 RHODODENDRON HYBRIDUM. Height from 12 to 18 inches. Samples and price to be sent to GEO. ROWBOTHAM, Avenham Park, Preston, Lancashire.

FOR SALE, Cheap, a large lot of IRISH IVY, and several hundred yards of BOX EDGING. WANTED, SCHIZOSTYLIS COCCINEA and other PERENNIALS. Apply, T. L. MAYOS, Nurseryman, Hereford.

WANTED, to EXCHANGE, good plants of New CROTONS, DRACÆNAS, COLEUS, FUCHSIAS, ZONAL PELARGONIUMS, and a few fine SPECIMEN PLANTS, for large Plants of AZALEAS, CAMELLIAS, EUCHARIS, and SEEDLING FERNS in variety. Particulars on application to Mr. F. WEBBER, Cliftonville Hotel, Brighton.

WANTED, a Specimen Plant of PASSIFLORA PRINCEPS RACEMOSA, not less than 6 to 8 feet long, and three or four shoots. Apply, stating price and full particulars, to BELL AND SON, Seed Merchants, Exchange Street, Norwich.

TO GARDENERS and OTHERS having Surplus Stocks of Spring Bedding Stuff.—WANTED, VIOLETS, Czar, Neapolitan, Victoria Regina, and Russian, &c. Please state lowest cash price per 100, to R. B. FULLER, Rose Villa Nursery, Harrogate.

WANTED, 100 or so of OSMANTHUS ILICIFOLIUS, 1¼ to 2 feet hight. State quantity and lowest price. RODGER McCLELLAND AND CO., 64, Hill Street, Newry.

WANTED, Six strong Fruiting Black Hamburgh VINES. State price to G. AND W. YATES, Seed Merchants, 28, Market Place, Manchester.

WANTED, SIR C. NAPIER STRAWBERRY. Particulars to H. CANNELL, Swanley, Kent.

Cabbage Plants.

WANTED, strong plants of ENFIELD MARKET, or other Garden variety. Offer to J. TAPLIN, 152, High Street, Uxbridge.

VERBENAS and CALCEOLARIAS.—Strong, well-rooted Cuttings of White Verbenas, Boule de Neige, Eclipse Scarlet, and Purple King, the best purple, 6s. per 100, free for cash, safely packed. Calceolaria Golden Gem, autumn-struck, strong, 5s. per 100, 40s. per 1000, package free for cash.—WILLIAM FIELD, Tarvin Road Nurseries, Chester.

Verbenas—Verbenas—Verbenas.

STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6s. per 100; 50s per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8s. Terms cash. H. BLANDFORD, The Dorset Nurseries, Blandford.

CALCEOLARIA, Golden Gem.—Strong, sturdy, healthy Plants of the above at 6s. per 100 H. BLANDFORD, The Dorset Nurseries, Blandford.

DAHLIAS, 400 vars.—Catalogue and Price on application to KELWAY AND SON, Langport, Somerset.

Special Offer of

FOREST TREES.—Transplanted ASH, BIRCH, Spanish CHESTNUT, HAZEL, SPRUCE FIR and QUICKS. Samples and prices on application. W. C. SLOCOCK, Goldsworth Nursery, Woking.

SPRUCE FIRS.—Many thousands, 2, 3, 4 and 5 feet. Stout, well furnished, and good rooted. ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

The New Silver Japan Birch.

(Referred to in last week's *Gardeners' Chronicle.*)

W. MAULE AND SONS have a limited number of Plants, 2 to 3 feet, that they can supply at 5s. each. The Nurseries, Bristol.

1880—Hardy Perennials—Illustrated.

THE ABOVE CATALOGUE, containing Lists of Hardy Orchids, Bamboos, and Ornamental Grasses, Carnivorous Plants, Bulbs, Climbing and Trailing Plants, and a fine selection of Choice New and Rare Hardy Perennials. Post-free on application. THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

Gardenias.

MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug. Royal Nurseries, Ascot, Berks.

JOHN FORBES' CATALOGUE of all the BEST NEW and OLD FLORISTS' FLOWERS, up to the present date, is now ready, and will be sent post-free to all applicants. Fine named Show and Fancy PANSIES from 20s. per 100, my selection.—Buccleuch Nurseries, Hawick, N.B.

HOLLYHOCKS—HOLLYHOCKS.—Strong blooming plants. LISTS with prices from LEWIS WOODTHORPE, Glazenwood Nursery, Braintree, Essex.

Orchids, Bulbs, &c.

THE NEW PLANT and BULB CO. beg to announce the arrival of their first Consignment of ORCHIDS from New Granada. Special LIST (No. 46), containing full particulars of the above, with LIST of New and Rare Bulbous and other Plants, is now ready. Post-free on application. Lion Walk, Colchester.

To the Trade.

ROSES.—Marechal Niel, Gloire de Dijon, Climbing Devoniensis, on Seedling Brier, in 5-inch pots, good stuff, all last year's working, 75s. per 100. GEORGE COOLING, Nurseryman, Bath.

Spring Bedding.

DOUBLE WHITE PRIMROSES.—Good patches, full of flower-buds, 20s. per 100; divided patches, 10s. per 100, £4 per 1000. T. JACKSON AND SON, Nurseries, Kingston, Surrey.

SPRING FLOWERS.—Choice varieties of Single and Double POLYANTHUS and PRIMROSES, Single and Double Dark AURICULAS, &c. Unusual fine strain of SWEET WILLIAM. Seed 1s. per packet. Apply to Mr. COOPER, Calcot Gardens, near Reading.

New Catalogue of Plants.

CHARLES TURNER'S CATALOGUE for the present season is now ready, containing full Descriptive Lists of all the most Popular Plants, free on application. The Royal Nurseries, Slough.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to Mr. JEAN NUYTENS-VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium. London Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

Seeds—Seeds—Seeds.

WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

SALES BY AUCTION.

Monday Next.

ESTABLISHED ORCHIDS and JAPANESE LILIES.

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, E C, on MONDAY NEXT, at half-past 11 o'Clock precisely, 350 lots of ESTABLISHED ORCHIDS, the larger portion of which comprise the entire Collection of a Gentleman who is giving up their cultivation, and which will be sold without the slightest reserve. Amongst them will be found Cattleya guttata, C. gigas, C. maxima, Cymbidium eburneum, Odontoglossum Roezlii, O. Hallii, O. triumphans, O. Alexandræ, O. Pescatorei, Disa grandiflora, Aspasia lunata, Dendrobium triadenium, D. primulinum, D. fimbriatum, D. thyrsiflorum, D. tortile, Pilumna fragrans, Ada aurantiaca, Oncidium zebrina, O. Roezlii, O. concolor, O. ornithorrhynchum, O. Rogersii, Cypripedium Stonei, C. Lowii, C. venustum, C. insignis, Vanda cœrulea, Aerides Fieldingii, Chysis aurea, Masdevallia ignea, M. Veitchii, M. Dawson's fine variety, M. species, M. melanopes, Phajus maculata, and a quantity of other rare and beautiful varieties; also a consignment of JAPANESE LILIES, viz., Lilium speciosum rubrum, L. album Krætzeri, L. Krameri, L. eximium verum, L. tigrinum fl.-pl., L. tigrinum splendens Leopoldi, L. species; also AMARYLLIS, DIELYTRAS, PHLOXES, PANSIES, CLEMATIS, GLADIOLUS, DICKSONIAS, PALMS, and a quantity of other PLANTS in variety.

Catalogues had at the Mart, and 98, Gracechurch Street, E.C.

Important Sale of a First-class Collection of CARNATIONS, PICOTEES, PINKS, and CLOVES, 500 Standard and other ROSES, selected FRUIT TREES, hardy CONIFERÆ SHRUBS, and AMERICAN PLANTS, GREENHOUSE PLANTS, DAHLIAS, choice SEEDS, LILIUMS, RANUNCULUS, ANEMONES, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above by AUCTION, at the City Auction Rooms, 38 and 39, Gracechurch Street, E C., on THURSDAY, April 15, at 12 o'Clock precisely.

On view the morning of Sale. Catalogues had at the Rooms, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

A Consignment of Rare Cycads per ss. "Scottish Lassie," consisting of fifty CYCAS MEDIA, 1 to 3 feet high, and two magnificent and rare specimens with stems 10 to 15 feet high (photographs of which may be had on application), also a quantity of the beautiful BOWENIA SERRULATA (the only known Cycad having bipinnate fronds), and a few MICROZAMIA MIGNELLII, together with a collection of 350 lots of choice ESTABLISHED ORCHIDS.

MESSRS. PROTHEROE AND MORRIS will SELL the above at the Mart, on MONDAY, April 19.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Nursery Stock.—Nursery Stock.

To NURSERYMEN, GENTLEMEN PLANTING, and OTHERS.

MR. JOSEPH WALTON has been favoured with instructions from the Executors of the late Mr. Charles Ridgway, of Romiley, near Stockport, to SELL by AUCTION, on MONDAY, TUESDAY, WEDNESDAY, and THURSDAY, April 12, 13, 14, and 15, to commence each day at 12 o'Clock, the following VALUABLE NURSERY STOCK, including about 500 specimen Green Hollies, from 3 to 10 feet high, and from 2 to 7 feet through; 400 variegated specimen Hollies, in variety, from 3 to 10 feet high; a great number of ornamental Green Hollies, specimen plants, in named varieties; likewise a number of Hollies of various sorts in smaller plants; 2500 Aucuba japonica, including many magnificent specimen plants, from 2 to 6 feet high; also upwards of 80,000 smaller Aucuba japonica; 100 specimen Handsworth Box, from 3 to 7 feet high, first-class plants; 800 ditto, 12 to 24 inches high; 600, 6 to 12 inches high; also a great variety of ordinary Nursery Stock, including Fruit Trees, &c. The plants are in first-rate condition, are beautifully grown, and have all been recently removed.

The place of sale is within two minutes' walk of the Romiley Station on the M. S. and L. and Midland lines of Railway.

Catalogues may be had from the Auctioneer, Wilmslow, or from the Nurseries, four days before the Sale.

Tree Ferns.

MR. J. C. STEVENS will include in his SALE on WEDNESDAY, the 14th inst, a quantity of TREE FERNS, with stems from 5 to 8 feet high, just arrived from Australia in excellent condition; also a few of the new, handsome, and rare CYCAS MEDIA, with stems 4 to 6 feet high, imported from Queensland.

May be viewed the morning of Sale, and Catalogues had.

Established and Semi-established Brazilian Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, April 14, at half-past 12 o'Clock precisely, BRAZILIAN ORCHIDS, consisting of the new, rare and beautiful Lælia Dormaniana, discovered by Mr. H. Blunt in September last, and described by Professor Dr. Reichenbach in the *Gardeners' Chronicle*, February 7, 1880, p. 168; the rare and lovely Oncidium Gardneri, described by Dr. Reichenbach as a glorious Oncidium, far superior to Oncidium curtum (see *Gardeners' Chronicle*, January 10, 1880, p. 41); Oncidium concolor, O. dasytyle, O. Forbesii, O. crispum, Cattleya marginata, C. Schilleriana, and C. amethystina, from Mr. R. Bullen, of Lewisham. Also an importation of INDIAN ORCHIDS, just received, direct, in good condition. A consignment of BLUE DISAS, just arrived, in good condition, by order of Messrs. E. G. Henderson & Son.

May be viewed the morning of Sale, and Catalogues had.

Immense Importation of ODONTOGLOSSUM ALEXANDRÆ.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on Thursday, April 15, at half past 12 o'Clock precisely, a grand importation of ODONTOGLOSSUM ALEXANDRÆ, the Queen of the Odontoglots. The consignment may safely be termed the largest and finest ever offered, being in most splendid condition, and consisting chiefly of masses of unusual size, freely set with healthy short breaks. The whole of the importation will be offered. The sale will also include a variety of other ORCHIDS, and a new very beautiful LYCOPODIUM brought home by Mr. Freeman from India.

May be viewed the morning of Sale, and Catalogues had.

Cattleya superba.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 22, at half-past 12 o'Clock precisely, a splendid consignment of CATTLEYA SUPERBA, just received from the interior of Guiana. The specimens are in grand health, full of leaves and fine plump eyes, and the importation consists of many masses, with upwards of thirty bulbs, which will speedily make Exhibition Plants. The varieties are the very best, and the old flower-spikes show that this truly superb Cattleya makes as many as nine of its beautiful large flowers on a spike.

May be viewed the morning of Sale, and Catalogues had.

Henbury Hill, Gloucestershire,

About 3 miles from Bristol and Clifton.

SALE of the VALUABLE PLANTS belonging to the Estate of the Rev. James Heyworth, Deceased.

MESSRS. H. R. FARGUS AND CO. will SELL by AUCTION, on the Premises, at Henbury Hill, on TUESDAY and WEDNESDAY, April 13 and 14, at 11 o'Clock each day, all the exceedingly Choice and Valuable COLLECTION of STOVE and GREENHOUSE PLANTS, belonging to the above deceased gentleman: comprising a choice assemblage of rare Orchids, including Phalænopsis Schilleriana, one spike with 85 flowers; Angræcum sesquipedale, four spikes with 12 flowers; P. grandiflora, has had 48 flowers on one spike; P. amabilis; Vanda tricolor; Aerides maculosum, suavissimum; Oncidium Marshallianum, Cypripedium niveum, Stonei, villosum, insignis, Veitchii, Sedeni; Cattleya Mendelli, Loddigesii; Dendrobium fimbriatum, occulatum, nobile, &c.: a variety of large fine Camellias and Azaleas, Lapagerias, Dipladenias, Gloxinias, Achimenes, Ferns, Pelargoniums, and an immense variety of other Stove and Greenhouse Plants. The whole of the Plants are in good condition, the Orchids free from spot, and all tender plants will be hardened for removal.

The Plants may be viewed the day preceding the Sale. Catalogues may be obtained of Mr. R. SHORE, Henbury Hill; or of the Auctioneers, 4, Clare Street, Bristol.

Reigate.

To GREENGROCERS, FRUITERERS, and OTHERS.

TO BE SOLD, at once, the LEASE and GOODWILL, with STOCK and FIXTURES, of a GREENGROCER'S and FRUITERER'S BUSINESS. Rent £20 per annum, including Shop and Dwelling-house, with four Bed-rooms, Stabling, and Out-buildings. Also the LEASE, STOCK, and GREENHOUSES, on a valuable plot of Nursery Ground near the Station. For further particulars, apply to

ROBT. W. FULLER AND MOON, Auctioneers, Reigate.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

Daffodils.

BARR AND SUGDEN'S EXHIBITION of DAFFODILS, Horticultural Gardens, South Kensington, S.W., and 12, King Street, Covent Garden, W.C., on TUESDAY, April 13, and following days.

BARR AND SUGDEN, 12, King Street, Covent Garden, W.C.

Spring Edition, Hardy Florists' Flowers.

THIS CATALOGUE is now ready, and includes Carnations, Chrysanthemums, Delphiniums, Hollyhocks, Pansies, Pentstemons, Picotees, Potentillas, Pyrethrums, Bedding Pansies, Violas, &c. Post-free on application.

THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

STRAWBERRY PLANTS. — Strong and well-rooted young plants of V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other varieties, at 4s. per 100, 30s. per 1000. Terms cash.

W. LOVEL, Strawberry Farmer, Weaverthorpe, York.

To the Trade.

EXTRA CHOICE MIXED FRINGED PRIMULA, from a splendid strain.

E. WILSON SERPELL, 21, Cornwall Street, Plymouth, begs to offer the above to the Trade at 30s. per ¼ ounce, or 100s. per ounce. Retail packets 1s. and 2s. each post-free.

To the Trade.

ASPARAGUS, GIANT, 2-yr. Price on application.

JAMES BIRD, Nurseryman, Downham.

Cheap Offer for Cash.

ASPARAGUS, Colossal, 2-yr., 2s. per 100, 15s. per 1000. Green Tree BOX, English YEW, and HOLLY, from 3 to 8 feet.—W. J. CHRISTIE, Leatherhead.

Verbenas—Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other good Bedding and Exhibition varieties, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, for cash with order.

Queen's Road Nursery, Markhouse Common, Walthamstow.

LARGE SPECIMEN ERICAS.—Several Grand Plants cheap. For LIST and particulars apply to W. JACKSON, Blakedown, Kidderminster.

ADIANTUM FARLEYENSE.—Six beautiful large plants for 21s., very fine strong fronds from single crowns. Grown this way the pinnæ are double the size usually seen. All fine for immediate decoration, in 5-inch pots, £10 10s. per 100. Packages gratis for cash with order.

J. H. LEY, Royal Nursery, Croydon.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.

CATALOGUE free. The Trade supplied.

Verbenas, 50,000 Now Ready for Sale.

S. BIDE can now supply, as he has done on previous occasions, really good strong spring-stuck Plants of Purple, Scarlet, White, and Pink VERBENAS, at 6s. per 100. Good Exhibition Varieties, 8s. per 100. Package free for cash with order.

Also strong healthy CUTTINGS of the above at half-price, free by post.

S. BIDE, Alma Nursery, Farnham, Surrey.

AUTUMN-STRUCK GERANIUMS, 12s. and 14s. per 100. List of sorts on application. Good Spring-struck CUTTINGS 10s. and 12s. per 100.

W. GEARL, Florist, Uppingham, Rutland.

To the Trade.

HOME-GROWN MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE will be pleased to give special quotations for their fine selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS.

Seed Growing Establishment, Wisbech.

Pyrethrums, Double-flowered.

ROBERT PARKER begs to announce that he can supply the above-named, by the dozen, hundred, or thousand, in nearly 100 named varieties, from 9s. per dozen upwards. Descriptive LISTS, with New General CATALOGUE of Hardy Greenhouse and Stove Plants, forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W.

Now is the Best Time to Transplant Hollies.

HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d. to 31s. 6d. each. Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.

RICHARD SMITH AND CO., Nurserymen, Worcester.

NEW CATALOGUE for 1880.—All intending purchasers of Greenhouse and Stove Plants, Herbaceous Plants, Florists' Flowers, Indoor and Outdoor Plants generally, should look through our CATALOGUE and compare our Prices before purchasing elsewhere. See also last week's large Advertisement.

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

LILIUM AURATUM.—Splendid Bulbs of this fine Lily at Reduced Prices — 9d., 1s. and 1s. 6d. each. For other new Lilies, rare and cheap Orchids, apply for CATALOGUE to

WM. GORDON, Bulb and Plant Importer, 10, Cullum Street, London, E.C.

Liberal discount to the Trade.

Sweet-scented Rhododendrons.

ISAAC DAVIES begs to inform the Public that his magnificent Seedling Plants of the above, as well as other Novelties, are now a mass of bloom, and he will have pleasure in showing them to any one who may favour him with a call, feeling sure that no one will be disappointed with these most beautiful of all half-hardy plants.

Brook Lane Nursery, Ormskirk.

ALTERNANTHERAS and other CARPET BEDDING PLANTS.

ALTERNANTHERA, amœna, 8s. per 100, 70s. per 1000.
" amœna spectabile, 8s. per 100, 70s. per 1000.
" magnifica, 8s. per 100, 70s. per 1000.
" amabilis latifolia, 8s per 100, 70s. per 1000.
" paronychioides major, 8s. per 100, 70s. per 1000.
" versicolor, 8s. per 100, 70s. per 1000.
" spathulata, 8s. per 100, 70s. per 1000.
MESEMBRYANTHEMUM, cordifolium variegatum, 8s. per 100, 70s per 1000.
COLEUS, Verschaffelti, 8s. per 100, 70s. per 1000.
IRESINE, Lindeni, 8s per 100, 70s. per 1000.
LEUCOPHYTON, Brownii, 8s. per 100, 70s. per 1000.
HERNIARIA, glabra, 5s. per 100, 40s. per 1000.
LOBELIA, Brighton Gem, 5s. per 100, 40s. per 1000.
MENTHA, Pulegium gibraltaricum, 5s. per 100, 40s. per 1000.

All the above are well established plants. LIST of other kinds free on application to

WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

Uninjured by Frost.

EVERGREENS.—In splendid condition for safe removal; having been regularly transplanted and growing in a very exposed situation, are very hardy and robust, thus having withstood the past excessively severe winter without injury.

With reference to the hardy nature of the Trees and Plants reared in these Nurseries, a customer in Yorkshire writes:—

"I am very well satisfied with the Roses you sent—the frost has not hurt them, whilst a lot I got from the South have suffered very much."

CATALOGUES on application.

JAMES DICKSON AND SONS, Newton Nurseries, Chester.

Wandsworth Common and Garret Lane Nurseries.

R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.

All goods delivered free on rail in London or at own residence within six miles of the Nurseries.

CATALOGUES free by post on application.

New Zonal Pelargonium.

WEST BRIGHTON GEM.

To be sent out in May, 1880.

This has been awarded a First-class Certificate as a New Plant by the Brighton and Sussex Horticultural Society, and a Cultural Commendation by the Royal Horticultural Society. Price 10s. 6d. each, two for 20s. (usual allowance to the Trade). As the stock is limited, orders will be booked and executed in strict rotation.

For further particulars see the *Times* of December 17, 1879, the *Journal of Horticulture* of December 18, the *Gardeners' Chronicle* of Dec. 20, and for full description and CATALOGUE apply to

WILLIAM MILES, West Brighton Nurseries, Cliftonville, Sussex.

JAMES LYE'S NEW FUCHSIAS for 1880, for which he obtained four Certificates of Merit during 1879 at the leading West of England Shows, are now ready.

LYE'S FAVOURITE, white tube and sepals, rich magenta corolla. Flowers of fine form, borne in elegant clusters. Plant of good habit and strong grower: 5s. per plant.

BEAUTY OF THE WEST, white tube and sepals, corolla bright vermilion-scarlet: 5s. per plant.

The above have been highly reported of in the *Gardeners' Chronicle*, October 25, in the *Journal of Horticulture*, and *Gardeners' Year Book*.

A Coloured Illustration of "Lye's Favourite" can be had of James Lye. Price 1s 3d each.

Post-office Orders made payable to James Lye, Market Lavington Office.

The usual Discount will be allowed on all trade Trade orders. Cash with order.

JAMES LYE, Amateur Fuchsia Grower, Market Lavington, Wilts.

TREES for AVENUE, PARK, or STREET PLANTING.
ACER DASYCARPUM, 14 to 16 feet, girting 5 to 7 inches.
CHESTNUT, Horse, 12 to 14 feet, girting 5 to 7 inches.
,, Horse, 14 to 16 feet, girting 8 to 10 inches.
,, Horse, Scarlet, 10 to 14 feet, girting 6 to 8 inches.
LIMES, 14, 15, 16, 18, and 20 feet, girting 6 to 10 inches.
PLANES, Occidental, 10 to 12 feet, girting 4 to 5 inches.
,, Occidental, 12 to 14 feet, girting 5 to 6 inches.
A few hundred splendid PLANES, 16 to 18 feet, girting 8 to 10 inches.
POPULUS CANADENSIS NOVA, 12 to 14 feet, girting 6 inches.
MAPLES, Norway, 12 to 16 feet.
BEECH, Purple, 10 to 12 feet.
OAKS, Scarlet, 10 to 12 feet.
CHESTNUTS, Spanish, 10 to 12 feet.
SYCAMORE, 12 to 15 feet.
They have straight stout clean stems, and handsomely furnished well balanced heads, and from frequently transplanting are splendidly rooted. They are without doubt the finest stock of Avenue Trees to be met with in any Nursery in Europe.
The girt of the stems is taken at 4 feet from the ground, and not at the base, which is often deceptive.
ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

Cheap Plants.—Special Offer.
WILLIAM BADMAN offers the following Plants, of which he has a very large stock :—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 5s. per 1000; 100, in 12 choice sorts, 8s.; or in 25 sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius and New Life, 20s. per 100; Dr. Denny, nearest to blue, fine, 5s. per doz. Pelargoniums, in 12 best varieties, 5s. per doz., 30s. per 100.
,, TRICOLORS—Mrs. Pollock, 2s. 6d. per doz., 18s. per 100; Sir R. Napier and Sophie Dumaresque, 3s. per doz., 20s. per 100.
,, SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra and Prince Silverwings, 15s. per 100.
,, GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
,, DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 12s. per 100; Madame Amelia Baltet, very fine white (the best), 20s. per 100.
,, BRONZE—Maréchal McMahon, the best for bedding, 18s. per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

TWELVE Beautiful and New CALADIUMS, 21s.; strong plants, about 1 foot high, in 4-inch pots, fit for 8-inch pots at once, selected from twenty finest and most distinct sorts, such as Beethoven, Belleymei, Albert Edward, &c.; carefully packed to travel any distance. Hamper and packing gratis and carriage paid to any railway station in England for cash with order. Dry roots (carriage free), 10s. 6d., 21s., and 42s. per dozen, according to size.
J. H. LEY, Royal Nursery, London Road, Croydon.

ARECA RUBRA, last year's Seedlings, £1 per 100.
CHAMÆROPS EXCELSA, four to six leaves, £1 5s. per 100; one to two divided leaves, £1 10s. per 100.
LATANIA BORBONICA, last year's Seedlings, 6s. per 100, £2 10s. per 1000. £22 10s per 10,000.
DRACÆNA INDIVISA, LINEATA, VEITCHII, last year's Seedlings, 6s per 100, £2 10s. per 1000.
ARALIA SIEBOLDII, in single pots, last year's Seedlings, £1 per 100.
SEEMANN AND GOEPEL, The Nurseries, Marienthal, Wandsbeck, near Hamburg.

To the Trade
EXTRA CHOICE MIXED FRINGED PRIMULA, from a splendid strain.
E. WILSON SERPELL, 21, Cornwall Street, Plymouth, begs to offer the above to the Trade at 30s. per ¼ ounce, or 100s. per ounce. Retail packets 1s. and 2s. each post-free.

Seed Potatos.
H. AND F. SHARPE have still in stock the following varieties of SEED POTATOS, which they are now offering at low figures, viz. :—

Magnum Bonum, true	Scotch Champion
King of the Flukes	Paterson's Victoria
Snowflake	Pride of Ontario
Walker's Improved Regent	Yorkshire Regent
American Early Rose	Extra Early Vermont

Seed Growing Establishment, Wisbech.

Palms.
TWELVE, Graceful, 21s.; strong healthy plants, fit to pot on at once into 5-inch pots, of Cocos Weddelliana, Euterpe, Areca lutescens, A. rubra, Corypha, Latania, Seaforthia, Chamærops, &c., usually sold at 3s. 6d. and 5s. each. Double size, for immediate decoration, 1½ to 2 feet high, 42s. and 63s. per dozen. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1880.
RICHARD SMITH AND CO., Nurserymen, Worcester.

SEED POTATOS.—

Snowflake	Paterson's Victoria
Early Rose	Regent
Myatt's Prolific	Dalmahoy
Fortyfold	Fluke
Bresee's Prolific	Champion (Scotch)
Early Shaw	Redskin Flourball

And other leading varieties. Prices on application to
JOSIAH H. BATH, York Street, Borough Market, S.E.

Rhododendrons with Bloom Buds.
H. LANE AND SON can supply large plants for immediate effect. CATALOGUE on application.
The Nurseries, Berkhamsted, Herts.

Special Offer of Hardy Conifers.
MORRISON BROTHERS, Aberdeen, having a large stock of the above, will be glad to send, carriage paid to any address, 6 1-yr. transplanted Plants of each of the following fine sorts for £4 10s., or 12 of each for £8 :—

ABIES Douglasii	PINUS contorta
,, Douglasii glauca	,, Coulterii
,, Engelmanni	,, deflexa
,, Hookeriana	,, flexilis
,, Menziesii	,, insignis
,, Mertensiana	,, Jeffreyii
,, orientalis	,, Lambertiana
,, Schrenckiana	,, monticola
CEDRUS atlantica	,, muricata
,, Deodara	,, parviflora
,, Libani	,, ponderosa
CRYPTOMERIA elegans	,, tuberculata
CUPRESSUS Lawsoniana	RETINOSPORA filifera
,, ,, erecta viridis	,, obtusa
,, ,, lutea	,, pisifera
,, macrocarpa	,, plumosa aurea
PICEA bifolia	,, squarosa
,, concolor violacea	THUJA gigantea
,, magnifica	,, Lobbii
,, nobilis	,, orientalis
,, Nordmanniana	,, Vervaeniana
PINUS aristata	THUJOPSIS dolabrata
,, Benthamiana	,, lætevirens
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,, Cembra	WELLINGTONIA gigantea

Being able to offer most of the above varieties by the 1000, will be glad to make special offers to large buyers.
Also a large stock of Seedling and Transplanted FOREST TREES.
Priced CATALOGUES may be had on application.
Forbesfield Nurseries, Aberdeen.

To the Trade.
MAGNUM BONUM POTATOS.
H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.
Seed Growing Establishment, Wisbech.

SUTTON'S FLOWER SEEDS

ARE THE BEST.

	s.	d.	s.	d.		s.	d.	
CYCLAMEN ..	1	0	2	6	and	5	0	per packet.
GLOXINIA ..	..		2	6	,,	5	0	,, ,,
PRIMULA ..	1	6	2	6	,,	5	0	,, ,,
BALSAM ..	0	6	1	0	,,	1	6	,, ,,
CALCEOLARIA	1	6	2	6	,,	5	0	,, ,,
CINERARIA ..	1	6	2	6	,,	5	0	,, ,,
PHLOX	0	6	1	0	,,	2	6	,, ,,
AURICULA ..	1	0	2	6	,,	5	0	,, ,,

And all other kinds.

SUTTON'S FLOWER SEEDS

POST FREE.

SUTTON & SONS,
THE QUEEN'S SEEDSMEN,
And by Special Warrant to
H.R.H. THE PRINCE OF WALES,
READING.

STRONG FOREST TREES.
ALDER, 3 to 4, 4 to 5, and 5 to 6 feet.
BEECH, 2 to 3, 3 to 4, 4 to 5, and 5 to 6 feet.
OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
PINUS AUSTRIACA, 4 to 5, 5 to 6, and 6 to 7 feet.
The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
JOHN HILL, Spot Acre Nurseries, near Stone, Staffordshire.

New Lilies.
TWELVE LILIUM SPECIES, good bulbs, 12s. This is a fine, new, and as yet unnamed species from the Rocky Mountains. The flowers are large, brilliant red, with yellow stamens; a grand addition to its class. Only a few have been imported by J. H. L. Carriage free on receipt of Post-office Order. LIST of other choice Lilies free.
J. H. LEY, Royal Nursery, Croydon.

To the Trade.
NEW ROSES for 1880.—Best thirty varieties, including Bennett's Pedigree and a choice selection of Tea Roses. Strong plants, in 4½-inch pots, now ready.
Descriptive Price LISTS post-free on application.
CRANSTON'S NURSERY and SEED COMPANY (Limited), King's Acre, near Hereford.

VIOLAS, 20,000 fine strong plants :—
,, cornuta, white, } 5s. per 100, 45s. per 1000.
,, ,, Queen of Blues, }
LETTUCE, strong autumn sown :—
,, Siberian Cos, } 7s. 6d. per 1000.
,, Giant Brown, }
Cash only. Carriage and package free to London.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

MAGNUM BONUM POTATOS.—A splendid sample of the above, grown from Seed direct from the raiser (Mr. Clarke), price 7s. 6d. per bushel of 56 lb., free on rail, sacks included, on receipt of P.O.O.
H. T. BATH, Seedsman, &c., 80, High Street, Lymington.

Illustrated Catalogue of Ferns.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

PLANTING POTATOS.—Fine samples of the following, at moderate prices :—
PATERSON'S VICTORIAS,
SNOWFLAKE,
SCOTCH CHAMPION;
Also PRICKLY COMFREY.
JOHN AND GEORGE McHATTIE, Seed Merchants, Chester.

Gloxinias.
TWELVE GLOXINIAS (new and beautiful), 12s., selected from sixty of the finest novelties of the last three years. Fine bulbs to produce plenty of flowers in two months if potted at once. A few extra strong, 21s. per dozen. One-yr.-old small bulbs, 6s. per dozen. All carriage paid.
JOHN H. LEY, Royal Nursery, Croydon.

Remarkable Clearance.
BUNDLE of FLOWER SEEDS, containing 100 Separate Packets, 2s., carriage paid; Half, 1s. 3d. If not worth six times the amount, or if unsatisfactory, money returned. Agents wanted everywhere, immediately, to fill up spare time.
W. H. HOWELL, Seed Merchant, Flackwell, High Wycombe.

Vines—Vines—Vines.
JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, has still on hand a fine Stock of Fruiting and Planting CANES of Muscat of Alexandria, Bowood Muscat, Mrs. Pince, Gros Guillaume, Burchardt's Prince, and Madresfield Court. Also Planting Canes of several other varieties. CATALOGUE free. The Trade supplied.

Stock Plants.
GERANIUMS.—Stock Plants of New and valuable Geraniums with cuttings, for cash.
The magnificent new Silver-edged Geraniums, with grand flowers of all colours, strong plants 4s. 6d. per dozen, 25s. per 100, packed and put on rail. Strong rooted cuttings of all the best sorts 3s. per dozen, or 18s. per 100, by post. Cuttings 10s. 6d. per 100, post-free.
LISTS free on application. P.O.O. payable to
CHARLES BURLEY, Nurseries, &c., Brentwood, Essex.

PICOTEES, best named varieties, 12s. per dozen pairs.
CARNATIONS, Selfs, various colours, 5s. per dozen.
PANSIES, named, 4s. per dozen. All strong, healthy plants.
Terms to the Trade.
SAML. HARTLEY, Headingley Nursery, near Leeds.

FERNS.—100 Rare and Beautiful, 42s., or fifty at the same rate—pretty plants in small pots, to grow on for Winter Decoration or Cutting. Many varieties rarely to be met with except at 3s. 6d. or 5s. each, including Adiantum Farleyense, Pteris Leyii, &c. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers to the Trade, PALMS, per 100, in store pots:—Areca rubra, 30s.; Bactris Binotii, 60s.; Chamærops excelsa and humilis, 8s.; Cocos insignis, 40s.; Cocos Weddelliana, 100s.; Corypha australis, 12s.; Geonoma Schottiana, 80s.; Latania borbonica, 10s.; Pandanus utilis, 20s; Phœnix reclinata, 10s.; Phœnix tenuis, 10s.; Seaforthia elegans, 25s.; and Aralia Sieboldii, 6s. FERNS, in small pots:—Adiantum cuneatum, 30s.; Cibotium regale, 80s.; Lomaria gibba, 30s.; Nephrodium cristatum, 40s.; Pteris serrulata and cristata, 30s. PRIMULA, acaulis alba plena, luteo plena, lilacina plena, and Arthur Dumoulin, 100 strong plants, twenty-five of each sort, at 50s. ARUNDO DONAX, arg. var., twenty-five for 15s.

Tricolor Geraniums.
ALFRED FRYER offers the following, in Autumn-struck Plants, at per dozen for cash:—Golden Tricolors: Isle of Beauty, 4s. 6d.; Lady Cullum, 3s. 6d.; Macbeth, 4s. 6d.; Mrs. Pollock, 3s. 6d.; Peter Grieve, 6s.; Sir C. Napier, 3s. 6d.; S. Dumaresque, 3s. 6d. Silver Tricolors: Lass o' Gowrie, 3s. 6d.; Mrs. John Clutton, 3s.; Queen of Hearts, 3s. 6d.; Prince Silverwings, 3s.; A Happy Thought, 3s. Package free for cash with order. Post-free for 6d. per dozen extra.
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

THE BEST PLANTING SEASON.
THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient special offers will be made, and CATALOGUES sent on request.
Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

WILLIAM BARRON AND SON'S Descriptive CATALOGUE of Coniferæ, Hardy Ornamental Trees, and General Nursery Stock—also their Rose, Forest, and Fruit Tree CATALOGUE—may now be had on application. A personal inspection of their unrivalled stock solicited. The Nurseries are three minutes' walk from the Borrowash station on the Midland (Derby and Nottingham) Railway.
Elvaston Nurseries, Borrowash, Derby.

SEED POTATOS FOR SALE
MYATT'S PROLIFIC ASHLEAF KIDNEY.
AMERICAN EARLY ROSE.
SNOWFLAKE.
MAGNUM BONUM.
SCOTCH REGENT.
CHAMPION.
FORTYFOLD.
PATERSON'S VICTORIA.
Lowest cash prices on application to
JOHN BATH, 32 & 34, Wellington Street, Covent Garden, W.C.

NEW REGAL PELARGONIUMS.—PRINCESS OF WALES, 1 guinea each. MAID OF KENT, 15s. each.

Mr. WILLIAM BULL is now sending out for the first time the above two beautiful Pelargoniums.

Seven for six New COLEUS, for 1 guinea, viz., Bijou, Duchess of Teck, Empress of Germany, James Barnshaw, Lovely, Royal Purple, and Sensation.

Establishment for New and Rare Plants, King's Road, Chelsea, London S.W.

The Largest Rose Gardens in England

CRANSTON'S NURSERIES, HEREFORD.

(ESTABLISHED 1785.)

The following Descriptive and Priced Catalogues are now published, and may be had free on application:—

DESCRIPTIVE CATALOGUE of ROSES.

DESCRIPTIVE CATALOGUE of FRUIT TREES.

DESCRIPTIVE CATALOGUE of FOREST TREES.

DESCRIPTIVE CATALOGUE of CONIFERS, EVERGREENS, &c.

DESCRIPTIVE CATALOGUE of BULBS and SPRING FLOWERS.

DESCRIPTIVE CATALOGUE of GARDEN and AGRICULTURAL SEEDS

CULTURAL DIRECTIONS for the ROSE By John Cranston. Sixth Edition. Price 2s., free by Post for 27 stamps.

Address—

CRANSTON'S NURSERY & SEED CO. (LIMITED), KING'S ACRE, HEREFORD.

ROOTED CUTTINGS

(Choice Varieties with Names).

FREE AND SAFE BY POST. FREE AND SAFE BY POST.

We have much pleasure in offering the following in well-rooted healthy young plants, and which, by our improved system of packing, can now be sent by post with perfect safety to any part of the British Isles. Customers may depend on really fine varieties only being sent, but the selection must in all instances be left to us:—

	Per Doz. s.	d.
BEGONIA FUCHSIOIDES, a pretty pot plant for the greenhouse or window .. .. each, 6d.	—	
CHRYSANTHEMUMS, large-flowered, incurved, reflexed Japanese and Pompons, very choice varieties	4	0
,, good standard varieties	2	6
COLEUS, from our splendid collection, newest and choicest sorts	5	0
,, good handsome varieties	3	0
DAHLIAS.—Our collection of these is very fine, and includes all the newest and best in cultivation.		
,, Choicest new and select Show and Fancy varieties	5	0
,, good standard sorts	3	6
,, Pompon or Bouquet	3	6
FUCHSIAS, a very fine collection.		
,, new varieties of 1879	6	0
,, choice exhibition varieties, single and double ..	4	0
,, good standard varieties	2	6
GERANIUMS (Pelargoniums), Zonal and Nosegay, new varieties of 1879, Denny's, Pearson's and Lye's	10	0
,, ,, extra choice sorts for exhibition, &c.	6	0
,, ,, good and choice varieties	4	0
,, standard sorts	2	6
,, ,, double-flowered, choicest varieties	4	0
,, ,, Madame Amelie Baltet, beautiful pure white, very double, the finest .. .. each 6d.	5	6
,, silver variegated, Daybreak, &c.	2	6
,, gold and silver, tricolor, and bronze varieties, extra choice sorts	5	0
,, ,, ,, ,, good sorts	3	6
,, Ivy-leaved, in beautiful variety	2	6
,, sweet-scented varieties .. .. .. each 6d.	5	6
MIMULUS, choicest large-flowered, with names ..	3	6
,, ,, in mixture..	2	0
PHLOX, choice perennial varieties, from our splendid collection, with names	3	6
PENTSTEMONS, very fine named varieties	2	6

From Captain Jas De Courcey Hughes, *Rathdowney, Queen's County, October 24.*

"I enclose Post-office Order to amount of account, and am much pleased with the rooted cuttings I got from you. They all turned out well, and made particularly nice shaped plants."

From Robert Boult, Esq., *Halvergate, July 5.*

"I have the pleasure of informing you that the collection of Pelargoniums sent by you to Holland last Autumn, to Mr. V. W. de Villeneuve, was awarded the Gold Medal at the Horticultural Show held this week at Nymegen, Holland."

Cheques or Post-office Orders to

DANIELS BROS.,

TOWN CLOSE NURSERIES, NORWICH.

SELECT INDEX OF PLANTS

The Publisher of the *Gardeners' Chronicle* recommends Subscribers who wish to have extra Copies of the Numbers containing the

SELECT INDEX of PLANTS from 1841 to THE END of 1878,

TO SECURE THEM AT ONCE.

The following is a List of those already published:—

1879.—October 11	1879.—November 29	1880.—February 7
,, 25	December 13	,, 21
November 8	1880.—January 10	March 20, 27
,, 15	,, 24	April 3

Price 5d. each, post-free 5½d.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

The Lawson Seed & Nursery Company, Ltd.

Seed Growers and Merchants

ALSO

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GENUINE FARM SEEDS,

COMPRISING

PASTURE GRASSES, CLOVERS, &c.,

AND

EXTRA SELECTED FIELD ROOT SEEDS.

Catalogues and Special Offers on application.

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Price 3s. 6d., or Gratis to Customers.

The Lawson Seed & Nursery Co. Ld. Edinburgh and London.

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SPECIAL NOTICE.

APRIL and MAY the best Season for Transplanting HOLLIES.

WM. CUTBUSH & SON

POSSESS MANY THOUSANDS OF

VARIEGATED AND OTHER CHOICE HOLLIES,

Varying from 2 feet to 6 feet, bushy, all transplanted in 1878, and will move with splendid roots.

An inspection invited, or Prices, &c., sent on application.

EXTRA FINE BUSHY AUCUBA JAPONICA.

WM. CUTBUSH & SON have a very fine stock of Aucubas, well rooted, and are offering very low. Prices, Sizes, &c., on application.

HIGHGATE NURSERIES, N.; or BARNET, HERTS.

IMMENSE IMPORTATION OF ODONTOGLOSSUM ALEXANDRÆ.

MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 15, at half-past 15 o'Clock precisely,

A GRAND IMPORTATION OF ODONTOGLOSSUM ALEXANDRÆ,

THE QUEEN OF THE ODONTOGLOTS.

The consignment may safely be termed the largest and finest ever offered, being in most splendid condition, and consisting chiefly of masses of unusual size, freely set with healthy short breaks.

THE WHOLE OF THE IMPORTATION WILL BE OFFERED.

The Sale will also include a variety of other ORCHIDS, and a new, very beautiful LYCOPODIUM, brought home by Mr. Freeman, from India.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN. LONDON, W.C.

'A Change of Seed always Pays."

JAMES CARTER & CO., have received a Consignment of the following varieties of AMERICAN-GROWN POTATOS, selected for them from the finest crops of the year:—

SNOWFLAKE
BRESEE'S PEERLESS
BROWNELL'S BEAUTY
LATE ROSE
Lowest Price per Barrel on application.

They are offered in Barrels, weighing about 168 lb. each, as received (as Messrs. CARTER do not Hand-pick these POTATOS, in the usual manner), and they must be taken with any risks and imperfections, and subject to being unsold.

20s. value Carriage Free. | 5 per Cent. for Cash.

Carters

THE QUEEN'S SEEDSMEN,
HIGH HOLBORN, LONDON, W.C.

PEDIGREE ROSES.

The greatest success yet achieved in the production of new Roses is the Stapleford Pedigree Roses.

DESCRIPTIVE LISTS post-free, including the striped Tea Rose American Banner, and the beautiful crimson climber, James Sprunt; this last Rose can only be obtained in England from my establishment.
H. BENNETT, Manor Farm Nurseries, Stapleford, Salisbury.

TO EXHIBITORS.

FOR SALE, the property of a Nobleman who is giving up showing,

THREE MAGNIFICENT SPECIMEN PLANTS,

as under :—

STATICE PROFUSA, in 18-inch pot, 3 feet high, 5 feet diameter.
Considered by many to be the finest specimen of its kind in the country.

ERICA CAVENDISHII, in 20-inch pot, 3 feet high, 5 feet diameter.

PIMELEA DECUSATA ROSEA, in 22-inch pot, 2 feet 6 inches high and 5 feet diameter.

These are three splendid plants, perfectly healthy, and full of flower-buds. Apply to

JAMES HAIN, Crossway House, Holmer, near Hereford.

TEA SCENTED ROSES

For Planting Out or Greenhouse Culture.

Upwards of 20,000 strong, well established plants, in pots.

List and Prices on application to

CRANSTON'S NURSERY & SEED COMPANY, Limited,
KING'S ACRE, near HEREFORD.

MYOSOTIS ELEGANTISSIMA.

NEW SILVER-EDGED, BLUE-FLOWERED FORGET-ME-NOT.

RODGER, McCLELLAND AND CO. are now prepared to send out this sterling novelty, probably the most valuable hardy plant ever distributed. Its habit is dwarf and very free, every leaf being broadly margined with silvery white. The effect of the bright blue flowers upon the white variegation can be imagined, but not easily described. It is quite hardy. The last severe winter has had no effect whatever upon it. Planted in various situations, in damp places and in dry places, in vases frozen through, the result is the same—quite uninjured. As a spring bedding plant is perhaps its special mission, but in partially shaded places it is also invaluable as a summer bedding plant. See *Garden*, March 20.

Good plants, in pots, 3*s.* 6*d.* each; 36*s.* per dozen.
Special prices per 100 and per 1000.
Trade price on application.

64, HILL STREET, NEWRY.

MANGEL SEED.

JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.

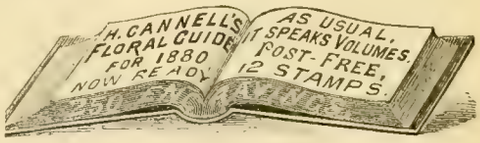
Bardney Manor, Lincoln.

To the Trade.

GARAWAY AND CO. offer :—

PELARGONIUMS, show and fancy, choice varieties, good bushy plants, to bloom in May, in 48-pots, 50*s.* and 60*s.* per 100.
CHRYSANTHEMUMS, large-flowered Japanese and Pompons, in 3-inch pots, 20*s.* per 100.
DAHLIAS, named varieties, in thumbs, 20*s.* per 100.
DELPHINIUMS, best named sorts, single and double, 5*s.* per dozen, 35*s.* per 100.
PYRETHRUMS, double, best named sorts, 20*s.* per 100.
PHLOX, herbaceous, best leading sorts, 4*s.* per dozen, 25*s.* per 100.

GARAWAY AND CO., Durdham Down Nurseries, Clifton, Bristol.



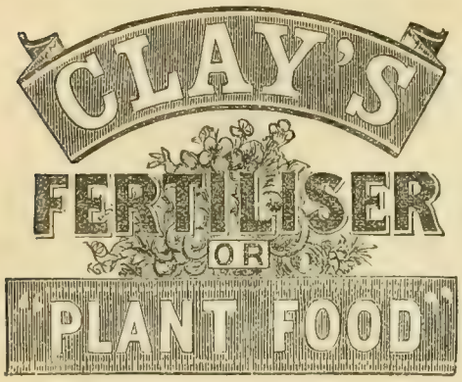
CHRISTIAN ANNUAL, 1880.

(*Extract from.*)

FLOWERS ALL THE YEAR ROUND.

A BAD SEED TIME AND HARVEST have passed away, and we have entered on a new year, which every one hails with new hope. On the part of all who have suffered or been disappointed during the past year in the produce of their flowers there will certainly be more careful looking out for the best seeds this spring than usual; for though the best seed may fail when circumstances are unfavourable, it is the good seed selected with professional skill from year to year from the best strains that weathers the storm, or springs with rebounding fruitfulness to the genial influences of sun and air. We do not know any firm in England of whom we can speak with more confidence in this respect than Mr. HENRY CANNELL, F.R.H.S., Swanley, Kent. He has all the motive of long-established reputation and experience not to fail when an emergency comes, and any one who looks over his *Floral Guide* will see that he is fully prepared for season 1880. In choice Florist Flower Seeds he has been celebrated for a long period, and the result of his careful and continuous selection from seeds of the most perfect type has been universally acknowledged, and have been elaborated with such constant skill and attention from year to year that they have attained a fineity of type and merit which is not to be found in the market. They are of the choicest, and in many instances the entire strains far onward to those usually offered, so much so, that the Council of the Royal Horticultural Society awarded him their large Gold Medal for general *excellency of his; flowers* and the number of plants and seeds that he exports into every nook where the English and foreign posts find their way is wonderful

THE HOME FOR FLOWERS
SWANLEY KENT.



Is now recognised by practical men throughout the United Kingdom as the best Manure that has ever been manufactured.

This Manure is composed of *highly concentrated animal matter*, and is entirely different from Guano, Nitrate of Soda, and all Chemical Manures, which are merely stimulants, and in the end exhaust and deteriorate the soil. It is really a *Plant Food*, and all Crops appear to benefit in a most remarkable manner from its application. It is now being used most successfully

For all Farm Crops,
For all Kitchen Garden Crops,
For Lawns and Flower Gardens,
For Vines and Strawberries,
For Melons and Cucumbers,
For all Soft-wooded Plants,
For all Stove and Greenhouse Plants,
For Camellias, Azaleas, and Gardenias.

Sold in Packets 1s. each, and in Bags,

¼ Cwt.	½ Cwt.	1 Cwt.
7s. 6d.	12s. 6d.	20s.

SPECIAL QUOTATIONS BY THE TON.

Manufactured by

CLAY & LEVESLEY,

174, HIGH STREET, HOMERTON, E.

CARTERS'

MAGNIFICENT LAWNS,

Awarded the only First Prize

AT THE

PARIS EXHIBITION.

CARTERS'

PERMANENT and BEAUTIFUL LAWNS,

From Seed.

Price, in sealed packets, 1s. (post-free, 1s. 4d.), 1s. 6d., and 2s. 6d.; 25s. per bushel.

Sow four bushels per Acre.

Ordinary Lawn Grass	1s. per lb. ;	20s. per bush.
Grass Seeds for Park Lands ..	1s. ,, ;	20s. ,,
,, ,, Tennis, Croquet, and Cricket Grounds,		20s. ,,
,, ,, Renovating Old Lawns		25s. ,,

"How to Make a Lawn."

Write for CARTERS' PAMPHLET on this subject,

Sent Gratis and post-free.

CAUTION.—PARIS LAWNS.—The best Lawns at the Paris Exhibition (as certified by the International Jurors) were formed with Carters' Fine Lawn Grass, and were awarded the First Prize and only Gold Medal. All other competitors, English as well as Foreign, received Second and Third Prizes only.

By Permission of the Hon. Board of Customs.
(Free of Duty.)

CORRY & SOPER'S NICOTINE SOAP

(PATENT).

An effectual and speedy Eradicator of Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight, and all Parasites affecting Plants, without injury to Foliage.

It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.

Especially adapted for the Destruction of Blight on the Coffee Plant.

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general INSECTICIDE.

It has now undergone a thorough test by some of the most practical men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with **Perfect Safety to Foliage.**

It may be used as a Dip or Wash for any description of out or indoor Plants, and as a Dressing for the Bark of Fruit Trees, Vines, &c., it has no equal.

The following is a fair sample of Testimonials, selected from some hundreds lately received from men of considerable experience :—

Messrs. J. & J. HAYES, *Nurserymen, Edmonton, London, N. on Feb 9, 1880, write :—*

"We consider your Nicotine Soap a great boon to all who have anything to do with plants or fruit growing, as it is so very useful for dipping and syringing when it is not convenient to fumigate. You are quite at liberty to make what use you please of this."

Messrs. OSBORN & SON, *The Fulham Nurseries, London, write :—*

"We have given your Nicotine Soap a fair trial, and our experience confirms the character you give it, that it is an unrivalled preparation for killing insect life, without injury to plants."

Mr. B. MALLER, *Burnt Ash Nursery, Lee, London, S.E., on Feb, 21, 1880, writes :—*

"I have given your Nicotine Soap a fair trial, and I must now say it is very satisfactory. I am now having it used freely for syringing, ½ pint to 4 gallons of water, without the least injury to the foliage."

Mr. J. C. SPYERS, *Orchid Grower to Sir Trevor Lawrence, Bt., Burford Lodge, Dorking, on Nov. 24, 1879, writes :—*

"I have now tried in many ways your Nicotine Soap as an insecticide for Orchids, and it has given me great satisfaction," &c.

Messrs. BARNWELL & TILBURY, *Nurserymen, Worthing, on March 19, 1880, write :—*

"Having used Corry & Soper's Nicotine Soap this year, we can with pleasure say it is the most useful insecticide that has ever come under our notice. We have tried it on Strawberry plants when in bloom, and find it most effectual in destroying the fly, whilst it does not in the least injure the plants or flowers, but gives a better and healthier growth to the plants."

Mr. GEORGE ABBEY, *Gardener to C. M. Palmer, Esq., M.P., Grenkle Park Garden, Saltburn-by-the-Sea, on February 20, 1880, writes :—*

"The Nicotine Soap I had from you I find a safe and powerful insecticide, being destructive of every kind of insect infesting plants, and in no instance has any injury been done to the foliage. At a strength of 3 oz. to a gallon of water, I have use it for syringing Peaches during growth for the destruction of red-spider, without injury in any way (only to the insect!—which it instantly kills). At that strength to 4 oz. to the gallon it may, with perfect safety, be employed for syringing every description of fruit tree, whether under glass or outdoor, and a majority of plants, without the least injury, whilst at the same time it destroys aphides—green, brown, blue, and black—thrips, and red-spider. At a strength of 6 to 8 oz. to a gallon of water, I have employed it very successfully for destroying mealy-bug, brown and white scale, both by syringing the plants and applying with a brush, its effects upon the insects making its application gratifying; whilst from its grateful smell, it is pleasant than otherwise. At a strength of 8 oz. to the gallon, I found it a first-rate winter dressing for fruit trees, mealy-bug on Vines, as well as a destroyer and preventive of red-spider, thrips, and aphides. It also destroys American blight."

The following Nurserymen authorise us to say they have used the Nicotine Soap with unqualified satisfaction :—

J. Laing & Co., Forest Hill, London, S.E.; Hawkins & Bennett, Twickenham, S.W.; G. Edwards, Balham, S.E.; James Walton, Lee, S.E.; D. S. Thomson, Wimbledon, Surrey; F. & A. Smith, Dulwich, S.E.; J. Peed & Son, Roupell Park, Lower Norwood, S.E.; G. Brand, Winchmore Hill, N.; Hooper & Co., Covent Garden, W.C.; Lucombe, Pince & Co., Exeter; Edwin Cooling, Derby; T. Frost & Sons, Maidstone; W. C. Drummond, Bath; G. & W. Yates, Manchester; W. Bryant, Rugby; J. Stewart & Son, Dundee; J. Cocker & Son, Aberdeen; J. Charlton, Tunbridge Wells; Edmonson Bros., Dame Street, Dublin, &c.

Sold in jars, 8 oz., price **1s. 6d**; 20 oz., price **3s**; and in tins, 14 lb., price **15s. 6d.**; and drums, 28 lb., price **25s**; 56 lb., price **50s.**; 112 lb., **95s.** Full directions for use upon each package.

And 2 oz. sample jars, **6d.** each.

Full directions for use on each package.

Manufacturers of Tobacco Powder, Tobacco Juice (duty free), Tobacco Paper and Cloth, and Horticultural Sundriesmen.

May be obtained from all Seedsmen and Florists.

Wholesale from the Manufacturers,

CORRY & SOPER,

BONDED TOBACCO STORES

SHAD THAMES, LONDON, S.E.

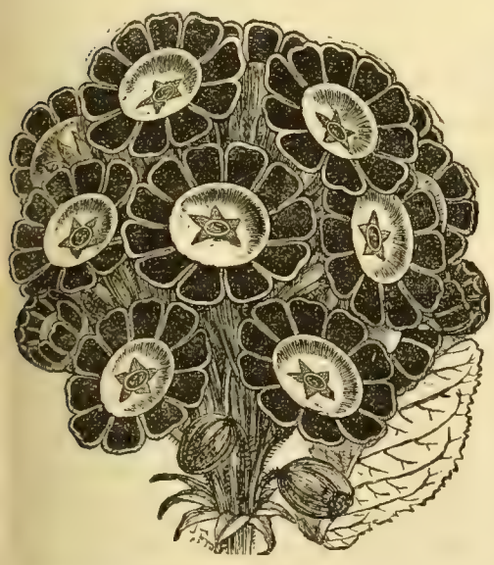
B. S. WILLIAMS'

PRIZE MEDAL

FLOWER SEEDS.

	Per packet—s.	d.
BEGONIA, New Bedding variety, finest mixed	1	6
BEGONIA, Splendid Mixed Hybrids	1	6
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and	1	6
CARNATIONS, finest mixed..	1	6
CINERARIA, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and	1	6
CYCLAMEN PERSICUM, Brilliant (New) .. 5s. and	3	6
CYCLAMEN PERSICUM GIGANTEUM, 5s., 3s. 6d. &	2	6
CYCLAMEN PERSICUM GIGANTEUM RUBRUM (New) .. .. 5s. and	3	6
CYCLAMEN PERSICUM, Williams' Superb Strain, 5s., 3s. 6d, 2s. 6d., and	1	6

PRIMULA SINENSIS FIMBRIATA COCCINEA (New).. .. .. 5s., 3s. 6d., and	2	6
PRIMULA SINENSIS FIMBRIATA, Williams' Superb Strain, Red, White, or Mixed, 5s., 3s. 6d., 2s. 6d. &	1	6



POLYANTHUS, Wiggins' Prize Strain	1	0
PANSY, English Show Varieties, finest mixed 1s. and	1	6
PANSY, Belgian or Fancy, finest mixed	1	0
PICOTEES, finest mixed	1	6
PINK, finest mixed	1	6
VIOLA CORNUTA, Loveliness (new)	2	6
VIOLA CORNUTA, Admiration	1	0

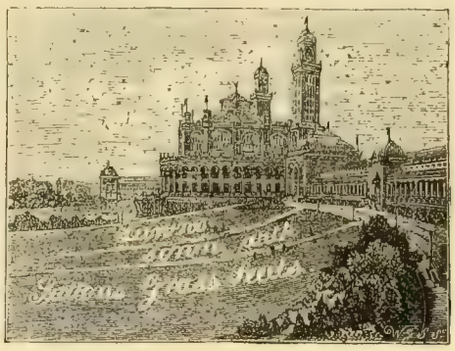
Flower Seeds Post-free.

VICTORIA AND PARADISE NURSERIES,
UPPER HOLLOWAY, LONDON, N.

TO ENSURE

THE BEST LAWNS

SOW



SUTTON'S

MIXTURE OF

FINE GRASSES and CLOVERS.

For making New Lawns, &c., sow 3 bushels (or 60 lb). per acre; for improving the sward sow 20 to 30 lb. per acre.

Price 1s. per pound; 20s. per bushel. Carriage free.

SUTTON'S

PRIZE LAWN GRASS SEEDS

Produced three beautiful Lawns at the Paris Exhibition, 1878 (see above illustration, taken from a photograph), which were awarded a Prize Medal, and thus referred to by *L'Echo Agricole*, November, 1878 :—

"The Lawns shown by Messrs. Sutton's Agent are at least equal in beauty, vigour, and luxuriance to those shown by any other exhibitor. They are of extraordinary beauty and evenness, and form throughout one charming velvety carpet."

From the Rev. T. H. F. HICKS, St. Michael's Home.

"The Grass Seeds with which you supplied me in April last have produced a very good lawn. The herbage is so fine and close that many persons who have seen it have supposed it must have been laid down with cut turf, and would hardly believe it was only sown this year."

From Z. HUNT, Esq., Berecrofts, Earl's Colne.

"I have got a magnificent Lawn with the Grass Seeds you supplied me. It is the admiration of the neighbourhood."

From T. E. GRAHAM, Esq., Abingdon.

"About two years ago you supplied me with some Lawn Grasses and Clovers which have made some of the best Lawns I have ever seen, and I now want to add to them."

From A. E. SEYMOUR, Esq., Teddington.

"The Lawn sown with your seed last September has far exceeded my most sanguine expectations."

SUTTON'S PAMPHLET

ON

Laying Down and Improving Lawns,

Gratis and post-free on application.

Sutton & Sons

THE QUEEN'S SEEDSMEN,
READING.

THE

Gardeners' Chronicle.

SATURDAY, APRIL 10, 1880.

MANURE WATER.

THAT water charged with manurial elements has a powerful influence upon vegetable life is so well known to those who cultivate plants of almost every description as to require no affirmation, yet there is often a wide difference of opinion amongst those who are so engaged as to the value of the different liquid fertilisers or stimulants generally used, some maintaining that it is better to apply manure in a solid state, and that the majority of liquids so used are often only stimulative in their influences, producing little, if any, permanent good. I well recollect the time when this estimate of manure-water, even amongst gardeners, was much more prevalent than it now is; neither is it difficult to account for the difference of opinion that once was so general on the subject, and which to a less extent still exists. The many various solid manures now in use are simply so much food, varying in their influences upon the plants to which they are applied according to the different elements of which they, the manures, are composed, almost as much as do the various articles of diet consumed and assimilated by animals. A given kind of manure may be the best possible for some particular species of plant, affording all the elements requisite to build up and sustain it, and still be of little value to another plant that requires something essentially different for its support. Through the joint result of chemical researches and advanced knowledge in cultivation this is now better understood than it used to be, but the fact is not always realised, that the effect of manure in a liquid state must necessarily be in accord with that of the solid matter which is used to make it. For instance, soot is one of the most exciting stimulants known, quickly becoming exhausted, after which, unless something else is at hand to sustain the exuberant growth thus excited, the plant languishes to a greater extent than it would have done if the extra growth made through the effects of the soot had been non-existent. Guano has a tendency in the same direction, but does not so soon become exhausted, and from the high amount of ammonia it contains, it promotes large and rapid growth, especially in quick-growing plants, more particularly those that are of a succulent nature.

The various animal excremental manures are possessed of fertilising, as well as lasting, properties, in a great measure proportionate to the description of food the animals are fed with: for example, the manure from cattle fed on hay and corn is much richer than if the food consisted of grass and roots; and if a liberal allowance of oil-cake is given to the animals in addition, the strength of the manure will be still further increased. Purely animal manures vary considerably in strength, and their enduring properties in a great measure are ruled by their rate of decomposition. Manures composed of the blood and flesh of animals are extremely

powerful, quick in action, and last well, but not nearly so long as the hair, horns, hoofs, and bones, which are so much slower in decomposing. This is nothing new, as all who have given the least attention to such matters are fully cognisant of it, as also of the fact that liquid manure, prepared in the usual way by the admixture of water with some solid manurial matter, must of necessity possess fertilising elements identical with that of the solid matter to which it owes its fertility, the potency of the liquid being proportionate to the solubility of the solid matter, of course governed by the extent of dilution. It thus follows that whenever liquid manure is given to a plant, it needs to contain such elements as the plant requires to build up its several parts. And I have no doubt that it is through an absence of knowledge, or want of due attention as to the suitability of the manure-water used to the particular kind of plants to which it is applied, and its frequent deficiency in the elements required by the plants, that it does not answer, and consequently is condemned as of little use; whereas, if it had been given to such other species of plants as required the particular fertilising ingredients it contained, the results would have been satisfactory, and the verdict as to the non-value of the fertiliser reversed.

The advantages derivable from the use of manure in a liquid form when judiciously applied, are, under many circumstances, such as not to be had by the use of solid matter. The effect of liquid solutions made from the dung of animals ordinarily used for the purpose, such as that of horses, cattle, sheep, and deer, is sufficiently understood, some giving preference to one, some to another of these. The powerful influence that urine, when applied to plants, exerts on growth, has also long been known; but the way that it is usually employed—more or less mixed with the soakings or drainings from solid excrement—prevents the possibility of a correct estimate being formed of its potency and relative value as compared with other manures applied in either a solid or a liquid form. Some years ago I tried the effects of manure-water made from urine of the various domestic animals—horses, cattle, and pigs—each kept separate and free of soakings from solid fœcal matter. I applied it to plants varied in their character, and ranging over most of the different subjects usually cultivated on farms and in gardens, outdoors as well as under glass. As a matter of course the extent of dilution was varied according to the natural ability of each kind of plant to take strong food. Things like Rhubarb, Celery, Raspberries, Black Currants, Chrysanthemums, Mangel Wurzel, and Cabbage, as will be easily understood, grew vigorously with doses of a strength that would have destroyed slower growing things. I continued the experiment for several years to see what would be the effects on the plants, particularly such subjects as the Black Currants and Raspberries, and in no case did I find any ill-effects where the liquid was given in moderation, and never in a stronger state than the plants could bear. In all cases the urine was considerably stronger, and consequently required more dilution when the animals were fed on dry food than when they had access to plenty of green stuff, as when out at grass, or with as many roots as they could consume. The relative strength stood thus—that from the horses first, pigs second, and cows third. But the strength alone was far from giving the true line as to their comparative manurial value, either for things of an annual nature, such as ordinary garden vegetables, or fruits, or pot plants, whether the latter are soft-wooded and quick growing or hard-wooded and of slow growth. With all, especially those of an enduring character, the cow urine told an unmistakable tale, not alone in the production of wood and foliage unequalled in vigour, but plants to which it was given exhibited a disposition to produce flowers in quantities that I have never seen result from the use of any other liquid fertiliser. Another important matter in connection with the use of this urine is, that plants to which it is applied regularly for a number of years continue to make growth exceptionally strong without any indication of exhaustion such as invariably follows the use of manures that are only stimulative in their effects. This verdict I find is confirmed by several extensive plant-growers whom I have advised to use it; but, like everything of a similar nature, being strong, it must be used with caution—even for such subjects as Chrysanthemums it should be diluted to the extent of something like six or seven parts of water to one of urine, for weaker growing plants still further reduced, and, as with all liquid manures, only given when the plants are making growth. At the time a plant is put out in the open ground, or placed in a pot or other confined space, solid manure, in quantity limited by its nature and strength, as also by the ability of the plant to absorb and assimilate food more or less freely, can be given; but beyond this we cannot go, as if too much manure is present in the soil its effects are identical with those which result from an animal taking food stronger than the digestive organs are able to digest and assimilate. It thus follows that after a time the manure first present within reach of the roots gets exhausted; it then becomes a question of providing more in either a solid or liquid state, the former usually in the shape of surface-dressing, the latter by soaking the soil to which the roots are restricted. The use of solid manure, except in a highly concentrated state, is generally inconvenient for such plants as frequently most need assistance, that is, when they have their roots confined in pots or similar appliances, with no access to food beyond the limited space in which they thus exist; it is then that manure-water becomes the most convenient, and often the most beneficial in its effects, for in this way food is brought immediately within the reach of the whole number of hungry mouths, the feeding fibres, quicker than by the use of solid matter laid on the surface, which takes time to get washed down in the ordinary process of watering.

There can be no question that the time of active growth in both roots and branches, the spring and summer, is the proper season for using manure-water; and where plants exist that want assistance in this way, especially such as are naturally of a hard-

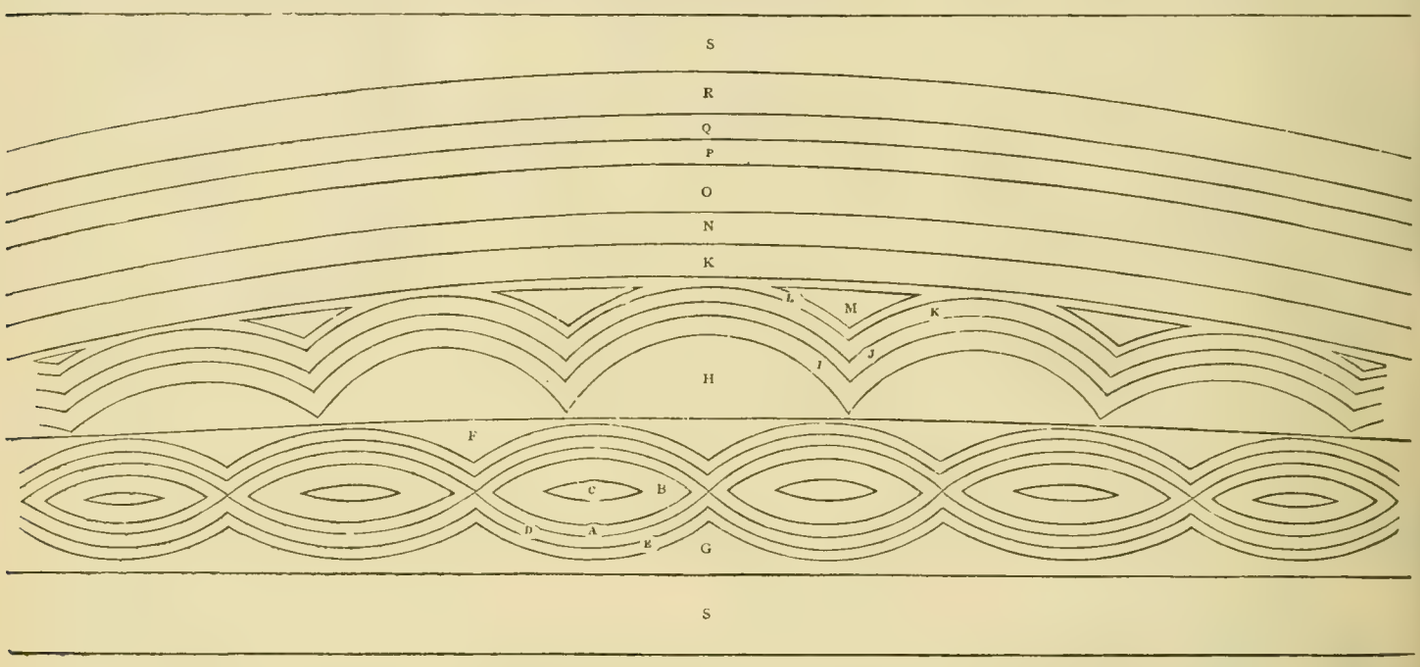


Fig. 77.—Spring Bedding at Belvoir Castle. (see p. 457.)

References to Plan:—A, Euonymus; B, Aubrietia; C, Heath; D, Red Daisy; E, White Daisy; F, Bellis perennis aucubæfolia; G, Myosotis dissitiflora; H, White Arabis; I, Blue Pansy; J, Golden Thyme; K, Red Daisy; L, Pyrethrum Golden Feather; M, Aubrietia; N, Myosotis dissitiflora; O, White Arabis; P, Pansy; Q, Daisies; R, Sedum; S, Grass.

growth commences in either the roots or the shoots, otherwise the first efforts of the shoots will be weak, and no subsequent application of manure during the ensuing summer will in that case strengthen them so as to make the collective growth equal to what it would have been if the food they required had been within their reach at the time they began to grow. A matter requisite to keep in view is, that at the time when any plant is just in the height of its growth it will then bear manure-water being given more freely than either at the beginning or later in the season. Another thing of quite as much importance, and which those who are first commencing to grow any kind of plants will find it to their advantage to note, is, plants have not the power to reject the food that is brought in contact with their roots in the way that manure-water is: whether the water they thus imbibe is sufficiently or overcharged with food, they must take it. If it is too strong the effects are seen either sooner or later, but often when much mischief has been done. It is always well to keep on the safe side—frequent applications are very much preferable to stronger doses even when they are only slightly too strong. As a rule the slower the growth a plant naturally makes, the less able is it to bear manure-water in a strong state. Through the absence of this fact being fully seen and acted upon, there are many plants that are generally supposed to be unable to bear manure-water at all, such as the slowest growing hard-wooded greenhouse plants, Heaths in particular; yet it is in the case of these subjects, more even than stronger rooted things, which can bear partial shaking out and renewal of the soil, that assistance by the use of liquid manure is often most required. It is scarcely necessary to mention that whenever manure-water is used, even to the most vigorous-growing plant, which, consequent upon its strength, is able to bear that which would be death to others weaker, the liquid should always be clear and transparent, vious to water afterwards. *T. Baines.*

THE SPRING FLOWERS AT BELVOIR CASTLE.

There is always a freshness of beauty attached to a garden of spring flowers that there is not to their more gaudy summer rivals. It was not a bright, genial day on March 22 when we visited the far-famed gardens at Belvoir, for the wind was blowing steadily from the north, the air was keen and chilly, yet the scene in the flower gardens was one of matchless splendour. It has been a great point with Mr. Ingram to obtain an early spring display, this year he has admirably succeeded, and is rewarded by having the spring flower gardens quite as bright by the middle of March as we expect to find them by the second or third week in May. Some of the beds were marvels of perfection, so bright and profuse were the flowers. The alpine Rhododendrons, the Saxifraga ligulata, Hepaticas, Cardamine rotundifolia, with its masses of white flowers; Primulas of almost every shade of colour, but specially noteworthy were P. auriculæflora, with its brilliant flowers of purplish-crimson, and P. Golden Gem, fine sulphur; Oxlips of many shades and fine large flowers, improved strains of Cowslips, Aralias, Anemone blanda, with its bright blue flowers larger than half-a-crown; and numerous other plants, formed a galaxy of unrivalled magnificence on the terraces and rock gardens at Belvoir. Mr. Ingram has also been engaged in selecting the best forms, and improving by cross-breeding the various classes of spring flowers. In this respect he well deserves the hearty thanks of the flower-loving public, for the various masses of Wallflowers, Aubrietia, Arabis, Anemones, &c., all bore testimony to the improvement effected by careful hybridisation. What appeared the greatest marvel was the fine masses of Saxifraga ligulata, with the large bunches of pinkish flowers, almost equal in size to a Hydrangea hortensis. Then the Rhododendrons also deserve special mention. R. præcox superbum was just past its best, but for early work it is invaluable. There was also a seedling of the late Mr. Pearson's, with flowers of a bright pink colour; it is very hardy and free flowering. This gentleman always thought at Belvoir it is highly appreciated, and stands first and foremost for flower garden embellishment. Wallflowers are remarkable for their even regular growth. We were too early to see them at their best, yet they gave promise of fine masses of bloom.

As we passed along the various terraces and through the rock gardens, admiring their many beauties, we could not avoid noticing what simple materials are brought together to produce such striking results. The generality of the plants employed are such as can be found in any cottage garden, and may be grown by the humblest subject in her Majesty's dominions. The common red Daisy is grown by tens of thousands, and the mossy Saxifragas and Sedums are extensively employed. Every inch of ground is also covered, not one inch of bare soil being allowed to be seen. Violets also form an important factor amongst spring flowers. The three favourites were Victoria Regina, the best of the single Violets; Marie Louise, very large double flowers; and Belle de Chatenay, pure white double flowers. These were cultivated on a large scale. Wherever we directed our steps they sprung about our path, and the air was redolent with their delicious odour. As we wended our course through the rock gardens we noticed that every niche and cranny contained some object of interest. In one position there would be a fine mass of Myosotis dissitiflora, and this would be overhung by some other plant remarkable either for the beauty of its flowers or foliage. There were fine clumps of Pulmonaria azurea, with its noble spikes of dark flowers; Polygala Chamæbuxus rubra, a dwarf shrub not more than 4 inches high, covered with dark-coloured flowers; Erica herbacea alba, also clothed with a profusion of white flowers.

Several choice shrubs that were found in the park gardens had withstood the severity of the winter uninjured. There was the Azara microphylla and Olearia Haastii, quite hardy; while Ceanothus Veitchianus and C. Gloire de Versailles were slightly injured. The Bambusa Metake proved itself quite hardy by the side of Aucubas that were killed by the frost.

It would be almost impossible to give a detailed description of these gardens, for they extend over many acres of ground. Near the Castle is the Duchess' garden. There may be from twenty to

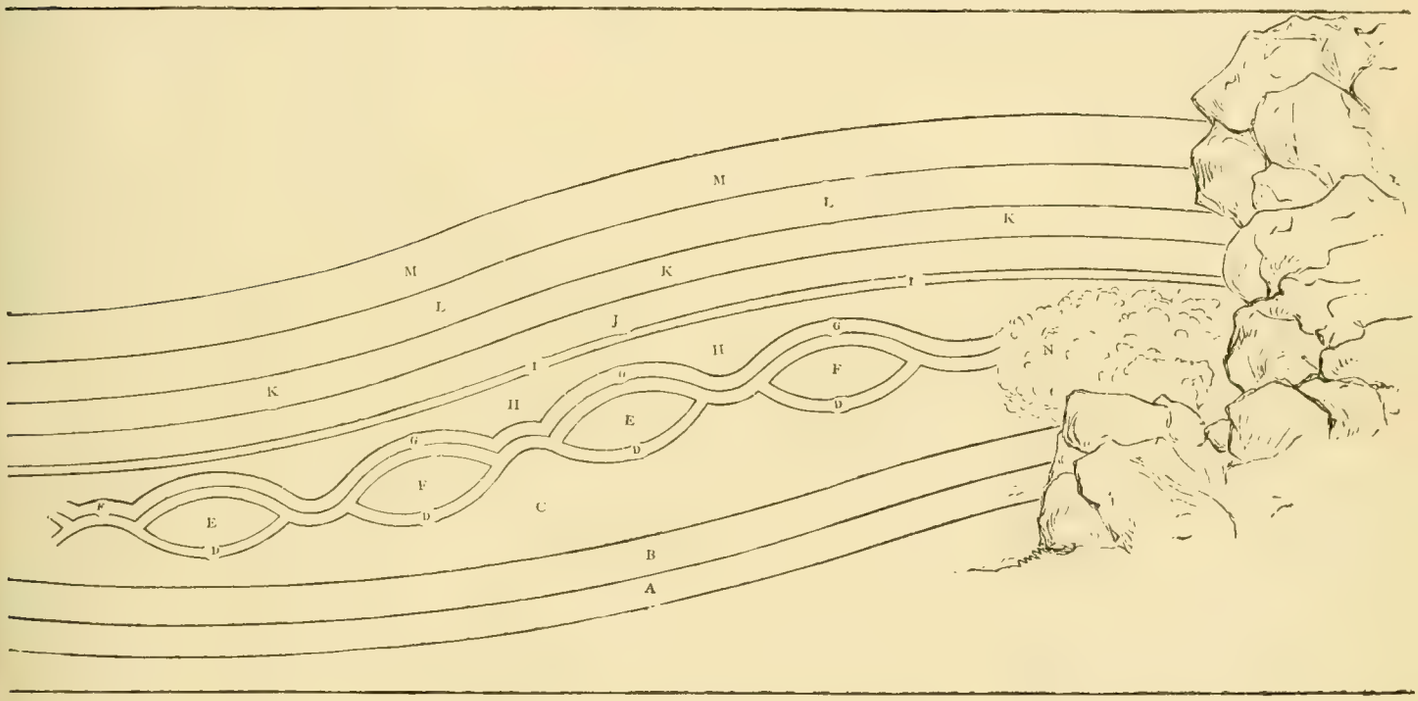


Fig. 78.—Spring Gardening at Belvoir Castle.

References to Plan:—A, Pulmonaria; B, Arabis; C, Purple Pansy; D, Pyrethrum; E, Heath; F, Aubrietia; G, Pansies; H, Red Daisy; I, White Daisy; J, Sedum; K, Arabis; L, Myosotis; M, Red Daisy; N, Primroses.

thirty beds, all well filled with plants and aglow with bright colours.

Turning to the left, down in the dell, is the statuary garden, also furnished with numerous beds, all filled with spring flowers. Wherever we turn the scenery is of the most enchanting character, and reminds one of what we have read of Transatlantic forests. Passing on we come to the garden in the walk. Here we have three terraces, one above another, all in full bloom. The first is planted in chains and links, the second in curves, and the third in ribbon lines. For particulars of planting, see fig. 77. Near at hand are numerous other beds filled with such plants as above enumerated. These are interspersed with clumps of Camellias, and Rhododendron Nobleanum, just opening its bright flowers. There is another terrace, as shown by fig. 78, this again surrounded by masses of bright flowers. As we proceed along the main walk we notice a collection of hardy Climbers on each side the path, and scarcely have we got from the shade of the lofty trees than we come on to what may be called a fairy scene. Wherever the eye turns it rests on dense masses of flowers of every shade, from pure white to crimson and dark blue. On the right is a sloping bank, containing many beds of bright colours set in a framework of living green. On the left is another series of terraces, rising 2 feet above each other. They are sixty-five yards long, and planted with great taste. In the kitchen gardens we noticed extensive herbaceous borders, where thousands of these hardy gems were cultivated with great care. We had a hasty run through the fruit and plant houses, and found everything in excellent trim. In the latter there was one plant that appeared to us most useful either for room decoration or for cut flowers—we refer to the old-fashioned Solomon's Seal, Convallaria Polygonatum. *Q. R.*

TEMPERATURE OF THE SOIL DURING WINTER.

The French physicists, Edmond and Henry Becquerel, took advantage of the intense cold prevailing at Paris last December to study the changes in temperature below the surface of the soil under various conditions. It is a widely-spread belief among farmers that when protected by a layer of snow, crops sown in the autumn are effectually guarded against freezing. This opinion, however, must lose much of its weight in view of these late observations, which we will briefly summarise.

The observations were made by means of Becquerel's electric thermometer, which consists simply of two wires isolated by a coating of gutta-percha, and soldered together at their extremities. Differences in temperature between the two places of junction cause electric currents varying in intensity with the greatness of the difference. A magnetic needle, brought under the influence of the current, registers on a dial these differences. The wires were inserted in the Jardin des Plantes at various depths, varying from 5 to 60 centimetres, and observations were made from November 26 to the close of December. Frost first appeared in the Garden November 26. December 3 snow fell in abundance, and the temperature of the air sank to —11° C. The layer of snow was 25 centimetres deep. December 10 the temperature had sunk to —21°, and commenced then gradually to rise. December 15 the snow was 19 centimetres in depth.

Coming now to the observations made below the surface of the ground under the above circumstances, we find at once a striking difference between the results obtained in soil covered with grass, and those obtained below a bare surface of the ground. In soil protected by grass, before as well as after the snowfall, at all depths below that of 5 centimetres, the temperature never descended below 0° C. Registering 3°.5 at the depth of 5 centimetres on November 26, it slowly sank to 0°.18 on December 14. The presence of grass would appear, then, to effectually protect the earth beneath it from freezing at the lowest temperatures attained in our climate. Quite different results, however, are yielded in the absence of grass. In this case at a depth of 5 centimetres the thermometer sank below zero on November 27. Two days later it registered—2°.6 On December 3, just before the snowfall, it reached its minimum of —3°.17. After being covered with snow it registered —0°.8, and later —1°.4. The snow here appears to act in a certain measure as a screen against changes in temperature, but its conductive properties are still too marked to prevent these changes from being felt sensibly at a certain depth in the earth. In the case of the agriculturist, this slow conduction, when united to the still slower conductive properties of a tolerably thick layer of dead shoots of cereal crops sown in autumn may frequently ensure immunity from freezing to the roots below the surface. *T. H. N., in "Nature."*

THE LATTICE LEAF OF MADAGASCAR.

Ouvirandra fenestralis is becoming one of the rarest of cultivated water-weeds in our gardens, and that it is so is much to be regretted, since it represents a phase of leaf-formation which is unique as well as beautiful. There are still a few places where it may be said to have almost naturalised itself, inasmuch as it reproduces itself by means of seeds, but in many more instances its culture is a struggle nearer akin to failure than to success; and in some cases, try what one may, the plant "dies out" or lingers in a more or less unhealthy state. In some cases the water—or rather foreign matter held in solution by the water—may be the cause of its failing to attain to a luxuriant state of growth; in other cases soil, or temperature, or neglect even, may be the cause of its decadence. This being so I ventured to ask a gentleman who has long been successful in growing the plant for his cultural *régime*, a request which he kindly granted, as follows:—

"Ouvirandra fenestralis.

"It is a matter for regret that this interesting plant is growing 'smaller by degrees and not beautifully less,' even in many of those gardening establishments where we have been accustomed to see and hear of the splendid proportions to which their several individual specimens had attained.

"Having been more or less successful in the growth of the plant, which has been under my charge for more than twenty years, I have been requested to give an account of my method of growing it. To this request I willingly accede, hoping that it may prove of service to beginners, and that it perhaps may cause a few of the 'old stagers' who are still 'masters of the situation' to give a few of their 'wrinkles' to the gardening public. The glass bowl or vessel in which our plant is grown measures 22 inches in diameter by 12 inches in depth. The compost used is three-fourths of good fibrous loam, one-fourth coarse Bedfordshire sand, to which I have sometimes added a little well-decayed manure. I then put it into the vessel to the depth of from 3 to 5 inches, slightly raising the soil towards the centre, where I place the plant, taking care not to break any of the roots or growth; then the whole surface of the soil is covered with Derbyshire spar, quarry stone, or shingle of light colour—broken oyster shells will answer quite as well. The twofold object of this surfacing is to keep the soil in its proper position, and to show to advantage the remarkable formation of the leaf. I next fill the vessel up to the brim with pure rain-water heated to a temperarure of 80° Fahr., using a fine-rosed watering-pot for the operation. The plant is then placed in the East Indian Orchid-house in a nice light position on the north side, the vessel being immersed to about three-fourths of its depth in a warm-water tank filled with Nymphæas, Vallisneria, and other aquatics, with which the Ouvirandra associates very well. One of the principal requirements of this plant is, that it be supplied with a certain amount of fresh water daily.

Some growers empty out the whole of the water once or twice a week. This mode of procedure is, to my way of thinking, very objectionable; for, do it as carefully as possible, even with an india-rubber tube to act as a syphon, or by any other means, it causes a displacement of the soil, which settles on the leaves, and if not very carefully removed soon disfigures them. Another objection to this style of cultivation is, that the leaves and surface-roots of the plant are exposed to the atmosphere for a shorter or longer period, and be this period ever so short it is a condition of things which oft-repeated is almost certain to throw the plant into ill-health. My method of adding fresh water is to give the plant daily a small panful of tepid rain-water, using a fine-rosed watering-can for the purpose, and causing the water to run over the edges of the vessel, and thereby displacing any conferva or dirt that may have settled on the surface of the water.

If at any time any conferva or any sediment should be seen adhering to the leaves of the plant, it must at once be removed as carefully as possible. I must warn growers of this extraordinary plant against increasing their stock (more especially if the plant is in good health and making good growth) by division of the root, as I really believe that to this cause alone may be traced more of the losses and failures of which we hear so much, than to all other errors of treatment. By far the best way of increasing the stock is by allowing the seeds to fall into the vessel and so germinate naturally, as I have known them to do. Still there are times when one has no young plants, and a request is made for a bit of that wonderful plant, which almost amounts to a command, more especially (as in my own case) when the request came from Royalty itself. Resort must then be had to division."

In Madagascar the plant grows in the rivers, and its tubers or rhizomes are used as food by the natives, their name for it being equivalent to "Water Yam." There is another species or variety (O. Berneriana), in which the leafy tissue is more fully developed, the interstices being reduced to very narrow slits rather than lattice-like openings. This last-mentioned variety is generally supposed to be more easy of management than O. fenestralis, but it is suggestive to notice that of the two forms it is the rarest.

With the writer of the above paper I also wish that those who are successful in Ouvirandra culture will likewise set down their *modus operandi*, in order that our garden aquaria may be more generally graced with this dainty fine-foliaged plant. The special points of interest to this end are soil or compost, aspect, shade, temperature, and mode of changing or refreshing the water in the bowl, vessel, or tank, in which the plant is grown. The geological formation whence the water supply is derived is of interest, and the condition of light or shade inimical to confervoid growth should be noted.

The gentleman who has already so kindly acceded to my request uses rain-water—a point worthy of note; and the manner in which the water is refreshed and aërated by rain from the rose of a watering-pot is another "wrinkle" which should not be overlooked. In plant culture much depends on apparently trifling details, which nothing short of experience and great care can rightly apply, so as to be effective under altered conditions, and to this end every atom of knowledge is a great gain. *Urania.*

PLANT PORTRAITS.

Alpine Auricula A. F. Barron, *Floral Mag.*, t. 392.—Ground colour deep maroon tinted with mauve and regularly edged or shaded with rose, centre golden. Mr. Turner.

Arisæma utile, Hook. f., *Bot. Mag.*, t. 6474.—A Nepalese Aroid, the tubers of which are used for food by the hill tribes of Sikkim. The plant was flowered by Mr. Elwes, and is remarkable for its 3-sect leaves, the central segment being obovate cuneate at the base, undulate at the margins, the midrib red. The brownish spathe is covered over like a hood, and the spadix is prolonged into a long thread.

Auriculas, Fancy, *Florist*, t. 508: 1, Captivation; 2, Picotee.—Laced alpine varieties of much merit.

Calochortus Benthami, Baker, *Bot. Mag.*, t. 6475.—A small yellow-flowered species, less attractive than most of its congeners. California. Dr. Wallace, Colchester.

Clematis Fairy Queen, *Floral Mag.*, t. 387.—One of Messrs. Cripps' varieties, belonging to C. lanuginosa section. Pale flesh-colour, with a central band.

Clematis Louise Carrière, *Revue Horticole*, January 1, 1880.—A very pretty seedling from C. Viticella venosa. It is hardy, evergreen, very free flowering, with flowers 2 inches across, bluish-lilac, with a pale central band.

Cymbidium Mastersii, *Floral Mag.*, t. 391.—A beautiful form, with racemes of large white flowers with lanceolate segments, and lip spotted with pale red blotches. Mr. B. S. Williams.

Cypripedium Sedeni x, *Revue Horticole*, December 16, 1879.

Dendrobium bigibbum, *Floral Mag.*, t. 386.

Encephalartos Hildebrandtii, *Monatschrift d. Ver. z. Bef. d. Gartenb.*, tab. 1, 1880.

Eremurus turkestanicus, Regel, *Gartenflora*, t. 997.—A noble species, with linear strap-shaped leaves, and fine spikes of densely packed reddish-brown flowers, the segments of which are edged with white.

Fritillaria Walujewi, Regel, *Gartenflora*,

tab. 993.—Hardy bulb. Flowers nodding, tubular, campanulate; segments pale lead colour, externally purplish-brown spotted with yellow. Leaves all ending in a fine spirally-twisted point. Alatan Mountains. Dr. Albert Regel.

Grape Black Alicante, *Bulletin d'Arboriculture*, Dec. 1879.—The true variety, large both in bunch and berry.

Grapes, *Florist*, January.—1, Muscat of Alexandria; 2, Foster's Seedling; 3, Duke of Buccleuch; 4, Dr. Hogg.

THE WINTER OF 1879-80.

This has been a winter of trials in this particular locality. The only common evergreens pleasant to look upon were Hollies, Boxes, Rhododendrons, and Laurels. All Aucubas and Sweet Bays will have to shed their black shrivelled leaves—the leaf-buds are pushing and unhurt. There will be no flowers on Laurustinus or Arbutus, and both shrubs will require cutting down, if it be not wiser to start fresh with young plants, which we intend to do with Euonymus of sorts. Many of these are killed outright, and all too damaged to risk a second bad summer and third severe winter. As we expected, Griselinia littoralis succumbed at once in December. Myrtles and Laurus nobilis angustifolius on the wall are killed to the ground, and it remains to be seen if they will spring from below. Gum Cistus will die—every week or two another branch gives way. We had not a Snowdrop until late in February, and will again have no Wallflowers or Stocks. A real trial this, not lessened by our having given the Stocks an extra good bed, thus as it turned out insuring their death: but really one can hardly blame oneself for failures when caused by unprecedented seasons. Walking round Edinburgh Castle the other day, I observed the Wallflowers all safe there in the starved nooks among the rocks, and have an idea of sowing seeds about an old wall, and thus making sure of flowers in 1881.

To counterbalance these disappointments all Hellebores have flowered and are flowering extra well, with the exception of H. argutifolius, which is killed to the ground; but this week I see symptoms of its breaking from the root, and will leave the woody stems and leathery foliage to protect it yet awhile. Hellebores seem to have liked the cold wet summer of 1879. The H. niger maximus bed was a sight, and being retarded by the storms in December and January was in beauty all February, and—what I never saw before—the honey-bees were working busily about the flowers on February 11. This gives us a faint hope of seed, and we are once again trying if the seemingly well-set pods will produce seed, and have given protection from frost and wet. The spring flowering sorts are all now in flower, with the exception of H. colchicus, and make a varied and fine show in the spring border. Last winter they failed entirely, as well as the large-leaved Saxifrages—Megasea I see they are now called. S. ligulata speciosa, from Mr. Niven of Hull, and S. ligulata rubra from Belvoir, are the two earliest, and have been fine. S. cordifolia is just coming out, and its variety purpurea, which we got years ago from Dr. Lowe, fine dark lilac. A white variety would be a grand addition, even if it faded to pink like S. Stracheyi; this last was in flower in the cold frame, and is quite beautiful when it first comes out, pure white with bright red stalks and calyx; I do not know if its leaves ever come good—the poor foliage is its drawback. Rhododendron dauricum, R. præcox, and R. præcox superbum, as well as Daphne Mezereum, have flowered beautifully this year. We had not one flower of the sweet Tussilago fragrans, although a special bed was prepared, and flowering crowns selected and well done to. We did not wish to be a second winter without the winter Heliotrope, as some call it, and did our best, but it has failed. Chionodoxa Luciliæ I saw in the Botanic rock garden much stronger than ours in the cold frame, so we shall plant them out, but were afraid to risk the bulbs kindly sent me by Mr. Maw their first year. It is darker and larger out-of-doors. Leucojum carpaticum is just in perfection, growing beside L. vernum, which is long past in seed. I think it is a great advantage to grow this late sort, prolonging the Snowflake as we do the Snowdrop season. The different varieties of Galanthus in the Botanic Garden were very marked—small and large, broad and narrow, early and late. Narcissus are very late, and I expect we shall lose one great charm of this family—the way they succeed each other—for they promise to flower all together. N. minor is the only one in quantity; N. obvallaris used always to be the earliest, but we had lately ten days of bitter east wind and low thermometers (7° to 12° of frost), accompanied by glaring sun—very trying for the spring flowers; even the Saxifrages hung their heavy heads, and young leaves of Primulas are whitened and killed.

These two winters and one summer have spoilt our spring beds and borders, and a thorough upturn and change of plan will be requisite. It was impossible to use a fork or hoe in 1879 in our soil; the result of the leave-alone system is a carpet of Marchantia and Hypnum sericeum: to scrape these pests off does no real good, for the earth is caked below and impervious to air, sun, or rain. So we are longing for our bulb treasures to be up, and get on to our alterations, do away with rings and surfacings, and whatever prevents us loosening the earth between each plant. Looking at our border, the only real advantage of what is called bedding-out struck me forcibly, being the thorough working and justice done to the soil.

While writing the wind has got round to the west, and a skiff or two of rain has made all the difference in the look of the spring flowering plants and shrubs. Dentaria digitata is not half enough grown, or appreciated. I observe strangers set it down as a sort of Honesty, forgetting its being in flower six or eight weeks earlier, and merely seeing a lilac Crucifer in bloom. It is a first-rate spring herbaceous plant we consider. Of Primulas (rather a heart-break here) the denticulata sorts never fail, possibly from their being almost deciduous, and their long roots are kept cooler in our light soil. P. kashmiriana has stood perfectly and is in full flower, also P. rosea. P. capitata we did not venture out of the frame, but I saw it all right in the Botanic Garden. Auriculas, too, from being mulched after the first severe storm, are promising well, while the common single Primroses, with the exception of MacNab's red, are dwindled away, as well as hose-in-hose of sorts, and the fine coloured Polyanthuses. The laced sorts are lasting better, but then they were seedlings, and I suppose we must just make up our minds to be satisfied with seedlings and give up propagating by division. This is another chronic trial, not merely one of winter 1880, for it is aggravating to raise or get a flower that pleases us, and increase it to a good stock and then off it goes. We used to have beds and edgings of P. helvetica and nivalis (helvetica alba?), and now merely have them; ditto double Primroses, eleven sorts; even Cowslips disappear.

We have had to take out our hedge of Rosemary where backed by the wall, and Lavender, and all our Thyme edgings—seven sorts, all equally damaged; and our plans have to be altered for this summer, and a fresh stock propagated for winter. We cannot do without Thymes. We find Dog-tooth Violets do better and increase quicker than any of the other bulbs planted in the grass banks; the leaves are as beautiful as the flowers, and keep much longer fresh and deep marked than when in the borders.

To sum up, we have more deaths to record this winter than last, and sundry herbaceous plants have not as yet appeared, but we are only this week fairly pruning our Roses (terribly cut down) and cutting over the herbaceous plants and forking-in our leaf-mould mulching, hoping to be ready for dividing and planting our hardy treasures, still safe in frames, when April weather sets in. *F. J. Hope, Wardie Lodge, March* 30.

FLORA OF THE NEIGHBOURHOOD OF BRISBANE.

Various recent publications in Australia indicate that botany is gradually becoming a favourite pursuit in that country; and fortunate our Australian cousins are in possessing so early in their history a general Flora of the whole country as a basis for their labours. The Rev. J. E. Tenison-Wood contributes to the last volume of the *Proceedings of the Linnean Society of New South Wales* an enumeration of the flowering plants and Ferns found within a radius of twenty-four miles of the city of Brisbane, preceded by an analysis of the constituents of the flora of the district in question. At present little is known of the range of species in Australia; but exhaustive local lists, like the one under consideration, will afford the required information. With regard to the flora of the Brisbane district, the author says, "We have, both in genera and species, a certain amount of world-wide forms; and these are for the most part species which are rich in individuals as well. If we were, for instance, to take away the grasses, Ferns, sedges, and rushes from the Brisbane flora, its connection with the flora of other parts of the world would seem to be very slight, but in the absence of such members of the flora the aspect of the country would be a desert indeed. Take them all in all, therefore, our resemblances are greater than our differences, and this must limit our notions of the peculiarities of the Australian flora." This is what one would expect from the position of Brisbane, which is so nearly tropical that the Asiatic element enters largely into the indigenous vegetation. How rich and diversified the flora of Brisbane is may be gathered from the total number of species and the relative number of genera and species. Hitherto 1228 species have been observed, and these are referred to 633 genera, belonging to 123 natural orders. The following orders are the most numerous in species:—

	Species.	Genera.
Leguminosæ	115	51
Gramineæ	99	49
Cyperaceæ	79	19
Filices	60	25
Orchideæ	59	31
Compositæ	58	41
Myrtaceæ	53	15
Euphorbiaceæ	40	24
Liliaceæ	26	20
Rubiaceæ	24	15
Rutaceæ	22	13
Epacrideæ	21	10
Proteaceæ	21	11
Totals	683	324

Ferns constitute a prominent feature in this flora. None of the species appear to be confined to the district. The proportions of woody and herbaceous species is not given.

Eucalyptus is represented by sixteen species, Acacia by twenty, Leucopogon by eight, Loranthus by eight, Pultenæa by eight, Melaleuca by seven, and Persoonia by six. Panicum is represented by twenty-one species, and Andropogon by seven. Dendrobium numbers no fewer than eleven species.

THE MISTLETO ON THE OAK.

It is necessary to my argument that I should show the relation of the Mistleto to the religion of the Druids. In order to do this I must use the *golden key*, of which I have spoken elsewhere, for this was the *aureus ramus* (the "golden branch" of Virgil) * than which Pliny (xvi. 95) † assures us *the Druids held nothing more sacred.*

In order to understand the mystical secret involved, we must follow with some attention the proceedings of the Druids in gathering this sacred plant.

A recent French writer describes thus the aspect of Gaul, which to a considerable extent must also have been that of Britain in those days ‡:—

"Instead of a cultivated country, it presented to view only an immense forest with thickets almost impenetrable, from the bosom of which arose, like rounded domes, Oaks of secular antiquity.

"Nevertheless, in this immense forest there existed vast openings—the dry lands of Champagne, where the chalky soil would not support abundant vegetation, or the sterile districts of Brittany, where cromlechs and stones unhewn by the tool of man § presided over human sacrifices. Here and there were fortified camps, whither the population retired with their cattle."

In Britain vast fortifications encircled the summits of the downs, as we see abundantly from remains still existing.

"The area of Stonehenge (or of Avebury?) was looked upon as a quasi-island in the midst of the expanse of Salisbury Plain. In the north of Gaul the people availed themselves of real islands, and probably of lake dwellings.

"In the depth of these sombre forests the Druids had

* Virgil, who was born near Mantua, in Cisalpine Gaul, had probably some acquaintance with the tenets of the Druids; at all events, he makes the golden branch, sacred to infernal Juno, the means of gaining access to the infernal regions. (*Æneid*, lib. vi.)

† Nihil habent Druides (ita suos appellant magos) visco et arbore, in quâ gignatur, *si modo sit robur*, sacratius. Jam per se roborum eligunt lucos, nec ulla sacra sine ea fronde conficiunt, ut *inde appellati* quidem interpretatione Græcâ possint Druides videri, &c. Lib. xvi., 95.

‡ *Le Gui de Chêne et les Druides*. E. Magdaleine, 1877.

§ The writer refers to Deut. xxvii., 5 and 6: "Thou shalt not lift up any iron tool upon them."

their retreats and their principal sanctuaries. They consecrated them to their divinity, and gave the name of God to that *internal something* (*secretum illud*) of which they were naturally cognisant (*qu'ils sentaient par la piété*).*

"They were forbidden to cut or to lop these sacred forests. They believed them inaccessible to wild animals, impenetrable to the storm, and safe from the lightning. The earth was believed to tremble, and serpents issuing forth from its recesses to coil themselves round the trees. These forests were arsenals. The spoils of their enemies were here deposited under the care of the ministers of religion. These sacred woods were called virgin forests (*castum nemus*), and they formed sanctuaries, the privileges of which were afterwards attached to the churches.

"We see, then, that all was consecrated. They had only to retreat within themselves to be conscious of God, or if their souls 'mingled with the universe' of outward things it was to be conscious everywhere of Divinity.

"But this gave them no peace. It was a religion of fear, and consistent with the grossest immorality. Nevertheless, there was felt a need of reconciliation with this awful mystery above them. It needs be that heaven and earth should in some way be brought together. There was a pure and serene heaven above them if they could share its blessings.

"This meeting-point was found whenever the Oak, itself a symbol of Taronowy, the God of Thunder, found a celestial visitant in the *æthereal tree* (*Pren awr*), the *tree of the high summit* (*Uchelvar*).

"This tree of pure gold (*Pren pur awr*) could not fix its roots in earth,† it must be altogether of heavenly original; and so to find a congenial home on earth it rooted itself into that which was already of congenial nature, the dread Taronowy, the mystic Oak.

"So it was not common Mistleto that would answer the purpose, but it was *the Mistleto upon the Oak*, a conjunction even then rare, and now almost extinct. It was the great object of the Druids to ascertain when this heavenly gift had been given, and to prepare themselves for its reception by fasting and special ceremonies.

As soon as the discovery was made it was the sign of a communication from heaven (*e cœlo missum putant*), and the announcement was made to the Pontiff of one of the three great colleges (of Gaul).

"The next business was to arrange for the collection of the precious plant, and bards were sent forth in all directions to summon the people to the great religious ceremony. The words of the proclamation are believed to survive in the custom which prevails, especially at Chartres, the old metropolis of the Druids, in soliciting presents on the new year with the words, '*Au gui l'an neuf.*'

"The tribes being assembled, with tumultuous joy, at the appointed spot, waited for the clergy, who arrived by torchlight leading the sacrifices. Three Druids of the first class, crowned with Ivy, advanced with slow steps, one carrying the bread intended for offering, the next a vase filled with holy water, and the third a sceptre of ivory, the characteristic mark of the chief Druid.

"The pontiff who was to gather the sacred plant then advanced to immolate the victims and offer the sacrifice. He was dressed in a white robe and a rochet, carrying an ornament somewhat similar to a cross, which was also the custom of the priests of Egypt. He was shod with wooden sandals, crowned with Oak leaves, and wearing a long beard which gave to his countenance a character of mysterious austerity. From his girdle was suspended, by a chain of precious metal, a pruning-knife of gold, having the form of a crescent. Behind the chief priest came the nobility, and then the people.

"When all had arrived at the foot of the Oak three ceremonies had to take place: (1), the offering of the victims and the consecration of the Oak; (2), the gathering of the Mistleto; (3), the distribution of the sacred plant, the sacrifice, and the festivities.

"A triangular altar of wood was constructed round the trunk of the tree (*unity in the circle, and trinity in the altar*), from which the Oak seemed to arise.

"A circular tablet was appended to the tree, on which were written mystic letters signifying (according to Trèmolière) *Dieu père, Lumière souveraine, principe de la vie qu'il donne au monde.*

"The victims, two bulls, were then offered, and a Druid cast upon a fire lighted at each of the angles of the altar a slice of bread on which some drops of wine had been poured, hymns to Teutates accompanying this portion of the ceremony.

"These offerings being completed, the Arch-Druid ascended the tree by means of a ladder, and cut, without touching it, the branch of Mistleto with his golden falchion, allowing it to fall upon a white linen cloth which had never been used, the four corners of which were each held by young Druidesses or by Druid dignitaries. Great care was taken that it should not touch the ground.

"Afterwards took place the distribution of the precious plant. Water in which the sacred Mistleto had been immersed was given to or sprinkled upon the people (*l'eau lustrale*). Then the branches were cut to pieces and divided amongst the assembled tribes in the midst of feasts and addresses."‡ *J. E. Howard, F.R.S.*

* P. Reynaud.

† Ου γαρ αληθειη φυτον ενι χθονι. Oracles, Zoroaster.

‡ The "Pardon of St. Ann" (to which I have seen the Bretons flocking in their picturesque costumes), may well be a "survival" of the above festival of heathenism.

TSUGA PATTONIANA.

The last time this species of Hemlock Spruce was brought before the readers of the *Gardeners' Chronicle* was by Dr. Engelmann at p. 756 on December 13, 1879.

Knowing that Dr. Engelmann was about to publish descriptions of the Californian Conifers, I had been looking forward with no small degree of interest to see how he would treat this species, and much as other writers had misjudged and confounded it with other species, I had great faith that Dr. Engelmann would settle all doubts about it; and although he has not done this in an elaborate manner, nevertheless I am not altogether disappointed.

His description of the plant, together with reference to authorities for name and synonyms, would no doubt surprise many cultivators of the species of American Hemlock Spruce, as under the above name he very faithfully describes the characters of a truly Californian plant, best known in Britain as the Abies Hookeriana of A. Murray.

Having myself been compelled to adopt the view taken by Dr. Engelmann, I beg leave to assign the reasons which led to it, and to do so it is necessary that I should begin at the bginning.

In 1851 Mr. Jeffrey, collector for the Edinburgh Oregon Botanical Association, sent home in case No. 13 cones and seeds of a species of Tsuga which he had found on the Mount Baker range in lat. 49° N., and requested of the Association that the plant might be named in honour of Mr. Patton, one of the members. The name Abies Pattoniana may have been sanctioned by the committee of the Association, but the species, as such, never was described by them from the said consignment of specimens. Seedlings, however, are said to have been raised from it, and are now well known in Britain.

In 1852 Mr. Jeffrey sent another supply of Spruce cones and seeds, accompanied by the following note:—"Abies, No. 430.—Collected October 15, 1852: lat. 42°, elevation 6000 feet, Cascade Mountains.—I forwarded seeds and cones of this species in case No. 3 from Mount Baker range, in lat. 49°, and at the same time suggested that it should be named A. Pattoniana." Shortly after receiving this consignment, the committee of the Oregon Botanical Association described and figured the species as A. Pattoniana in a circular which they distributed to the Association in 1852. That was, I need hardly repeat, the first time that it was figured and described, and that, too, from Mr. Jeffrey's second batch of specimens, as indeed we gather from the said circular itself. So that really Mr. Jeffrey's Abies No. 430 is the true Tsuga Pattoniana, and if it is identical in its specific characters with the one, specimens of which he sent home from the Mount Baker range, lat. 49° N., then he had his original wish gratified; but it is extremely doubtful about its being the same. In the circular already mentioned a brief description of the plant is given, but as it might as well apply to other species it must go for very little. But on plate iv. engravings of the cone and leaves are given, and from appearances they agree with the characters of the A. Hookeriana, Murray, *Edin. New Phil. Journal*, 1855. The leaves particularly agree with those of Mr. Murray's plant, and fully justify Dr. Engelmann's description of them, under the name Tsuga Pattoniana, as being "6—12 lines long, angular, acutish, attenuate at the base, often curved." I have critically examined Jeffrey's Abies No. 430, in the museum of the Edinburgh Botanic Garden, and can testify to it being specifically identical with A. Hookeriana, Murray. I may here be allowed to state that the reason why Mr. Murray so long and strenuously contended for the specific distinction of his A. Hookeriana from that of A. Pattoniana was due to the impression which he had, as revealed in his *Synonymy of Various Conifers*, that A. Pattoniana was originally described and figured from Jeffrey's specimens from the Mount Baker range, lat. 49° N.; and further, it was always with these specimens, together with the seedlings raised from them, that he compared his A. Hookeriana.

It will be seen that I have thus far endeavoured to support Dr. Engelmann in the characters which he assigns to T. Pattoniana, but here I must stop. In his list of synonyms he gives Pinus Pattoniana, Parlatore, in *DC. Prodromus*, in full. Now it is well

Fig. 79.—Forelle Pear. (see p. 464.)

known that Professor Parlatore included under that name the species represented by Mr. Jeffrey's specimens from both the 42° and 49° of latitude; and though he believed that they represented one species, yet his specific description pretty well covers the characters of both. Are we then to understand that Dr. Engelmann follows Prof. Parlatore in the belief that these forms are of one species? It seems doubtful as to what he means, but at any rate in his description of T. Pattoniana he has only described one of the forms. The other, namely, the Mount Baker plant collected by Jeffrey, has been so well described by Dr. MacNab—who by the way also fell into the error of supposing it to be the true Pattoniana—that I cannot do better than quote his description in full:—"Leaves six to nine lines long, irregularly bifarious: margin denticulate near the obtuse apex; upper side yellowish-green with from two to four rows of stomata on each side of the slightly marked central furrow, beneath with six to seven rows of stomata on each side of the middle line." Compare the foregoing particulars with Dr. Engelmann's description of T. Pattoniana already given. The cone comes exceedingly near to that of T. Pattoniana, but to set against this I find a very great difference in their barks. If we examine a plant of each kind, say from fifteen to twenty years old, growing under exactly similar conditions, we shall find that the bark of T. Pattoniana, or the kind lately described as such by Dr. Engelmann, is, from the decaying leaves on the branches and trunk down to the surface of the ground, smooth and of a whitish or light grey colour, or if broken at all is on the trunk near the base in large rounded thick flakes. The bark of the other, from the base of the trunk up to the decaying leaves, is on the contrary dusky, almost black, and regularly broken up into thin shreddy pellicles as though the trunk were furred. So great is this difference in the barks of the two trees that, even if they could not be distinguished by other characters, it is sufficient to for ever separate them as distinct and good species. The plant from the Mount Baker range is, as one would naturally suppose, the hardier of the two; the late autumn growth of the other is liable to injury by early frosts. Nevertheless both are hardy enough in any part of Britain.

The British Columbian species was also re-discovered by Mr. Robert Brown, while acting in the interests of the Oregon Botanical Association, who, some time between the years 1863 and 1866, sent home specimens which were provisionally named Abies Hanburyana and A. Parryana (not the true Spruce now being cultivated in Britain under this name), but which have since turned out to be identical with Jeffrey's plant from the 49° of latitude. So that in addition to Mr. Jeffrey's original specimens of this species those of Mr. Brown can be examined in the herbarium of the Edinburgh Botanic Gardens. This species may have again been found, and seeds of it sent to Britain since 1866, but I think I may safely say that seedlings of it have not been advertised or offered for sale.

The natural position of this species is between T. Mertensiana, Carrière, and T. Pattoniana, Engl., but comes much nearer to the latter than to the former. And although there is the possibility of intermediate forms being yet found somewhere in the extensive and as yet imperfectly botanised region of the Cascade range to link it and T. Pattoniana together, yet until then, as species are now founded, they must be considered distinct; and as the plant from the Mount Baker range has heretofore borne an illegitimate name, and since the A. Hookeriana of A. Murray has been found to be synonymous with T. Pattoniana, to prevent further confusion by the introduction of a new name I would suggest that in the future it may be known as Tsuga Hookeriana, in honour this time of Sir Joseph Dalton Hooker. But should this description of the plant as herein given be considered too imperfect to warrant this or any other name, I still trust that, in the interest of simple science, my suggestion may not be lost on the one who may legitimately name it.

To the fact of this species and T. Pattoniana being little known, or only known by a few, and to their decided merit as ornamental trees (and as such deserving of extensive cultivation), I attribute my hope of being excused for these rather lengthy notes. *George Syme, Castleton Botanic Gardens, Jamaica.*

Fig. 80.—Flemish Beauty Pear. (see p. 464.)

Mackaya bella.—We are glad to note the fact, for the encouragement of those who have not succeeded in flowering this lovely plant, of which we gave an illustration in May last, that it is now in bloom in the gardens of J. E. Wilson, Esq., at Edgbaston, Birmingham. We have a spray before us, kindly sent by a correspondent, but no details as to the mode of culture adopted.

The Poultry Yard.

Gender of Hens' Eggs.—Clever stupid people are always asking foolish questions about things that no one can give positive or reasonable answers to, and equally clever stupid people are always ready to give their replies, which are never of the slightest value. This question, as to the probable gender of eggs, is one respecting which some persons are always wanting to obtain unreasonable information; and, in response to one such querist, this is a sample reply:—"Hold an egg up to the candlelight; if the air-space is seen at the top, in the broad end, it will produce a cock bird; if a little on one side, it will be a hen."

Now this is intolerably stupid, because there can be no possible connection between the position of the air-chamber and the sex of the unincubated chick. Any such divergence in the air-chamber is but the result of some accident, whilst the rule is to find it exactly at the top of the egg. That eminent naturalist, Professor Owen, gives us some interesting information upon the structure of the egg, showing that whilst the air-chamber remains in the same position in the egg until the newly-hatched chick exhausts the air for its own purpose, the position of the yelk is a changing one, as, whatever be the position in which the egg is placed, the generative orbital portion always comes uppermost, and is in that respect as infallible in its action as the needle is to the magnetic pole. This is a wise order of Nature, because the result is to bring the yelk, and specially the most vitally organic portion, or top of it, to the surface. And as in the nest eggs invariably lie on the side, the warmth of the sitting hen comes in immediate contact with the life-germ, and natural incubation proceeds. In all this, however, there is no allusion to, or connection with sex; indeed, sexual characteristics in the fowl are not apparent until some time has elapsed. It might be some advantage to know beforehand what will be the sex of the coming chicks, but unless any one is endowed with second-sight means of telling are quite out of the question; and therefore the less seldom such queries are put the better for the propounder's reputation. *A. D.*

Florists' Flowers.

The Auricula and Other Flowers.—The great progress made by Auriculas during the last week or two reminds us that the exhibitions are near at hand. The exhibition to be held at South Kensington on April 20 promises to be the best exhibition of Auriculas ever held in England. Besides an increase in the classes over that of previous years, there will also be a series of prizes offered for seedlings in all the classes; and by the accounts received from the northern districts it seems that the number of high-class seedlings likely to be exhibited is very large indeed. Mr. Woodhead, a very enthusiastic cultivator, will flower one thousand seedlings from good crosses; and I hear that his plants are very forward this year, and will most likely be in time for the exhibitions. The Rev. F. D. Horner, and Mr. Benjamin Simonite, have exhibited such good seedlings in past years that we look forward to seeing yet better things this season. From Wales there will probably be more than one competitor, and Mr. Llewellyn is not likely to be in the background with high-class seedlings. From Lancashire I do not hear much; but that county, celebrated for Auriculas, is not likely to be behind, and the silence may be ominous. To the Auricula fancier the raising of seedlings creates a more intense interest in the plants; and if the best varieties are chosen to be crossed for seeding from, there is certain to be two or three first-rate varieties in every thousand.

For the last few years it has been very difficult to bring forward the best varieties in cold frames. Owing to the genial weather there has been no difficulty this year, and I have not as yet thought it desirable to place the plants in the house. Even Mr. Woodhead, in the highest and coldest district of Yorkshire, fancies that some of his best flowers will be over before the date of the Manchester exhibition.

In the report issued by the committee of the Southern section of the National Florists' Societies, it is stated that one object of the exhibitions is to demonstrate the peculiar adaptability of the Auricula, the Carnation, and Picotee, to the circumstances of the residents in or near large towns and cities. On one occasion I paid a visit of inspection to the col-

lection of the Rev. F. D. Horner, Kirkby Malzeard, at the blooming season, and went on the next day to Sheffield to see Mr. Simonite's collection; and I must say that the plants, well within the range of Sheffield smoke and its sulphurous atmosphere, were as healthy as those in the clear atmosphere of Kirkby Malzeard. It is the same with the Carnation and Picotee. Mr. Simonite has carried off the principal prizes at the National exhibitions at Manchester on more than one occasion. Mr. Dodwell's garden at Clapham is quite within the London atmosphere, and nowhere is there to be seen a healthier collection of plants than he has. Last year they were superior to our own in the clearer atmosphere of South Essex, and quite as good as Mr. Turner's in the still more favourable conditions to be found at Slough.

Since writing the above remarks, I have received reports from several amateurs in the South, and their belief is the same as my own—that the best flowers will be over before the date of the show on the 20th. Laced Polyanthuses usually flower earlier than the Auriculas, and we cannot expect that they will be at their best. Our common Primroses are mostly over; and by no manner of scheming can the bulk of them be kept back a week longer. The same may be said of the species, especially the Himalayan section. We hope to have some of all the above from the North and Midland Counties, as they are from one to two weeks behind us. *J. Douglas, Loxford.*

VEGETABLE PRODUCTS OF SHANTUNG.

In a report on the products of Shantung it is stated that besides the fruits usually cultivated in China, Strawberries have been introduced by Europeans, and are found to thrive well; though the natives have not taken to their cultivation. Raspberries grow wild all over the hills, but have not been admitted into the orchards, owing, it is stated, to the native ignorance of horticulture generally, and of grafting in particular. The only fruits of good quality are Walnuts, Grapes, Plums, and Melons. Millet is grown on a large scale, and is of two kinds. Siao-Ku Millet is entirely consumed locally, its stalks, now that the Wheat-straw is manufactured into braid, is the winter mainstay for feeding beasts of burden and plough-oxen. The larger Millet, Kaoling, being largely composed of heat-giving oil, affords a cheap diet to the poorer population; it is also distilled into an inexpensive spirit containing a large proportion of alcohol. Its stalks are of the highest value, and supply the place that Bamboos fill in the South. They form the fences of gardens and fields; they are universally used as laths in the roofs of buildings, both native and foreign, and of the rude but effective native hothouses for rearing winter Cabbages and preserving delicate plants. They are likewise the principal fuel used for cooking and for warming the brick couches on which, as well as in the east of Russia, natives live and sleep during the cold months. No Millet is exported.

Of all the exports of the country that of straw-braid is in the most flourishing condition; being grown in the Lai-chow department, Chefoo is the natural port of its exportation. Increasing steadily every year, it will probably soon be the mainstay of the export trade of this port. The export of straw-braid, which in 1873 was only 1,363,054 lb., had increased in 1877 to 2,730,606 lb., and in 1878 to 3,736,268 lb.—value, £231,181; besides which 42,296 straw hats, of the value of £1057, were exported. Vermicelli, it is said, is made in large quantities, and its production has increased, *pari passu*, with that of straw-braid. In the immediate neighbourhood of Chefoo an extensive manufacture is carried on—masses of it glistening white in the sun as it hangs up to dry form a marked and not unpleasing feature in the autumn. The Shantung Cabbage forms an important item in the food of the population. The stunted grass of the hills does not even suffice for fodder for the beasts of burden and the few plough-oxen, consequently there is but little pasture for sheep and cattle. The eating of beef is forbidden by the Buddhist religion, is denounced by tracts spread abroad by benevolent societies, and is in times of distress vigorously punished by the secular arm; mutton and goats' flesh are luxuries that few can afford to indulge in, and though pigs and poultry are reared to a great extent by the peasantry, they are only eaten during festivals. To supply the place of meat the natives indulge in highly-flavoured fish and seaweed, in small quantities, and in dried Shantung Cabbage; the stalks, containing more nourishment than the leaves, are preferred. These vegetables are reared in winter in rude hothouses; each Cabbage has a small hut over it, the roof of which, made of the invaluable "Kaoling," or Millet stalks, is covered by about 6 inches of earth; each hut has a doorway to the south, made of paper, which is carefully opened on warm, and closed on cold days. No spot on earth is more bountifully supplied by Nature with all that renders a country rich and prosperous than Shantung; the soil, naturally fertile, instead of being, as is the case, periodically parched by droughts, would be regularly visited by rains and snows were it not that the hills, which might be covered with moisture-producing trees, are bare and barren, every atom of wood, except that in the neighbourhood of temples and a few orchard trees, being ruthlessly cut for fuel as soon as it grows.

Garden Operations.

KITCHEN GARDEN.

Culinary Herbs.—The quantity of certain kinds of herbs which is consumed in the culinary department of an ordinary establishment in the course of a year would scarcely be credited by any one not practically acquainted with the demand, which in the case of some subjects, such as common and Lemon Thyme, winter Savory, and Marjoram, Sage, Mint, Tarragon, and Parsley, is not of an occasional character, but almost of daily occurrence. The frequent plucking to which the plants are thus made liable, in course of time so debilitates and shortens their existence as to necessitate provision being made in the way of new plants every year. For this purpose April is unquestionably the best period in the whole year. In a class of subjects so diverse in nature and requirements as these, which include both hardy and tender annuals, as well as biennials and perennials, the mode of propagation and the process of cultivation necessarily will vary considerably. In the case of hard Thyme, winter Savory, and Sage, we make a rule of sowing a small quantity of seed in a pan or box every year at this time, and when the seedling plants are fit to handle we prick out as many of them as we are likely to require either under similar conditions or in a cold frame, where they remain until such time as they are ready to be put out in the places selected for their permanent quarters. We also prefer to raise Hyssop and Fennel by the same means and under similar conditions, and Borage and Chervil likewise, but these should be done in a natural way out-of-doors. The latter subject should be sown now, and again in the autumn; by so doing a supply will be insured throughout the year. Tender annual kinds, as Sweet and Bush Basil, Knotted Marjoram and Summer Savory, require to be raised in pans or boxes in heat; these subjects can be grown more efficiently under glass than otherwise, and therefore the ordinary supply for drying purposes should be cultivated at those times when the glass conveniences can be best spared for the purpose.

At many places Basil is required to be had in a green state the greater part of the year; for this end occasional sowings should be made, and the plants grown in houses or pits suitable for it. Parsley, as a matter of course, comes in the herb class, sowings of which should be made periodically to meet the requirements. Mint, Tarragon, Pennyroyal, Marjoram, and Lemon Thyme are readily increased by means of dividing the roots, which when effected can be planted in the appointed places at once. Tarragon roots are wanted for forcing: an additional supply of these, to meet this demand, will therefore be necessary, and this likewise will be the case in regard to Mint. This subject delights in the richest kind of soil, and for the purpose of having it out-of-doors as early as possible a warm sheltered place should be given up to it. The growth in plants which are intended to be forced the following season should be allowed to proceed and develope itself unchecked. The most marked point to be observed in the cultivation of herbs is to give them a sunny position, and soil of a somewhat friable and rich nature; while that of gritty character will be most suitable for the hard-wooded section of these plants.

Ordinary work of every description will increase by the force of favourable influences, such as we are providentially now experiencing. Asparagus plants are now about fit for removing from seed-beds to more permanent places. We fully described in a recent paper under this head the best method of planting this important vegetable. The main crop of Potatos should also be got in without much further delay. We are still of the opinion that whole sets of moderate size are preferable to any others. In planting the distance apart of both rows and sets is a matter which must be properly determined by those having a knowledge of the state of the soil. In highly enriched kitchen gardens, 3 feet apart between the rows and 15 inches apart in them is about a fair average distance, and in poor soil 21 inches by 9 inches in the row will suffice. Early planted ones will be coming through the soil soon, and a little litter thrown loosely over the top will make them safe from ordinary frosts and will be of material help in advancing the crop of tubers. Lettuce plants which have been forwarded in frames, after being hardened, should be planted out. At some places the garden is so limited in extent as to necessitate very close cropping being carried out; under these circumstances the spaces between all such subjects as Scarlet Runners, French Beans, Peas, &c., must necessarily be made available, and will be convenient places for rows of Cauliflower, Cabbage, Spinach, Lettuce, and similar plants. Make a sowing of Osborn's forcing French Beans or some other kind about the middle of the month on a warm sheltered border, and supplement it by another sowing of Canadian Wonder in about a fortnight hence. Neglect not to sow Peas as required to come in, and to keep up a constant supply when advanced crops of these become exhausted. Where sticks are to be used let them be put in in an upright position, so as to allow the bines space to climb up inside them. Sow the main crop of Beet in good soil, in rows 15 inches apart. Henderson's Pine-apple, or improved forms of it, is equal if not superior to any other kinds. Choose suitable opportunities, as, for instance, when sunless and showery weather prevails. Let all planting operations, as far as possible, be done expeditiously. On the other hand, under the influence of favourable conditions, such operations as hoeing, stirring the surface-soil, and clearing, should be accomplished promptly. Remove exhausted stems of Brussels Sprouts and other winter stuff immediately they are done with, for the sake of appearance, and to benefit the soil.

Forcing Department.—French Beans.—These plants are so subject to the red-spider that the cultivation of them along with fruit trees in houses should, as far as possible, be discontinued altogether, and confined to pits; the surface soil about the plants should be well mulched with manure, in order to keep them equally moist and save time in watering.

Potatos.—Those which were planted out at about the beginning of this year will be fit for lifting; this should be done off-hand, and the Potatos stored for use. We divide the lot into 1 lb. and 2 lb. samples in pots, and place soil beneath and above them; the pit thereby is available for other purposes. The force of sun and heat combined will necessitate more attention being given to watering later crops of these. This also will apply to other crops placed under similiar conditions, as Carrots, Radishes, Peas, &c.

If not already done, sow Gherkin and Ridge Cucumber seeds for out-of-door work, also Tomato, Vegetable Marrow, Capsicum, and Chili seeds, and shift on advanced plants of these as they require it. Prick out on to a gentle hotbed enough Celery plants to form the early crop, and sow again now for a subsequent one. Tomato plants coming into bearing will need a mulching of about 3 inches of lumpy loam and manure over the surface soil when it becomes permeated with roots. As soon as the fruit shows signs of colouring let it be kept dry, or in the case of tender-skinned sorts the surface will be disfigured by cracking. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

Pines.—Seasonable influences, such as may now be expected to prevail in the way of sunshine and heat, will materially conduce to the advancement and well-being of every class of plants in this department, providing these means conformably with those of an artificial character also, be utilised in a proper manner, by making solar heat as far as practicable subserviently useful in lieu of fire-heat. A free course of growth will now be proceeding in every plant if its health is satisfactory; see, therefore, that every detail in management is strictly enforced. Watering, which is the most important operation of all, should be seen to regularly at least once in every week; each individual plant should be examined by the hand before water is given to it. Syringing overhead now may be much more freely indulged in at the time of closing up the place for the day, and an abundance of moisture should abound in the house constantly when it is shut up. Be very careful in disturbing fermenting beds which have a moderate degree of heat in them, lest by so doing it become increased to an extent that will be injurious to the roots of the plants. The temperature in fruiting houses should range from 80° to 95° by day, at about 70° or 75° at night; that of successional plants at 65° to 70° by night, and 80° to 90° in the day; and the younger stock of plants will take no harm at 60° at night, and a proportionate rise in the daytime

according to external influences. Plants which are placed near to large squares of glass will be much benefited by having a slight shade placed over them during the hottest part of sunny days until such time as the tissues of the leaves have become more inured to the effects of sunshine. Look over fruiting plants occasionally, and remove all surplus suckers which are not wanted for stock, and see to the staking of any fruits which are not in an erect position. *G. T. Miles, Wycombe Abbey.*

Figs.

When the fruit on the early pot-trees show signs of changing for ripening the ventilation may be increased whenever more air can be admitted without causing a check, and the flavour will be greatly improved by full exposure to the sun. Many of the Figs on large pot-trees cannot have this advantage, but judicious thinning, stopping, and tying will throw them open to light and air, two necessary elements at all times, as Figs ripened in a close, moist pit or house are perhaps the most insipid fruit imaginable, while properly managed trees yield an invaluable addition to the dessert at a time when choice fruit is by no means plentiful. The Fig is a gross feeder, and enjoys good food when in full growth, more particularly when the pots cannot be conveniently arranged for the active roots to draw nourishment from the decaying leaves, generally used as a plunging medium. When grown under glass it is subject to two troublesome insects—red-spider and brown-scale. The first does not make much progress under good syringing, but when atmospheric moisture is reduced it advances rapidly, and on this account great efforts should be made to keep the foliage quite clean up to this period. Brown scale, if left undisturbed, soon spreads over the young shoots, and extends to the leaves and fruit, when its destruction is attended with some difficulty; but if taken in time a solution of Gishurst, carefully applied, will prevent it from doing much mischief. Water to the roots through all stages is necessary, and favourable opportunities for well washing the trees and all out-of-the-way corners may often be secured through the ripening season by gathering all the ripe fruit at one time. For private use Figs should be ripe when taken from the trees, but for market purposes they may be gathered before they attain that state. The night temperature may now range from 60° to 65° with a little air, and 80° to 85° by day. Open the top ventilators at 70°, and admit a circulation of air at 80°, with plenty of moisture rising from water applied to the mulching and all available surfaces.

The permanent trees in succession-houses, usually planted in internal borders, will now take large quantities of water through the mulching, which should be kept constantly moist as a means of increasing their vigour and keeping insects in check. Syringe twice a day, and let the temperature range 5° lower than that recommended for the early house. Trees in cold houses and wall cases should now be tied or nailed in, and syringed on fine days. Excellent crops of fruit may be grown in these structures in low, cold situations unfavourable to their culture against walls; but to insure annual success there should be some provision for keeping out frost in the spring and ripening the wood in the autumn. Firing through the winter is unnecessary, possibly injurious, as the tress may be unfastened in the autumn, tied in bundles, and protected with dry straw or bracken. *W. Coleman, Eastnor.*

Orchard-house.

The trees in pots from this date require considerable attention. They must not have too much water, and it would almost be as bad to give them too little, and those who have charge of the trees will not be highly successful unless they patiently study the requirements of their trees. I find they do very well with the top-dressing that was recommended at the usual time for performing this operation, but, as I have stated in a previous number, it is very difficult to ascertain the state of the roots as regards moisture owing to the top-dressing becoming moist and drying but slowly, while the portion of the soil which is quite full of roots becomes over-dry before it can be noticed and the trees suffer for want of water while to all appearance the potting material is too moist. I prefer in most cases to repot the trees very soon after the fruit has been gathered, and this can be done with advantage even if it is not desirable to repot into larger pots than those in which the trees had been previously growing. It has been stated how this had been done, and it would only be repetition to explain it again. There is no difficulty to water such trees, and no one with even a superficial knowledge of gardening would be likely to make a mistake. Our trees have been fumigated once or twice, but there is still a number of the aphis tribe to be seen on the leaves, and now, as the blossoms have mostly faded, it will be a good time to fumigate. This pest spreads on the Peach and Nectarine trees with amazing rapidity, and the leaves curl at once. I cannot too strongly urge the importance of destroying it as soon as it is discovered, and it would be better if it could be kept quite at bay. We seldom realise the mischief that is occasioned by allowing greenfly to feast on the juices of certain classes of plants, or we would destroy it as soon as the least signs of its presence appeared. It would be very desirable now to thoroughly syringe the trees, to clear them from decaying petals; the syringing also incommodes the greenfly, and a regular system of it quite disposes of the red-spider, and this pest will speedily appear as the days become warmer, and there is much more danger of this if the house is crowded with plants, or if the shelves are devoted to Strawberry culture. It must also be noted that the Strawberry plants are now throwing up their flower trusses, and have made considerable growth, so that it has been necessary to thin out the plants considerably, to allow of the perfect development of the leaves. Now that the trusses are rising, weak manure-water must be given to them at each alternate watering. Syringe under the leaves once or even twice daily in fine weather. *J. Douglas, Loxford.*

Orange-house.

The trees here also require much attention, they are now making considerable progress, and require plenty of water. It is better to surface-dress with a compost of crushed bones, rotten manure and loam, than it is to water with diluted manure-water. Insect pests increase more rapidly now than they do at any other season, and a constant watch must be kept to prevent their making any progress. Keeping the trees in a healthy growing atmosphere and well syringed tends to maintain them in health and checks the increase of insect pests. The night temperature may range from 65° to 70° with an increase of 10° by day. It is a very good plan to place the trees over a dung or tan-bed, not plunging the pots into it, and the fermentation may be kept up by turning the bed at intervals of a month or six weeks, and adding a small portion of fresh materials. *J. Douglas, Loxford.*

PLANT HOUSES.

Orchids.—The month of April, with its proverbial sudden changes of sunshine and showers, is without doubt a troublesome period to all who have the management of a collection of Orchids. On many an April day the changes are so numerous between sunshine, shade, heat, and cold, that to keep the atmosphere of hothouses anything like regular in temperature is next to impossible. For several mornings we have found it necessary to use in every division, save the cool-house, a considerable amount of fire-heat, in order to maintain the proper day temperatures. Even through the middle of the day the pipes have been kept warm, so that when the sun becomes suddenly obscured by heavy clouds we can, by closing the ventilators, avoid any extreme fall in the temperature. The blinds will, of course, require a great deal of looking after, but there is not the least need to keep working them for every trifling change in the weather. Keep them down on all very changeable days, and up whenever scorching of the foliage is not feared. At this particular time of the year scorching of the foliage takes place in much less time than many persons might think. I have here and also in various other collections seen plants marked for years through having been exposed for a short time to the full glare of a spring-day's sun. Through the summer, probably owing to the free use of the ventilators, one seldom gets an Orchid scorched, while during the ripening days of autumn many are greatly benefited by a fair share of sunshine. Now is the critical time, and, judging from the past, more mischief is likely to ensue from too much sun than too much shade.

A sharp look-out must now be kept with respect to such insect pests as aphides and thrips; both are deadly enemies to Orchids, living as they do upon the vital fluids of the plant. Many a rare delicate plant will flourish fairly well under cultivation if kept clean, but speedily succumbs under even a slight attack of these parasites. Take, for instance, Odontoglossum Warscewiczii: this plant will grow very well under the same conditions as O. vexillarium so long as it is free from insects, but from the moment a single yellow thrips takes possession of its young breaks the balance of its existence is upset, and a rapid decline in vigour follows, which can only be arrested by frequent and careful cleanings. Black thrips are not so difficult to keep under as the yellow, but they must be allowed no quarter. Nothing less than sponging the under-side of the leaves of plants attacked by this pest will entirely eradicate it. Tobacco smoke will kill every form of the insect with the exception of the eggs, but these, sealed down as they are by the excrement of the matured insect, can only be got rid of by the sponge dipped in some weak insecticide. Neither the green or yellow fly are so injurious to the plants as the thrips, but they mar the freshness and purity of every flower they attack, and when clustered on the young breaks of such plants as Dendrobiums do undoubtedly prevent such from attaining the perfection they otherwise would. The remedy for the four named insects is tobacco smoke. If the insects are in the cool-house, among such plants as Odontoglossums and Masdevallias, fumigate lightly and frequently, for the foliage of these cannot stand strong doses of tobacco smoke. In either of the other divisions fill the house with smoke on two consecutive evenings, or on the evening of one day and morning of the next. Previous to smoking get the houses nicely dried up, as the plants suffer less from dry smoke than from moist. The following plants—Bolleas, Pescatoreas, Odontoglossum Phalænopsis, O. citrosmum, Cœlogynes, and the Brazilian Oncidiums of the crispum type, suffer more from smoke than any other Orchids. Use the fumigator so that these get only a mild dose. White scale and mealy-bug are two pests that annually cause hundreds of cultivated Orchids to decline in vigour; to keep these down the brush and sponge must be often in use. As a preventive to red-spider the flow-pipes in all the warm divisions should be smeared over here and there with some sulphur paint. This is best made by mixing first equal parts of dry earth and sulphur together; then stir in sufficient water to give it the consistency of thick paint. Apply it after the houses are closed for the night. In the cool-house, with the exception of Lycastes, few plants suffer from red-spider. These suffer from a small species of that pest, and I believe this to be the principal cause why they are so often seen in a languishing state. Clean or unclean these plants should have their foliage washed over once a month. As these Lycastes go out of flower, let such as require potting be done at once. They do perfectly well in a mixture of peat and sphagnum well drained, and although moisture-loving plants the young breaks easily rot if the plants are potted too low. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

Lawns and Shrubberies.—After three weeks of fine bright weather and a few refreshing showers, the garden is beginning to look as if there was some life left in it after such a severe winter. The grass is growing rapidly, the shrubs are bursting their buds, Lilium candidum is pushing forth its stems, and the garden will soon be clothed in its proper robe of verdure. The roller will have to be actively employed until the mowing commences, when the mowing machine takes over the mowing and rolling to itself. The edges of walks should be neatly cut. Shrubberies should have the hoe run through them at the first opportunity.

Beds and Borders.—We may now fairly consider that the bedding-out season has commenced with the planting of edging plants. The first thing to be done is to have the edge set up as directed at p. 207. When such plants as Cerastium, Veronica, Santolina, Stellaria, &c., are used, it is essential that the soil should be pressed firmly round the roots, to prevent too much drought or wet getting to them. Hardy annuals should now be sown on borders; the ground was never in better condition than at the present time. Amongst the following may be found some of the best:—Clarkia elegans, Collinsia bicolor, C. violacea, Silene pendula compacta, Godetia Lady Albemarle, G. Whitneyi, Calliopsis, Eschscholtzia, Lupinus, Nemophila, Papaver, Saponaria calabrica; also ornamental grasses, Agrostis nebulosa, A. pulchella, Briza maxima, B. elegans, Eragrostis elegans, Lagurus ovatus, and Stipa pennata. In sowing annuals on borders the special things to be studied are their heights and colours, arranging them in their position on the border accordingly. It is a good plan to sow them in a circle 18 inches in diameter or three circles connected, forming a figure similar to a Shamrock leaf. These circles, or figures, should be placed at irregular distances along the border, leaving a good space between them to fill in with tender annuals or bedding plants when the season arrives.

Propagating Department. — Alternantheras should now be propagated, and where there has been a good stock kept through the winter there will be no difficulty in making up the required quantities. Mesembryanthemum cordifolium variegatum, Koniga variegata, Gnaphalium lanatum, Iresine Lindeni, I. Herbstii, Coleus of sorts, Heliotropes, Nierembergia gracilis, &c., should now be ready to pot off, if not already done. Mentha Pulegium gibraltaricum should be parted up and planted in boxes or frames; it will not do without protection in town before May. Golden Feather should now be pricked off from the seed-boxes into cold frames to prepare it for planting in its summer quarters; it will repay for the extra trouble of pricking off. Small-rooted bedding plants, such as Alternanthera, Mesembryanthemum, Heliotrope, Gnaphalium, Koniga, &c., are far better grown in pots, for the reason that they transplant better into their summer quarters than they do when grown in boxes or planted out in frames. Certainly pots may take up a little more room and demand a little more labour, but I think they will repay it. *W. Gibson, Royal Hospital Gardens, Chelsea, S.W.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	April 12	Sale of Established Orchids, Japanese Lilies, &c., at the Auction Mart, by Protheroe & Morris.
Tuesday,	April 13	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
Wednesday,	April 14	Sale of Established and Imported Orchids, at Stevens' Rooms
Thursday,	April 15	Royal Horticultural Society of Ireland: Spring Show. Meeting of the Linnean Society, at 8 P.M Sale of various Importations of Orchids, at Stevens' Rooms. Sale of Roses, Fruit Trees, Carnations, &c., at 38, Gracechurch Street, E.C., by Protheroe & Morris.
Friday,	April 16	Sale of Scientific Instruments, &c., at Stevens' Rooms.

ONE of the most interesting, but by no means agreeable, results of the cold, wet, sunless summer of 1879, is the paucity of blossom on the fruit trees in this present spring. About London, Plum blossom is plentiful but late. The Apricots and the Almonds, which latter form such conspicuous ornaments of suburban gardens, are notably deficient. The same holds good of Peaches and Pears, and to a less extent of Apples. Was it the deficiency of light, or of heat, or of both, which has brought about the result? The safest way would be to adopt the last alternative. But the searcher after truth will not be satisfied with vague answers and possibilities. He seeks a more precise answer. In the present case this is not easy to obtain, owing to the difficulty of eliminating the effects of light from those of heat, and *vice versâ*. This, then, is one of those cases in which we may fairly hope that the electric light will do service. By its means it will be possible, to a large extent, to isolate the results of light from those of heat, and thus to gain information of the highest value to physiology and of no less importance to practical culture. Our object, however, in now adverting to the subject of fruit blossoms is to follow up some remarks made last year, and to induce young gardeners to make themselves acquainted, not only with the ripe fruit they cultivate, but also with the habit of the tree, the form of the foliage, and the construction of the flower. At first sight it may be the blossom of one Pear tree seems very like that of another, but a very little investigation will show that there are considerable differences between them. It would be interesting to observe whether there is any relation between the form of the flower and the disposition of its parts and the degree of hardiness. The four varieties we figure to-day, from specimens drawn some time since by Mr. Fitch, will serve to illustrate some of the differences we have alluded to.

The main points of distinction which should be looked to at this season are the general habit of growth—erect, spreading, loose or dense, &c.; the colour, hairiness, or glabrescence of the young shoots and of the old wood respectively. In the leaves the points to be examined are the size, form, and hairiness, taking care to observe both the leaves on the barren shoots and those on the fruit-spurs. As to the inflorescence, the first thing to be noted is the date of opening, then the number, denseness or looseness of arrangement of the flowers, the form and colour of the buds, the relative length and the hairiness or smoothness of the flower-stalks.

The flower-tube (or calyx-tube) at the top of the stalk should be specially noticed, as that is the part which ultimately ripens into the fruit, the form of which is even thus early foreshadowed. At the top of the flower-tube are the sepals, generally broad at the base and tapering into a long point. These sepals ultimately form the "eye" of the ripe fruit, and their form is much better studied thus early than when the fruit is ripe. The petals vary considerably; in some varieties they are broad and spoon-shaped, in others much narrower. The number of the stamens should be noted, and more especially their length in relation to that of the petals. Within the stamens, at the top of the young fruit, are the styles, which vary in number, in degree of union at the base, in hairiness, &c. The woodcuts at p. 469 will indicate in like manner the variations in the form of the fruit. It may be objected that these are minute details, and so indeed they are, but it is by attention to such minute details that the young gardener succeeds in life. Such details will not only help him to distinguish between one variety and another, but they will create and foster habits of observation and discrimination of the greatest possible value to him in after life.

We may take another opportunity of alluding to these points, in the meanwhile we append a list of some of those varieties which we noted on a recent visit to Chiswick as flowering freely at this season, or the reverse. The list is by no means complete, and is intended solely to direct attention to the subject. Of varieties showing a good proportion of bloom, though in almost all cases late, we may mention the following:—Thompson's, in full bloom; Emile de Bivort, Rousselet Enfant Prodigue, Henri Capron, Marie Louise, Beurré Desais, Duc d'Angoulême, Fondante du Bois, Althorp Crassane, Catinka, Louise Bonne, Madame Durieux, Soldat d'Esperen, Charles van Mons, Colmar d'été, Comte de Paris, Emile d'Heysch, Beurré Gris, Louis d'Orléans, Belle Julie, Musette de Nancy, Maréchal de la Cour. Of varieties with little or no bloom, we may mention Doyenné de Comice, Glou Morceau, Louise de Prusse, Henry de Nicaise, La Juive, Triomphe de Louvain, Gansel's Late Bergamot, Belle après noel, Beurré Kennes, Forme de Bergamote, Suzette de Bavay. All these are standard trees, and there appears to be a slight advantage in those trees which are on the southern side of the quarters.

Fig. 81.—Beurré Diel Pear. (see pp. 460, 461.)

—— The Electric Light and Plants.—M. Hervé Mangon was one of the first, if not the first, to experiment with the electric light on plants. In 1861 he grew seeds of Rye under the light, and succeeded in producing the green colouring matter as under solar light. He also observed that the plants turned to the light as they would do in the case of the sun.

—— Anthurium Andréanum.—Great interest was excited at the 143d Exhibition of the Royal Agricultural and Botanical Society of Ghent, which opened on the 4th inst. It will be remembered that this is the Society to which English horticulturists owe so many hearty receptions—so much cordial intercourse. On this present occasion foreigners, that is to say of the human race, were not present in large numbers, their visits being specially reserved for the quinquennial exhibitions. The success of a plant at one of these great shows at Ghent, writes a highly esteemed correspondent, is like that of a well-dressed beauty at Longchamps. This time the plant that has attracted all eyes is a splendid Aroid (Anthurium Andréanum), of which a figure in the *Illustration Horticole*, t. 221, noted by us at the time of publication, led us to expect great things. We are assured, however, by Count Oswald de Kerchove, that the plant as shown at Ghent far excels the representation, taken from a dried specimen. The spathe is very large (*énorme*), ovate, of a bright shining red, brighter even than that of A. Scherzerianum. Instead of being flat, as in the plant just named, the spathe in this new Anthurium is crumpled and traversed by deep sinuous veins, which at a distance one might take for the handiwork of some clever artist. The spadix is whitish with a yellow tip. Altogether the plant is one of the most remarkable introductions of modern times, and by itself would suffice to confer renown on the explorations of M.

André in New Granada. We congratulate M. André on his "find," and trust that M. Linden, through whose agency the plant has been introduced, will speedily be in a position to exhibit his treasure in London.

—— Crystal Palace.—Oak-apple day, May 29, is the date selected by the authorities at the Crystal Palace for holding the annual summer show at that place. The schedule still includes two prizes only in each class, a very short-sighted policy, which will sooner or later lead to the "farming" of such competitions. The National Rose Society's exhibition is fixed for July 3.

—— Massachusetts Horticultural Society.—The annual March exhibition of Azaleas and Roses took place on the 18th ult. Perhaps the choicest—certainly it was the most wonderful—feature of the exhibit was a specimen of the Azalea Exquisita, contributed by Hon. Marshall P. Wilder. This plant measures 6½ feet in height, and is no less than 17½ feet in circumference at the head. Fair Ellen, shown by the same exhibitor, measured 5½ feet by 15 in circumference; Azalea Wilderi, 5 feet by 13; Harlequin, 5 feet by 14; and variegata, 4½ feet by 12 feet. The exhibition was a very good one, and showed that American cultivators endeavour to keep abreast of their contemporaries in the Old World. American seedling Camellias compare favourably with those of foreign origin.

—— Prof. Schimper.—The death of this amiable and accomplished botanist at Strassburg is announced. His researches in vegetable morphology, and in the history and classification of mosses and of fossil plants, gave him a high place among his contemporaries.

—— Lacaena spectabilis.—A nice plant of this apparently rare Orchid, which in habit and general appearance somewhat resembles an Acineta, is now in flower in the Kew Orchid collection. It has a conical channelled pseudobulb, about 4 inches in length, and a pendulous spike of delicate, if not brilliantly-coloured blossoms. The ground of the sepals and petals is of a pale flesh colour, which is dotted with numberless minute, pale claret spots and blotches; the prominent colour is a creamy white, but the lip is the most conspicuous both in colour and shape—the central one of the three lobes being prolonged into a stalked spade-shaded body, which is so thickly covered with its purplish dots as to appear a kind of purple even at a short distance.

—— New Agricultural College.—It is stated that a school of agriculture is about to be established near Salisbury. Among the Professors are Messrs. Church, Wrightson, Fream, and Sheldon. A farm for practical instruction is also provided.

—— Luminous Paint.—Mr. Balmaine has recently introduced a substance formed of calcium sulphide, and which, after exposure to light, becomes luminous in the dark, after the manner of phosphorus. Mixed with water or oil this substance is capable of being used as a paint. A sheet of cardboard, for instance, so painted and exposed to the light, may be used afterwards as a lamp in cellars or in places where an ordinary light would be dangerous or impracticable. The durability of the paint is great, and, as it is unaffected by water, it is likely to be of great service for painting buoys. The property in question is explained on the theory that rays of the spectrum, ordinarily invisible to the human eye, are taken up by this phosphorescent substance, and converted into visible light. The present cost of the paint is 28*s*. per pound, 1 lb. of paint being sufficient to cover about 28 square feet. In addition to the many uses to which this paint can be put, one very great advantage accruing from its use is the greatly diminished risk of fire.

Fig. 82.—Glou morceau pear.

—— Socotra.—Professor Bayley Balfour has arrived in this little-known island, of the flora of which he speaks in glowing terms. We expect great things, botanically and horticulturally, from this expedition.

—— The Victoria Gardens.—The large vacant space of ground at the south-west end of the Houses of Parliament and adjoining the Victoria Tower, which is bounded by Abingdon Street on one side and by the river on the other, is now in the course of being formed into a pleasure garden similar to those on the Victoria Embankment, and will hereafter be known as the Victoria Gardens. The ground, with the wharves and buildings upon it, was bought up in order that the Thames Embankment wall might be extended up the river from the Houses of Parliament to what is known as Dorset Wharf. After the river wall of that portion of the embankment was finished it became a question as to how the large space within it should be appropriated. There were strong objections urged to its being rebuilt upon, in consequence of its close proximity to the Houses of Parliament, especially to the Victoria Tower, which, in case of a fire taking place in any of the buildings, might be very much endangered. Ultimately it was resolved by the Commissioners of Her Majesty's Works to lay it out as a garden, and that resolution is now being carried out. To all appearance the work will be completed by early summer. A promenade has been formed on the river side, and trees planted along it. The centre of the ground has been raised into several circular mounds for the reception of shrubs, plants, and flowers, with walks round them. *Times.*

—— Destruction of Field Mice.—One of our readers sends us the following method for destroying field mice:—"Cut in small pieces (half an inch at most) a common sponge, and fry those pieces in dripping (like fritters) until they harden, then scatter them at the spots infested by the field mice. In a few days the swollen and dead bodies of the field mice will be found everywhere. As the bait is more alluring for the mice when dry, it is better to choose fine weather to do this. The remedy is easy, cheap, and infallible." *Jersey Express.*

—— Mauve Beauty Stock.—This fine variety, when treated as an Intermediate Stock, is very fine and effective at this season of the year. Some superb specimens raised from seed sown in August last, and grown on through the winter in a greenhouse, are objects of great beauty, with immense double flowers thickly set on very large spikes; the flowers of a delicate lavender-mauve tint by no means common to ordinary Stocks. It is a variety requiring generous treatment, and according as this is given it so will be the extent of its effective floral service. It also makes an excellent summer-flowering stock sown in spring and planted out in good ground to flower in summer. A very large percentage of the flowers come fully double.

—— A Grim Discovery.—A startling surprise, after the fashion of the story of Ginevra, was experienced some days ago by a party of Styrian woodcutters in the forest of Drömmling. They began to fell a venerable Oak, which they soon discovered to be quite hollow. Being half decayed it speedily came to the ground with a crash, disclosing a skeleton in excellent preservation. Even the boots, which came above the knee, were almost perfect. By its side was a powder-horn, a porcelain pipe-bowl, and a silver watch, on which was engraved the name "H. von Krackowitz, 1812." The teeth were perfect. It would seem to be the skeleton of a man between thirty and forty years of age. It is conjectured that, while engaged in hunting, he climbed the tree for some purpose, and slipped incautiously into the hollow trunk, from which there was no release, and he probably died of starvation. *Times.*

—— Effects of the Gale of December 28 in Scotland.—The *Journal of Forestry* remarks that now the fearful effects of the hurricane which swept over Scotland on the evening of December 28 can be fairly estimated, some conception of the enormous loss entailed by owners of property unfortunately situated within its course may be estimated when it is istated that in the Athole forest alone over 80,000 trees were blown over, and many of them broken, shattered, and rendered useless. It will take years before the disastrous results of the storm are obliterated in the districts swept by it, of which Perthshire appears to have been the vortex.

—— Primula pubescens.—A pretty species bearing this name, but which appears to have but little of a pubescent character about it, is now flowering in one of the cold frames at Chiswick. In its

habit of growth and character of the leaves it is not unlike P. nivalis; and like that species it throws up several trusses of flowers of bright mauve-lilac colour, nearly as large as those of P. spectabilis. Mr. Barron obtained it in the North of Scotland, and as it is of a decidedly valuable character, it is desirable that it should be correctly named.

—— Orchids in Flower. — The following Orchids flowered last month at Forest Farm, Windsor Forest, the residence of John C. Bowring, Esq. :—

Ada aurantiaca
Arpophyllum giganteum
Aspasia lunata
Bolbophyllum sp.
Calanthe Turneri
,, Veitchii
Cattleya citrina
Coelogyne cristata
,, pandurata
,, species
Colax jugosus
Cymbidium eburneum
Cypripedium barbatum
,, ,, biflorum
,, Boxallii
,, insigne
,, longifolium
,, pardinum
,, Pearcei
,, Roezlii
,, Schlimii
,, Sedeni
,, stenophyllum
,, villosum
,, new hybrid, not yet described, Roezlii × Pearcei
Dendrobium aggregatum
,, album
,, Cambridgeanum
,, chrysotoxum
,, ,, superbum
,, crassinode
,, eburneum
,, heterocarpum
,, lituiflorum
,, macrophyllum giganteum
,, nobile
,, Pierardi
,, ,, latifolium
,, primulinum
Dendrochilium glumaceum
Epidendrum crassifolium
,, erectum
Eria fusca
Galeandra Devoniana
Isochilus linearis
Liparis sp.
Lockhartia elegans
Lycaste gigantea
,, lampes
,, Skinner
Masdevallia ignea
,, Livingstoniana
,, nycterinia
Maxillaria densa
,, Harrisoni
,, variabilis
Mesospinidium sanguineum
Odontoglossum cordatum
,, gloriosum superbum
,, hystrix
,, Lindleyanum
,, maculatum
,, odoratum
,, Pescatorei
,, Roezlii
,, Rossi
,, triumphans
Oncidium aureum
,, Cavendishianum
,, ampliatum
,, Papilio
,, serratum
,, Wentworthianum
Phalænopsis Luddemanniana
,, Schilleriana
Pleione, species
Sarcanthus filiformis
Spiranthes sp.
Trichopilia suavis
Vanda cœrulescens
,, tricolor
,, ,, insignis

—— Soldanella Clusii.—This also is an attractive plant in the collection at Chiswick. It grows about 4 inches in height, and throws up several flowers of a very pretty bright mauve colour. It is a delightful subject for cultivation in the cold frames. Mr. Barron is constantly making additions to his collection of hardy plants, and the frames at Chiswick furnish abundant evidence of his unremitting activity in this respect.

—— The Effects of a Dry Autumn.—Serious as has been the injury done to outdoor vegetation by the past winter's frosts in many parts of the kingdom, there can be no doubt that destruction would have been much more widely spread had it not been for the lengthened period of dry weather which we had in late autumn. Of this there is abundant proof at Eastnor Castle, Earl Somers' fine place in Herefordshire, where, as elsewhere during the last summer, the continual rains and absence of sun were very similar to what occurred in the memorable season of 1860, but the way in which trees and shrubs have withstood the frost during the last winter, as compared with the winter of 1860, is most remarkable. Amongst other things that suffered severely nineteen years ago were the large examples of Arbutus Andrachne, then killed down to the ground by the 34° of frost which was experienced; these sprouted from the stools, and once more their stems have grown to over the thickness of a man's leg. The thermometer, last December, at Eastnor, was again down to 34° of frost; but this time no further injury was done to the plants than a slight browning of their leaves—a circumstance that can only be attributable to the long stretch of dry weather which preceded the frost having prepared vegetable life generally to withstand the ordeal of severe cold, the opposite of that which took place in the autumn of 1860, when the moist mild weather continued right up to the commencement of the frost.

—— Dentaria pentaphylla.—This is a very pretty object on the rockwork at Chiswick. The flowers, which are of a pale lilac colour, and not unlike those of a single Stock, are borne in a terminal cluster, and it is well suited for the position it occupies. There are a few species in this genus, but they are seldom met with except in select collections. They require care in their cultivation, and they will repay it.

—— Bouquets.—We have heard a lady who was an accomplished flower painter lament that, although she could pourtray flowers on canvas in a way to elicit the approval of those competent to criticise, yet she could not arrange a bouquet or a vase of flowers either to please herself or any one else, as when she attempted anything of the kind the result was usually the production of something like a haystack. There can be no question that the ability to arrange foliage and flowers differing in form and colour so as to produce a combination that satisfies the eye of taste has some pretension to be called an art, and it is an art that some individuals appear to possess instinctively, as even with very ordinary materials they can make a much more pleasing arrangement than others after an unlimited amount of practice are able to effect with the choicest flowers. The bouquets of late years exhibited by Mr. Cypher at many of the leading exhibitions, and which are the handiwork of his daughter, have been generally noticed for their more than ordinary merits; sufficient evidence of this is afforded by the number and proportion of 1st prizes she has been awarded, and of which she holds the cards as mementos, numbering 120 1st and eighteen 2d, frequently won where the competition was unusually keen.

—— Crotons.—In spite of the many new types of Crotons which have been introduced during the past ten years or so, it is yet open to question whether for general usefulness C. pictus and C. angustifolius are surpassed or even equalled. This was the impression derived from inspecting a collection of fine young growing plants in a representative collection growing freely in a stove. Those who grow Crotons largely for decorative purposes give the preference to the two above named; and if to these be added C. Weismanni and C. irregularis, the cream of these handsome plants is obtained. In all stages of growth they colour well, and in a young state they are both bright and effective in appearance, and handsome and symmetrical in growth.

—— Exhibition Plants.—Those who have seen much of the leading provincial flower shows of late years will not fail to have noticed the prominent place held by the fine plants so often shown by Mr. Cypher, of Cheltenham. A recent sight of them leaves an impression that during the coming exhibition campaign the Queen's Road collection will in no way be behind what it has hitherto been. In what are usually understood as hard-wooded greenhouse plants there are a couple of examples of the New Holland Darwinia tulipiferum, in splendid condition, profusely flowered, and of beautiful colour; the red-bloomed D. Hookeri, equally well done; the now-seldom-seen Acrophyllum venosum, a medium-sized handsome specimen; the purple form of Aphelexis macrantha, clothed with buds. Amongst numerous Heaths is a splendid plant of depressa, large and covered with its yellow buds, as also is its companion in colour, E. Cavendishiana; the fine spring blooming E. Queen Victoria, many of the best representatives of the tricolor section and other summer flowerers, as well as the later blooming varieties. Of Ixoras, all the best hybrids, including I. Fraseri, one of the finest. A number of immense specimens of Eucharis amazonica, each capable of producing a couple of score of flower-spikes; and many other representatives of the usual exhibition flowering plants, with a host of Palms, Ferns, and other fine-leaved subjects.

—— Bignonia speciosa.—In the Palm-house at Kew this beautiful climber is now flowering freely. The blossoms are large and showy—the throat being yellowish and the limb white, veined and netted with rosy purple. The neat, dark-green glossy foliage sets off to advantage the handsome flowers. As a stove climber, not too vigorous or luxuriant even for houses of moderate size, this is a decided acquisition. A native of Uruguay.

—— A History of the Evolution of the Vegetable Kingdom. — Under the title *Versuch einer Entwicklungsgeschichte der Pflanzenwelt*, &c., Dr. Engler, Professor of Botany in the University of Kiel, has published the first part of an essay on the evolution of the vegetable kingdom since the tertiary period. This part relates to the extra-tropical regions of the northern hemisphere, and is illustrated by a map showing, as nearly as present knowledge permits, the configuration of the land in the northern hemisphere in tertiary times. The task undertaken by Dr. Engler presents such formidable—we might say insurmountable—difficulties, that we can only admire his courage in attempting it. It is a subject that leaves much scope for the imagination, and one that a clever writer can render very attractive. Nevertheless, the mere collocation of the data illustrative of a theory of the descent and migration of the plants of any region is sufficiently instructive to deserve the attention of all those interested in the distribution of plants, and this is especially the case in relation to the regions under consideration. Dr. Engler enlarges considerably upon what has previously been written on the same subject by Dr. Asa Gray, Sir Joseph Hooker, Professor Miquel, Professor Grisebach, and others; and if he has not succeeded in throwing much light on evolution, he gives a good idea of the actual distribution of species and types. This he contrasts with their distribution in the miocene period, indicating at the same time the directions in which they have spread and migrated. Those persons who have read Dr. Engler's essay on the distribution and evolution of the species of Saxifraga, in his monograph of the genus, will be able to form an idea of the character of the present work. Disregarding the speculative element (which has, however, a great deal of probability in it), the book is an excellent one, and should be read by practical men.

—— Marica Northiana.—Although of the easiest cultivation, and a decidedly handsome plant, the subject of the present notice is rarely seen in ordinary collections of stove plants. It has long been known in botanic gardens, but apparently is rare in private establishments. Perhaps the short life of the individual blossoms (hardly a single day) has something to do with this, but there is a succession of flowers from each scape, and their delicate fragrance and beautiful colouring ought to make up to some extent for their fugitive character. The outer perianth segments of the Iris-like flowers have a snowy white limb and a yellow claw, blotched and barred with cinnamon-brown; the inner perianth segments are similarly coloured, with the addition of the upper portion of the limb being a bright ultramarine-blue. A native of Brazil, first discovered in the island of Raza, near the mouth of the Rio Janeiro, by Sir Joseph Banks.

—— Orchids at Ashton Court.—It is nothing new to say that plant-houses which have an imposing appearance, and are faultless in the materials and workmanship, are often anything but faultless in their adaptability to the plants which have to be grown in them. Lofty structures, where the occupants in a great measure are necessarily too far from the glass, are particularly unsuited for Orchids, which plants are usually more influenced by the description of houses they are grown in than most things. Even with Orchids something may be done to minimise the structural defects of the house they are grown in. At Ashton Court, near Bristol, we recently saw an example of what may be done in this way, as also of the manner in which species usually grown in temperatures considerably different can be made to succeed together. Here in a lofty house with a high back wall we found Saccolabiums, Aerides, Phalænopsis, and Dendrobiums, in exceedingly strong vigorous condition, along with Mexican Cattleyas, Odontoglossums, and other comparatively cool-country species, equally vigorous and showing flower profusely. Amongst the greater heat-requiring species was Saccolabium guttatum, very strong single growths, pushing three or four spikes; S. retusum, equally stout; S. præmorsum, making a couple of breaks from the stem: Phalænopsis amabilis, with thick leathery leaves, has been in flower all the winter. Dendrobium Cambridgeanum is generally supposed to do best under cool treatment: the plant here had fifteen flowering bulbs, several of them 20 inches in length and proportionately thick; Dendrobium aggregatum, covered with flowers; D. Wardianum, D. thyrsiflorum, and many others; Aerides quinquevulnera, A. suavissimum, and A. odoratum purpurascens, many of the plants 5 feet high, and have not lost a leaf from the pot upwards; Vanda cœrulea. Cattleyas are represented by C. Mossiæ and other, so far as temperature, allied species; Odontoglossum citrosmum roseum in several large plants, some 2 feet across, composed of very large

bulbs and healthy foliage; with many others equally varied in their heat requirements. The character of the foliage gives a clue to Mr. Austen's treatment, comprising more air with somewhat less atmospheric moisture than many growers use. We do not say that where it can be avoided it is desirable to grow the greatest heat-requiring Orchids along with others that will do with a good deal lower temperature, but when the management is judiciously regulated so as to compensate as far as possible for the inevitable compromise that has to be made, Orchids indigenous to parts of the world varying more in climate than usually thought to do well together, can be induced to succeed satisfactorily.

—— Melasphærula graminea.—Although the blossoms of this Irid have neither size nor brightness to recommend them, the profusion in which they are produced and the length of time the plant remains in flower—without speaking of its elegant and graceful habit—render it a desirable object for conservatory or cool greenhouse decoration. The leaves are grass-like, light green, and the flowers are borne in flexuous branched panicles. In shape, these latter rather resemble some of the Gladioli; the perianth segments being acuminated, and each bearing a purplish stripe on a whitish ground. The species owes its generic name to the dark colour of its small bulbs. It is easily cultivated, requiring just the same conditions for successful cultivation as those under which Ixia, Sparaxis, Babiana, and the general run of Cape bulbs flourish. This, like the plant just named, is a native of the Cape of Good Hope. Specimens are now flowering at Kew.

—— The Londoners' Garden Supplies.—With the opening of a new and extensive fruit and vegetable market in the City, there appears to the gaze of a daily contemporary a vista of supplies of garden produce for the famished Londoner that shall by-and-bye give the metropolis that one thing which alone is needed to make it an elysium—an abundance of fruit, flowers, and vegetables. Visions arise before the eyes of the sanguine writer of myriads of cottage gardens and garden allotments clustered near and about rural railway stations, where the cottager and the working-man shall each in his humble plot cultivate enough garden produce for the consumption of his own family, and shall, through the agency of local collectors, send the remainder, or surplus, to this new City market, where it will assist to bring down the present extortionate charges for these simple articles, and on the other hand bring to the cottager a valuable addition to his moderate store of wealth. This is a charming picture—one calculated to lead us to a glimpse of a modern Arcadia if realised; but alas! in that "if," simple but most essential of monosyllables, lies all the essence of the proposal. Rural districts, as a rule, do not provide a population sufficiently large in the near locality of railway stations to make the work of collection profitable, or the surplus garden produce sufficiently abundant. Even if in any case made a tangible fact, there remain the cost of collection, the cost of transit, the salesman's commission and market dues, to be subtracted from the sale of produce of only second-rate quality, and then the game would not be found worth the candle. The most cursory consideration shows that London, with its teeming millions of consumers, can only be supplied with garden produce by those who make it a business, devote to it a large capital, and with it apply the greatest practical experience.

—— Concerning Cigars.—From an interesting article in the *Chicago Druggist* on the cigar trade of the United States we gather the following particulars:—Treating first of the consumption of cigars in the United States, it is shown that during the last year the number amounted to the enormous total of 2,082,356,362, or an average of fifty cigars for every head of the population. Computing the cost of cigars with that of Wheat, it is stated to be equivalent to two-fifths of the value of the entire consumption of the latter. The cigar consumption has increased since 1874 at the rate of nearly 60,000,000 cigars per year. The cigars sold in the market of the United States may, it is said, be divided into three classes, namely, those imported, those made of imported tobacco, and those made of "domestic tobacco." All the cigars made in the United States are invariably put up in imitation Havana boxes, with imitation labels and brands. It is doubtful, however, whether this transparent device deceives anybody, for in accordance with the United States revenue laws all boxes of cigars manufactured in the United States must not only bear the manufacturer's label, giving his full name and place of business, and the number of his manufactory, but they must also bear the United States inspector's brand. Before the present law was in force, and the duties on tobacco were low, this scheme may have been profitable, but why the practice is still adhered to by the manufacturers it is hard to imagine; for the boxes now used, being made of imported Cedar, must be very costly, and must materially increase the price of cigars. Only those of the very poorest quality are packed in white wooden boxes. "Concerning Havana cigars, an eastern paper observes that every box of cigars packed in Havana has, at least, six distinctive marks on it. First is the brand, which is burned on the upper side of the lid of the box with an iron made for the purpose; second, the label, which bears the name and address of the manufactory; third, the mark designating the size and shape of the cigars — this is usually put on with stencil; fourth is the colour mark, which is also put on with stencil; fifth, the class mark. All the round cigars made in Havana are separated into three classes: — *Primera*, or first; *segunda*, or second; and *tercera*, or third. Some manufacturers never mark any of their cigars as of the third class, not because they do not make them, but because they think they sell better without the mark. They make the first class *flor*, the second *primera*, and the third *segunda*; others mark all their cigars of the first class, and indicate the classes by the colour of the labels: and in this way none but the wholesale purchasers know the secret. The sixth, and last, is the mark denoting the number of cigars in the box. This is stencilled on the side in Arabic numerals."

—— The King William's Town Botanic Garden.—We gather from what appears in the annual report of the King William's Town Botanic Garden Committee, published in the *Cape Mercury* of March 1, that the Curator, our occasional correspondent, Mr. J. C. Nelson, is giving great satisfaction in his new sphere of labour, the garden having been rescued by him from the utterly neglected condition in which he found it, and placed in a state of "something like order and neatness." We are glad to see that Mr. Nelson takes a wider view than his committee of the uses of a botanic garden, in an opinion which he expresses, that the growth of vegetables for sale is not the legitimate work of a botanic garden. He proposes that the more extensive raising of timber trees suitable for the colony should be entered upon, as being both more useful and more profitable.

—— Arisæma curvatum. — Few greenhouse plants exhibit elegance and grace of form combined with beauty in colour in so marked a degree as several members of the genus Arisæma. The present species is a handsome plant about 4 feet high. The inflorescence crowns a scape which overtops the foliage; the tube of the spathe is cylindric, green, obscurely striped with white; the elliptic blade arches forward, and is green on the inner surface, and brownish-red on the outer. The spadix is produced into a purplish-red tail about a foot in length. The leaves are pedate like those of the Hellebore, and on this account it received the name of A. helleborifolium, which, being a more recent one than that of A. curvatum, does not stand. A striking feature in this plant is the marbling of the large bracts, which closely sheathe the base of the stem—dark olive-green, red and light green being beautifully blended. It is a native of the humid forests of the Himalaya from Bhotan to Simla, and is also found on the Khasia Mountains. Specimens are now in flower at Kew.

—— Auricula Shows.—We may remind our readers that the shows of the National Auricula Society take place on April 20 and April 27. The former is the date of the exhibition of the Southern section at South Kensington, which, we hear, is likely to be well attended. The flowers are rapidly developing with the present milder and brighter weather, and some of the growers fear the finest blooms may have gone past—so difficult is it to fit exhibition arrangements with the changes of the ever-varying seasons. On the later date the Northern section is to hold its show in the New Town Hall, Manchester, and we trust it may serve to help forward the revival of the taste for these interesting florists' flowers, as well as for the gold-laced Polyanthus, which are worthy to share in the florists' regards. The schedules of both shows are drawn up on a liberal scale, and we trust they will be as liberally responded to by the growers, and also liberally supported by a no less important class—the pleasure-seekers and sight-seers.

—— Restrictions upon Horticulture.—We are glad to see that our Belgian friends intend to hold a meeting at Ghent, on the 9th inst., to protest against the measures adopted by some Governments (stupid measures, as we think) in order to prevent the introduction of plants into their respective territories. The measures are taken, of course, with a view to the prevention of the spread of the Phylloxera. We have again and again protested against the folly and uselessness of such measures, except in the case of Vines, and trust that our Belgian friends, whose opinion should carry the greatest weight, may be successful in their contest against mischievous ignorance. We have urged upon our Royal Horticultural Society the duty of taking similar steps in the interest of horticulture and science, and trust in the end that knowledge may prevail over ignorance.

—— Destructive Thunderstorm in Somersetshire.—A correspondent informs us that a terrific thunderstorm accompanied by vivid lightning broke over Hatch Beauchamp on Wednesday morning at half-past 10 o'clock. On the estate of Mrs. Hardstaff, Hatch Court, near Taunton, one of the many fine old Elm trees in the park was struck by the lightning, and split from the top to the bottom, one piece being detached, split into matchwood, and blown to a distance of 123 yards, the ground being literally strewn with chips and branches for some 70 yards right and left of the tree. The thunder was so loud that the bells in the church tower—about 400 yards from the split tree—were heard to jingle. About 100 yards further on one of the men employed in cutting wood on the estate had the billhook hurled from his hand, one of his fingers being slightly injured thereby. One of the Vines in a vinery at the same place was also scorched at the same time. Our correspondent states, what is very remarkable, that the sun was shining brightly at the time.

—— Institution of Surveyors.—The next meeting will be held on Monday evening, April 12, when a paper will be read by Mr. C. G. Saunders, entitled "Quantity Practice." The chair to be taken at 8 o'clock.

—— The Newcastle Botanical and Horticultural Society will hold its summer exhibition for miscellaneous plants, Roses, and fruit on July 7 and 8; and the autumn show, for Dahlias, Hollyhocks, Gladiolus, table decorations, and fruit, on September 15 and 16.

—— The Weather.—General remarks on the weather during the week ending April 5, issued by the Meteorological Office, London:—The weather during this period has been much less settled than of late, the sky being generally cloudy over the whole country, with frequent heavy showers. Hail fell in some places occasionally, notably on the 5th, when it was accompanied over central England by thunder and lightning. Bright sunshine was much more continuous in the western than in the eastern parts of the kingdom, but in no district was the sun clearly visible for as much as half of the time that it was above the horizon. The duration recorded varies from 43 hours in the "Midland Counties" and 40 hours in "Ireland, N.," to 19 hours in "England, N.E." The temperature was one or two degrees above the mean in all districts. The highest of the maxima (66° at Barnstaple) occurred on March 31, but at most other stations the highest readings were registered either on March 30 or April 3. The lowest of the minima were observed during the early morning of the 30th, and at Oxford the thermometer went as low as 27°. The wind was generally south-westerly (south-westerly to westerly) in all parts of the kingdom; and, though moderate in the east and south-east, blew freshly or strongly in the west and north, and reached the force of a gale in Scotland both on March 31 and April 2. The rainfall was above the mean in all districts, the excess being very marked in "England, N.E." and "England, S.W."

STOVE PLANTS FOR WINTER AND SPRING DECORATION.

To keep a conservatory or greenhouse gay during the summer and autumn months is easy enough, but to provide a constant succession of flowering or other ornamental plants for making a display in winter or early spring is quite another matter, and requires a good deal of forethought; and as the season has now arrived when the propagation of many of them should be taken in hand, it has occurred to me that a list of the most suitable, together with a few remarks relative to their treatment, may not be unacceptable. It will perhaps be well to notice the stove varieties first, as being the most important.

Sericographis Ghiesbreghtii stands foremost among these for general usefulness, and for brilliancy of colour and free-flowering qualities cannot be surpassed. Another thing in favour of this plant is that it does not require strong heat after growth is complete and it begins to expand its bloom—a time when, if afforded a temperature ranging anywhere between 50° and 60°, the plants will do much better, and last in beauty considerably longer than they would in one that is higher. Cuttings put in now in any warm close pit, or under bell-glasses in the stove, where they can be kept shaded, will soon root, and should then be potted off singly in small pots, and stood on a back shelf in any forcing-house, or, better still, on a hotbed in a Melon or Cucumber frame, as there the genial atmosphere will at once start them into rapid growth, and cause them to become quickly established. The natural habit of the Sericographis is rather thin and spare, but if stopped occasionally by nipping out the points of the shoots it may be induced to become tolerably bushy; but this should not be done after the end of July, or middle of August at the latest, or they will not have time to ripen and set their flower-buds, which are formed in the axils of most of the upper leaves. The best soil to grow them in is about equal parts of leaf-mould and loam, or any refuse peat and the latter, to which should be added a sprinkling of sand to keep the mixture porous. Except for old plants that have been cut back, 6-inch pots are quite large enough, as they do not require much root-room, and such sizes are far handier for general purposes than others that get a more liberal shift. The most suitable place to grow them during the summer and autumn is a pit of sufficient depth to hold a little plunging material, such as leaves or tan, in which to stand the pots, and if these are in a very slight state of fermentation, so much the better, as a little bottom-heat will keep them in a greater state of activity, and induce a more vigorous growth. Besides frequent watering they will require during dry weather, they should be well syringed, or damped overhead, about 3 o'clock every afternoon, and have the lights closed immediately after, which will be the means of creating an atmosphere highly conducive to the welfare of the plants. If this treatment is steadily pursued till the end of September, or middle of October, it will then be time to take them into a warm house, where they can enjoy a night temperature of about 55° till they begin to expand their flowers and are required for use elsewhere.

Linum trigynum is likewise a grand winter-flowering subject that should be largely grown where a display has to be kept up at that season, for when well managed it blooms in the greatest profusion, and being of a bright yellow shows up well in contrast with the above. The great difficulty many have with this Linum is in keeping it free from red-spider; and this, unless a special course of treatment is pursued, is a matter of impossibility, so susceptible is it to their attacks. The only way I can ever manage them successfully is by keeping them in a frame by themselves, and syringing them heavily overhead at least once a day, taking care when doing so to wet the undersides of the leaves thoroughly, as there it is these pests assail them, and cause such a disfigurement. In syringing these plants it is highly important that the water should be applied with some force, as the foliage is of that peculiarly smooth nature that wet does not stand on it; and this is one of the reasons why red-spider gets such a hold, and is not easy to eradicate. After trying various composts to grow Linums in, I find there is nothing suits them so well as thoroughly decomposed leaf-soil, to which a slight portion of fibry loam and sand has been added to give it weight, as in this the roots can ramify easily and the water pass readily through. When growing freely they can scarcely have too much of this, provided they have heat in proportion, which should be afforded by closing early in the way recommended for the Sericographis. To attempt the culture of Linums in houses, with the pots and plants exposed to dry currents of air, is useless, as it is sure to result in failure; but kept in a pit or frame there are no plants that may be grown with greater ease, and few that yield a better return for the care and attention bestowed on them. Cuttings made of the young shoots, and put in sandy soil under a bell-glass in moist heat, will root in a week or ten days; and these, if potted on, will make nice bushy little specimens by the winter. Any old ones that may have been kept should be shortened back a little, and divested of all the old shabby leaves that appear likely to harbour insects, and after this is done shaken out and potted, and then placed in close moist heat, to give them a start, after which the pit or frame, as already mentioned, is the proper situation for them. Although I have placed the Linum among stove-plants it requires but little more heat during the winter than that of an ordinary greenhouse, in which temperature, if the atmosphere is kept moderately dry, it will retain its blooms much longer, and remain a considerable time in perfection.

Rivina humilis is a plant of great decorative value that may be got up to a useful size quickly, and is just the thing for amateurs and others having only a limited amount of room, and who require something they can manage easily, and which when grown can be made use of in their dwellings for the embellishment of the dinner-table or other similar purposes. Rivina humilis is especially adapted for this kind of work, if not kept too long out of heat so as to cause its berries to fall, as they unfortunately do rather easily after they have become fully ripe. The best way of growing the plants is to run them up with clean stems about a foot high, in which way they show off their numerous long racemes of flower and fruit to the greatest advantage. These have much the appearance of bunches of red Currants, but are more glossy and polished looking, so that any one unacquainted with the plant may readily conceive how exceedingly ornamental it is. If a few seeds are sown at once in heat they will be found to germinate readily, or cuttings put in strike with great freedom; but the seedlings are always preferable, as they grow stronger and make the best standards. In order to get them to set their berries freely they should be subjected to plenty of light, which will likewise induce a short-jointed compact growth, resulting in well-formed close little heads. Almost any kind of soil suits them, and 6-inch pots are quite large enough unless extra sized plants are required, in which case they must be shifted quickly and have a brisk moist heat afforded them. By pruning or stopping a few back occasionally and starting them into growth again they may be had in full beauty nearly the whole year round, and eventually got to form quite large specimens suitable for exhibition.

Centropogon Lucyanus is another valuable cool stove plant, which is suitable for small collections, both on account of its moderate growth and exceedingly floriferous habit. So free is it in this respect that it not only blooms at the ends of every one of the main shoots, but when these are cut or die away it breaks again at the axils of the leaves, and yields others for months in succession. The shape and general appearance of the flowers resemble those of the Æschynanthus, as does also in some respects the plant, and like the Æschynanthus it may be grown in baskets for suspending, in which way they show off to great advantage. Those who are not so fortunate as to possess any stock of this Centropogon, may, by purchasing one now, soon work up as many as they require, as it strikes freely from cuttings made of the young tender growth taken off with a heel. The shoots to form these should not be more than from 2 to 3 inches long, and if these are put in in strong moist heat they will soon be ready to pot off, after which the best place for them is in a pit where they can be plunged and treated similarly to the Sericographis. This plan of managing this class of plants not only relieves the stove and renders it available for the principal specimens, but it suits them both so much better to be separated, as the one is not then overshadowed by the other. Although the Centropogon will grow in almost any kind of soil, it succeeds best in good fibry peat, in which it should not be potted over firm, but be well drained, as it requires plenty of water during the summer. *J. S.*

(*To be continued.*)

Home Correspondence.

Xerophyllum asphodeloides.—On opening my *Gardeners' Chronicle* (p. 433) I was agreeably surprised by the flattering notice of the Xerophyllum asphodeloides exhibited by me, and now answer the implied question as to how we grow it. Till lately we had only two plants, one in a shady part of the rockwork on a soil of about half loam and half sand and then peat added; here it grows and flowers fairly well, but our best plant is in a shaded cool damp rock border, the soil being about two parts peat and one of sandy loam. Here along with Trilliums, Cypripedium spectabile, Lygodium palmatum, Andromeda tetragona and fastigiata (the last given me by, and a valued remembrance of, Dr. Moore, of Glasnevin), it seems thoroughly at home. Having lately become possessed of a few more plants, I am trying them in the wild garden, under different conditions of shade and damp, and will report the result. A pan of seed has as yet made no sign: if this grows I shall have means of trying the effect of Xerophyllum on beds, which would, I think, be very striking. We have now in the wild garden a bed of the yellow Dog-tooth Violet, Erythronium americanum, growing and flowering freely; it is in shade in the black vegetable soil, which seems exactly to suit it: with a number of flowers out at once it is a beautiful object. The wild garden is a great success. After beginning experiments on plants in a sandy dry hot field with the "pan" below—where, though I cannot say with Crabbe, "And the blue Borage marks the sterile soil," the Erodium did this thoroughly, and we had soil, shade, and shelter, all to make—you can then imagine the luxury of having dropped into a garden, or rather plot of ground, where in the small space of 5 acres there is every condition of soil from sand to good loam, and from dry vegetable black earth to black bog, and situations from hottest sun to completest shade; so that within a short stone's-throw we have a roasting bank, with soil and aspect perfect for Ixias, Calochorti, Millas, &c., and a cool black bog, in which the great double Caltha given me by the great gardener of Aldborough, the Rev. Mr. Nelson, is luxuriating and is now flowering in all its gorgeous beauty. Mr. Dominy used to say that a gardener should have two lives; the next best thing is as at Bitton, where two generations have enthusiastically carried on the garden. I am working at the wild garden as hard as other engagements will permit, in hopes that my son may follow the good Bitton example. *George F. Wilson, Heatherbank, Weybridge Heath.*

Double Cinerarias.—I always looked on double Cinerarias as useless and unsatisfactory flowers, until I received a few flowers from Mr. Greenfield of the Priory, Warwick, of his magnificent varieties, Mr. and Mrs. Thos. Lloyd, the flowers of which are more like miniature Pyrethrums than Cinerarias: and with stems 2 to 3 inches long, one may imagine to what decorative purposes they may be put. The flowers I received are 1½ inch in diameter. As an old Floors man I beg to congratulate Mr. Greenfield on his success as their raiser, and the Messrs. Veitch on their acquisition. Double Cinerarias are now a reality and worthy the public appreciation which I believe they are destined to gain. *Henry Knight, Floors.*

Plants by Post.—In those interesting notes by a lady headed "Garden Gossip," on p. 425, I see oiled silk recommended for enclosing plants by post. A cheaper and lighter material, quite as useful for the purpose, is gutta-percha membrane, of which I enclose a specimen. I call attention to it in hope that an increased demand and production may lower the price, which at present, though less than that of oiled silk, is high enough to make a serious item of expense to those who use the post much for the transmission of plants. When we see the large gutta-percha air balls which are sold in the streets for a penny, it seems to me that the tissue enclosed ought to be made for less than 3*d.* a square foot. *C. W. Dod, Grange-over-Sands.*

Aaron's Rod.—The botanical name of Aaron's Rod is Verbascum Thapsus. There are two reasons why this should be called Aaron's Rod: firstly, the Romans dipped the stems of this plant in tallow, and burnt them at funerals! Secondly, the simple spike is long, cylindrical, on which is a quantity of densely packed, very large, and handsome golden-yellow flowers. The stem is 5 feet high. The flowers when dried in the sun give out a fatty matter used in Alsace as a cataplasm in hæmorrhoidal complaints. The leaves are ovate, excessively woolly both sides. Formerly it was called Barbascum, from Barba, meaning a beard, in allusion either to the shaggy nature of its foliage, or else to two of the five stamens, which are hairy. It is a biennial, flowers in July. This when cultivated is very beautiful, often growing 8 feet, and is well worth the attention of both ama-

teur and professional gardeners. The Solidago virgaurea is occasionally known and called Aaron's Rod, but only then, I fancy, in mistake, *W. Roberts, 9, Chapel Street, Penzance, March* 30.

Thinning Pseudobulbs. — Orchids, I think, are not strengthened but rather weakened by thinning their pseudobulbs, whether these appear old and leafless, or blind and fresh; for they are thus deprived of a store of nourishment reserved in the swollen portion of the stem. This is of a succulent character, containing many spiral cells and and vessels, which, from their elasticity, keep the tubes pervious and favour the rapid transmission of fluids, while a thick epidermis prevents absorption by the atmosphere. A similar provision is made in the case of some terrestrial Orchids, by tubercles at the roots, which abound in starchy matter and minister to the growth of the young shoot. But since personal experiment first and observation afterwards are both necessary to direct and substantiate our notions regarding natural phenomena, I removed all the old and leafless and a few blind pseudobulbs from Cattleya Mossiæ, Lælia anceps, Epidendrum cochleatum, and Dendrobium nobile. Two years have since elapsed, and the plants which, before the operation, were making good progress, received a check from which they have not yet entirely recovered. As a research into the nature of the vegetative organs of Orchidaceæ has begun in the laboratory at Kew, by a distinguished

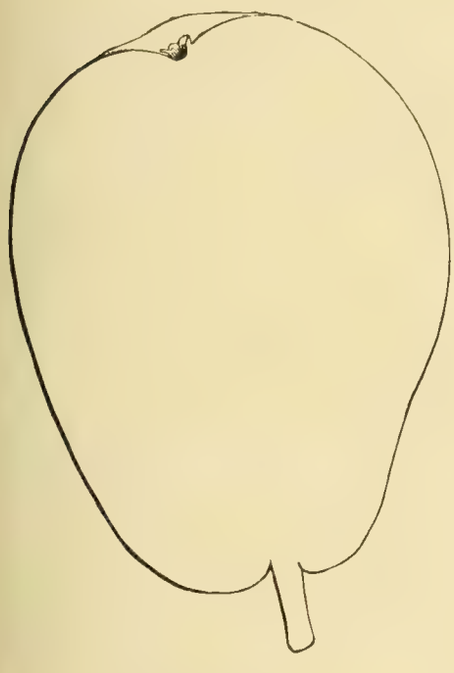


Fig. 83.—Forelle pear.

German botanist, we hope to receive some light in this direction. *James Scott, Edinburgh Gardens.*

Effects of the Winter on Hardy Plants.—I find on looking at the record of frost which has been carefully kept here, that on December 2 we had 27°; on the 3d, 24°; on the 7th, 26°; on January 20, 19°; on the 26th, 21°; and on the 28th, 20°. There has not been so long and severe a winter since 1860, and had it not been that we have a good dry subsoil (gravel and Kentish ragstone) we should have fared far worse than we have done, and that is bad enough. We had as good specimens of Laurustinus as are often met with; now they look as if scorched, and a great number of them have been killed to the ground line. Laurus nobilis (the Bay) has shared the same fate, while Euonymus are all killed down, except radicans variegata. Arbutus, too, are for the most part killed down; Aucubas, Portugal and even common Laurels have suffered severely; Phillyreas and some of the evergreen Oaks have lost their foliage, and are much injured; Conifers have come off pretty well, although some of the foliage is very brown and falling off, but I hope they will all recover. The St. John's Wort even has not escaped, but is killed down to the ground line. Rhododendrons are not much hurt, except a few of the hybrids and tender varieties. The Pampas-grass, which was not protected, I am afraid is much injured. The flowers in the borders have suffered much, such at least as are in any degree tender—Carnations, Pinks, Statice, Santolina, Chrysanthemums, Lobelia cardinalis, and a host of little things one meets with as they walk around. The kitchen garden has fared better, simply because in the winter there is not so much to kill but what is quite hardy. I have not many losses to mourn here except Broccoli. I think I have six left out of 1000. Scotch Kale, too, is very much cut up, also Parsley; with these exceptions there is not much but what can be easily made good. What are we to do in the face of all this disaster and disheartening affair? Some will perhaps give up in despair, but I would advise them to do nothing of the sort, but to set to work with patience and perseverance to repair the actual losses. Carefully cut away the parts that are dead, and trim the others in shape so that they are missed as little as possible. A great many of the blanks may temporarily be filled up during the summer months with tall-growing annuals and foliage plants, and spare greenhouse plants, many of which can still be raised from seed, such as Tobacco, Helianthus, Wigandia, variegated Maize, Cannas, Amaranthus, and a host of things which I believe would be an agreeable change. *A. W., The Gardens, Preston Hall, Kent.*

Asparagus Kale. — I can fully endorse Mr. Horsefield's remarks as to the usefulness of this vegetable. The reason of its oftentimes rotting off in

Fig. 84.—Beurre Diel pear.

the autumn is, I think, to be explained by its being sown and planted out too early. In most places the middle of April will be found quite early enough to sow, and it should be the last of the winter greens to be planted out, for if it has become very strong and bushy in the autumn, it will, from its dense habit of growth, be constantly saturated to such an extent that many of the plants will be fairly killed. *W. B. Glasscock, The Gardens, Shirley Park, Croydon.*

Trug Basket (p. 436).—Have not we the precise word from which the above (slightly localised in pronunciation in one part and translated in the other) is taken in the German compound, "Trag-korb," a pannier, hamper, or portable basket? See Flügel's *Dictionary. O.*

Asplenium viride.—More than once lately, whilst rambling amongst the mountain limestone hills through which the Settle and Carlisle Railway runs, I have been surprised to see the abundance of Asplenium viride growing mixed up with Asplenium Trichomanes. Mr. Bentham, in his *Handbook of British Flora*, says of A. viride that though in the first edition he treated it only as a variety of A. Trichomanes, he has in his second edition admitted it as a species "only in compliance with general custom." Bearing this in mind I have spent several hours amongst them, examining growing specimens to see whether I could find any doubtful or intermediate forms. The distinctions appeared to me, in several hundred specimens I looked at, to be quite constant, and could not be accounted for by any difference of soil or position. The two species grow together amongst the same rocks, and frequently in the very same crevice, close to one another. A. viride does not begin to be common until about 1000 feet above the sea level, though A. trichomanes grows quite down to the seaside. I could not ever find A. viride on these hills growing on the open face of rocks, or in any place exposed to much sun, though the other grows abundantly on perpendicular rocks, even with a full south aspect. A. viride delights in those narrow crevices of which the surface of the limestone is full, growing 1 or 2 feet below the ground level, between natural walls of rough rock about 6 inches apart, where it can always see the sky above its head, but no sun for more than a few minutes each day. In these fissures A. trichomanes grows equally well, and both grow together to the very summit of mountains 2000 feet high; though as the elevation increases A. viride becomes relatively more common. Still the distinctions are quite as marked at the highest elevation, where they grow together, as at the lowest. I succeeded at last in finding one plant which had three or four fronds with black stalks, mixed up with others

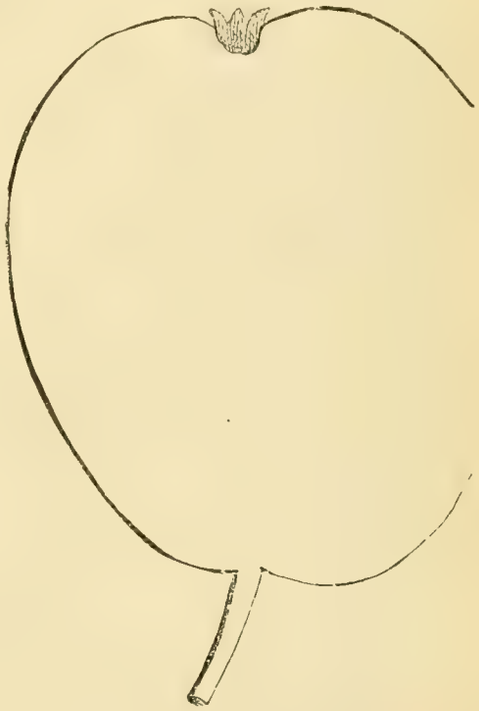


Fig. 85.—Flemish beauty pear.

having green stalks. I thought at first that the colour was due to their withering, but I afterwards observed that the withered stalks of A. viride turn to light brown and not to black. I am not certain, however, that these are not two plants grown into one, and I have sent it to a good botanist for his opinion. *C. Wolley Dod, Grange-over-Sands, Lancashire, April* 2.

The Edelweiss (Gnaphalium Leontopodium).—Any one wishing to raise this plant from seed had better sow at once in shallow pans, well drained and filled with a compost of sandy peat. Cover the seeds very lightly, place the pans in a warm house, and be careful never to let the soil get dry. In about a fortnight the seeds will be through the soil. I sowed on March 5, and have now some scores of seedlings up, which I shall prick out under hand-lights. Here on the sandstone it thrives vigorously. *A. Brown, Pusey Gardens, Faringdon.*

Seedling Anemones. — For supplying large quantities of cut flowers in winter and spring few things are more useful than seedling plants of Anemone coronaria. Early in February I was through the well-kept gardens of Doneraile Court, and on a south border there were several rows of plants, which even at that early date were blooming freely, and comprised a great variety of remarkably rich colours; and I was informed that they had been in bloom more or less throughout the winter. The seed was sown last May, in rows a foot apart, the ground having previously been well manured; the

only attention the plants received being to keep them free from weeds. *W. C.*

Saxifraga oppositifolia.—This prettiest of native Saxifrages, which has been nearly cleared from North Wales, except on inaccessible precipices, still survives in tolerable plenty on some of the less frequented mountains of Yorkshire. I saw it in full flower there on March 22, defying the east wind and frost; for at that elevation—2000 feet above the sea level—in spite of a bright sun at mid-day, the ground was hard frozen, and the small pools coated with ice, yet this hardy little mountaineer was as bright as summer, its apparently leafless tufts of purple flowers lying so close to the surface that it looked as if the rock itself was in flower. *C. Wolley Dod, Grange-over-Sands, April 2.*

Cattleya crispa superba.—Mr. Williams in his *Orchid Manual* considers this one of the finest Cattleyas in cultivation. Sepals and petals pure white, lip rich crimson, and beautifully fringed. This magnificent variety is undoubtedly all that is here described, and it is to be regretted that it is so rare as not to be seen oftener. The true variety is perfectly distinct from other Cattleyas, and easily distinguished by the numerous dark brown spots over the upper and lower sides of the leaves. No other Cattleya with which I am acquainted has the same free distinct spotting. In reality it is a superb Cattleya, and its fringed lip enhances greatly its beauty. *Henry Knight, Floors.*

Charcoal. — In answer to "A Pembrokeshire Gardener," I may say that charcoal is made into an excellent manure by absorbing from the atmosphere, or earthy substances with which it is in contact, ammoniacal vapours and saline solutions which are very beneficial to vegetation, and without which they could not live. Now wood charcoal (for there are two sorts, wood and animal), as it is very light and porous, has great affinity for vapours, absorbing a large amount of ammonia, and 9¼ of oxygen. Ammonia is present in, and is given off from, all dead and decomposing animals and vegetables. It is also one of the chief constituents of manure, without which it is almost worthless. Wood charcoal also possesses deodorising, disinfecting, and decolorising properties, which are entirely dependent on its absorbent qualities. Seeds sown, and plants grown in moistened charcoal, sprout and grow with remarkable quickness. I think that the best way to use charcoal is to mix about half and half with manure, or to carry the urinal water of stables and shippons, and empty it on to a heap, or even let it steep in water from the dung-heap, so that it may collect and retain the salts and solutions which are necessary for the well-being of the future plant. There is also another very valuable fertiliser, but which must be used with caution, or it will do more harm than good. This is the black dust of the flues and chimneys, which contains from 18 to 48 per cent. of mineral matters, which are found in combination with it, consisting of the earthy matters of the coal, and of compounds of gypsum and sulphates, which are obtained from the lime of the flue and the sulphur of the coal. It also contains from 1 to 5 per cent. of ammonia. Gypsum is composed of 41½ parts of lime and 58½ of dry sulphuric acid, and the sulphate is composed of the sulphate of magnesia (or the epsom salts of commerce), and is generally procured after evaporating common salt from sea-water. These compounds are for the most part very soluble, and enter into the composition of almost all vegetables. It is only by a knowledge of these things by which we are enabled to see and understand the effects of elements that are wrought each day by the never-altering laws of Nature. *T. K. Holden.*

—— My experience of this goes to prove that nearly all plants grown in pots are greatly benefited by its use, stove plants and Ferns especially so. I have generally used sand and dust, in about equal proportions. Why should not outside crops like it as well? At most places where an establishment is kept up it can generally be obtained gratis. *J. B. Combe.*

Peaches and Nectarines.—The prospect of a crop of these outdoors during the present year is a very poor one, for on examining the trees I find the wood is badly injured by the severe and protracted frost, and the buds are very small and weak looking, which betokens imperfect organs within. Ripe wood is always considered the first essential towards getting fertile blossoms, and if this is so necessary, as no one at all acquainted with fruit culture can doubt, the chance of the blooms setting is a very forlorn one, as in most places the shoots are green and soft, with leaves still hanging, and, what I fear is worse, the bark has its sap-vessels ruptured to a serious extent, for when cut into I find it is much discoloured and full of dark spots, which, under the microscope, appear to be particles of decayed vegetable matter, evidently brought about by the action of frost. Such an affection as this must disorganise the health of the trees, even if it does not kill many outright, as seems inevitable, as when overtaken by winter they were in full growth, most of which was made quite late in the autumn. Unfortunately nothing can be done at present but to remove the most crippled, and replant with others from reserve walls, as to attempt any sort of pruning till the buds become more advanced is useless, and would be likely to help in carrying the decay further back. In ordinary seasons it is generally preferable to leave Peach wood full length, but much shortening will have to be done this spring, the points of the shoots being quite soft and shrivelled, and totally unfit for laying in to fill up the gaps. That on young trees, however, if alive, should be preserved, that the spaces they are intended to occupy may be covered as quickly as possible, the extension system being far the best with these, as the more the branches lengthen the more the roots extend and the faster the stems and trunk swell—all tending directly to establish the plants speedily, and bring them into a fruit-bearing state. I have seen healthy young trees from nurseries shockingly maltreated, the shoots being cut off to within a few inches of their base, thus leaving the trees mere stumps with large wounds to heal over, whereas had they been planted almost intact they would have been far better in every respect, and the loss of at least a year saved. When beheaded in that way all that they can do in the time is to make about the same number of branches of similar length, which, strange to say, are frequently subjected to the same kind of treatment again. A young Peach that is healthy and has the right sort of soil to grow in does not require these persuasive influences to break back, as it will do that fast enough and make shoots less gross and watery with growth equally distributed, instead of being drawn away by one or other of the gourmands taking the lead. *J. S.*

Artificial Manures.—In the issue of the *Gardeners' Chronicle* of July 12 of last year, in the course of some remarks of a general character on Potatos I alluded to an interesting trial of three Potato manures then proceeding here, and fully described the nature of the trial, how conducted, length of rows, quantity of manure given to each row, and various other particulars that it is not now desirable to recapitulate, as any reader may refer to the number of that date if desirous of so doing. Now that the planting season is approaching, and the minds of growers, both large and small, are being turned to the production of good profitable crops, I have numerous applications from those who evidently had read my remarks last July, and now want to know something as to the result. As the matter has a general interest for all Potato growers, I ask leave to add now what I then left unfinished and unsaid. The three manures employed were not sent with the maker's compliments and gratis with the hope expressed that a favourable report might be made concerning them, but were ordered and paid for in the way of business, therefore I can write of them and their merits, or otherwise, with entire freedom. They were as under:—Messrs. Clay & Levesley's "Fertiliser," Messrs. Morris & Griffin's, of Wolverhampton, special Potato manure, and a special Potato manure manufactured by Messrs. F. C. Hills & Co., of Deptford. Clay's Fertiliser is without doubt a splendid pot-plant manure, and I found, used with early Potatos grown in pots, that the effect was remarkable. Only a few days since I heard it spoken of by an eminent gardener, who used it specially with his pot Strawberries, as a "wonder," and he was quite enthusiastic in its praise, and with good reason. Used in quantities of one-half soot to one-half of the Fertiliser, the effect on the plants was indeed wonderful, and the swelling crop of fruit a remarkable one. As a special Potato manure for outdoor crops its effects are less marked, and although its highly concentrated nutritive properties may act with good effect upon a succeeding crop, its immediate effects upon the Potatos are not so great or so sensible as was shown by Hill's manure, which is also cheaper, and evidently prepared to meet the needs of the Potato plant and the formation of tubers. The rows were 122, each 50 feet in length and 3 feet apart. The sets were of same size and selection throughout, the soil freely worked, but of moderate quality, having had no animal manure applied for two years, and the quantity of artificial manure of each of the three sorts used was 4 lb. per row of 50 feet, or at the rate of about half a ton per acre. As the Potato plants grew the effects of the respective manures on the tops was most obvious—that of Hill's so far exceeding the others that ere the haulm was half grown the rows where this manure was applied could be picked out from the rest with ease. The best and most satisfactory test, however, was found at the scales, when the produce of all the earlier kinds was lifted, for not only were the samples throughout from Hill's manure finer, but the produce greater, as the following results will show:—Early Lemon Ashleaf gave to Hill's manure 52 lb. per row, and to Morris' manure 41 lb. per row. Early Bird Ashleaf gave to Hill's 45 lb. and to Morris' 37 lb. In the same order Bedfont Prolific gave 40 lb. and 35 lb.; Rector of Woodstock, 46 lb. and 37 lb.; Porter's Excelsior, 52 lb. and 42 lb.; White Emperor, 40 lb. and 28 lb.; Feltham White, 45 lb. and 35 lb.; and a single row planted farther on with Clay's Fertiliser gave 39 lb. Woodstock Kidney gave to Hill's 50 lb., and to Morris' 35 lb., Avalanche 42 lb. and 31 lb., and Emerton's Advance 54 lb. and 42 lb. The kinds planted in three rows with one kind of manure to each row were chiefly late ones, but the following, got up before the disease had largely spread, although the growth was checked, gave as under:—International Kidney: Hill's 54 lb., Clay's 46 lb., and Morris' 46 lb. Vicar of Laleham: Hill's 50 lb., Clay's 45 lb., and Morris' 36 lb. All the other kinds were not weighed, because the continued rains made the soil so adhesive that no fair test of bulk could be had, but all through the greater value of Hill's manure was most evident. This is an impartial and exact recital of the results, and those who read may deduce from it their own conclusions. *A. D., Bedfont.*

Reports of Societies.

Royal Caledonian Horticultural: *April 7 and 8.*—The spring show of this Society was opened on Wednesday in the Waverley Market, Edinburgh, and closed on Thursday night. It was one of the finest displays we have seen in the North at this early season, and the weather being fine there was a good company. The nurserymen of Edinburgh, as usual, showed forth with prominence, the Rhododendrons exhibited on one of the tables by Messrs. Downie & Laird being one of the greatest features of the show: we noticed amongst these a gorgeous R. Broughtonii some 12 feet in height and nearly as many through, John Downie, Prince Camille de Rohan, and many others nearly approaching it in size and equalling it in profusion of bloom; this firm also carried off the first honours in both classes of greenhouse Rhododendrons, a plant of Countess of Haddington being particularly grand. From the Lawson Seed and Nursery Company came a fine display of Conifers, standard Sweet Bays, with a number of fine-foliaged stove and greenhouse plants arranged with considerable taste on the floor. Messrs. Ireland & Thomson came well to the front as usual, with an excellent display: we noticed in particular some fine specimen Crotons of Weismanni and other favourite kinds. Interspersed in this collection were a few nice Orchids, Dracænas, Azaleas, &c.; also a plant of the charming Rhododendron Countess of Dalkeith. In Messrs. Dickson & Co.'s display were a few good Tree Ferns and a quantity of herbaceous spring-flowering plants, for which this firm is noted. Pyrus Maulei, in very small pots, was covered with bloom. Messrs. Methven & Sons exhibited some good Todeas and decorative Pelargoniums, with Rhododendrons and other forced flowers, which made a good display. Mr. Robertson Munro staged an admirable group of herbaceous plants, which were very effective in their way and attracted much attention. Messrs. Gordon & Sons had a table of flowering plants, in which were some good Calceolarias, Azaleas, &c., and a quantity of the charming Primula nivalis. Messrs. James Dickson & Sons exhibited twelve Conifers in baskets, which were all that could be desired, in form and variety of colouring, to illustrate what may be effected by judiciously planting this class of tree. Messrs. Todd & Co. took the 1st prize for table and hand bouquets, and exhibited also some floral decorations for dinner-tables.

Amongst the amateurs the competition in most classes was keen, and we observed some excellent Azaleas. These were as perfect as possible, the flowers of good size and substance, and the plants literally covered. Mr. Paterson, of Millbank, took three 1st prizes, the other falling to Mr. Smith, of Restalrig—Mr. Paul, of Gilmore Place, showing well up in these classes. In stove and greenhouse plants Mr. Paterson again distinguished himself, showing admirable specimens of Erica Cavendishiana and Sindryana, Azaleas Model and Roi Leopold, Pultenia subumbellata, and Anthurium Scherzerianum. Mr. Paul and Mr. McCormack also showed well here. Some very fine Ferns were staged by Mr. Pearson, gr. to Lady Lucy Dundas, Beechwood; by Mr. R. Johnston, gr. to F. Gibson, Esq., Dalkeith; and by Mr. McDonald. In Mr. Paul's collection was a very fair plant of Microlepia hirta cristata.

Dr. Patterson, of Bridge of Allan, exhibited a very fine specimen of Anthurium Scherzerianum, also a very nice collection of Orchids, in which were fine plants of Chysis bractescens and Cymbidium Lowii, and beside them was staged Anthurium Williamsii, with some fine spathes expanded. Mr. Paul took the 1st prize for six Orchids, with nice plants of Oncidium sarcodes, Masdevallia Harryana, Phalænopsis Schilleriana, Cypripedium villosum, Dendrobium densiflorum and D. nobile; Mr. Walker, of Lanark, being 2d with Cypripedium villosum, fine Masdevallia Veitchii, and a gem of a plant of Lycaste

Skinneri alba, and three other good plants, which we think must have caused some trouble to the judges in giving their award.

In the class for two Orchids Mr. Curror, gr. to G. Douglas, Esq., of Eskbank, was placed 1st with Dendrobium lituiflorum and D. Pierardi major; Mr. Paul 2d. Mr. J. Boyd, of Falkirk, was placed 1st for a single specimen with Cattleya Skinneri; a fair plant of Renanthera coccinea was also noticed. Ericas were not exhibited in any quantity, the 1st prize for four falling to Mr. Paterson, Millbank, who had E. ventricosa coccinea minor, florida, profusa; Mr. McCormack being 2d.

For tables of ornamental foliage and flowering plants combined, Mr. Priest, of Newbattle, led the van. He staged some fine Azaleas, Crotons, Pelargoniums, and similar plants, and a few good Orchids dotted amongst them: this was considered for style and finish the best table. Other tables were exhibited by Mr. Green, gr. at Falcon Hall; Mr. Reed, gr. at Ravenswood; and Mr. J. Spence, gr. to J. Buchanan, Esq., Oswald Road, in all of which were to be found examples of good gardening.

The Hyacinths at this show made one of the great features, and absorbed a vast amount of interest. In the class for eighteen that veteran in their culture, Mr. J. Cowie, of Morningside, was placed 1st. In his collection were fine examples of William I., Marie, Mont Blanc, Seraphin, Lord Derby, Gigantic, Grandeur à Merveille, &c. Mr. Ker, gr. to Alex. Hope, Esq., Chapel-on-Leader, was 2d, and Mr. McLure, gr., Trinity Grove, 3d. For nine Hyacinths Mr. Pearson, gr., Beechwood, was 1st, and Mr. Walker, gr., Rosehall House, 2d. In the two classes for six Hyacinths Mr. J. Johnston, gr. to Mrs. Gordon, of Clunzon, and Mr. Robertson, of Brunton Cottage, Canon Mills, were respectively placed 1st. Mr. Gordon, of Niddrie, staged some excellent Polyanthus Narcissus, as also some grand cut Roses. In pot Roses Mr. Bryson, of Helensburgh, and Mr. Paterson carried off the honours in their respective classes. Messrs. Downie & Laird were awarded the 1st prize for eighteen Hyacinths in the nurserymen's class, as also for twelve Cyclamens.

Messrs. Thomson & Sons, of Clovenfords, made a grand display on one table with forced flowers, including excellent Azaleas, Spiræas, Lily of the Valley, &c. In like manner Mr. Taylor, Hermitage, Leith, also much distinguished himself, his table being tastefully arranged.

A small display of fruit was staged, Mr. Anderson, of Oxenford Castle Gardens, carrying off the prize in both black and white Grapes; Mr. Rentoul, Bothwell Bank, the 1st for Strawberries; Mr. Potter, Seacliff Gardens, North Berwick, for Apples.

A number of tables of spring flowering hardy plants in pots were staged and attracted universal notice, they either having been just lifted from the open borders, or grown for a short time in pots in cold frames. Large quantities of Palms were also exhibited, some by the leading nurserymen, some also kindly sent by Mr. Sadler from the Botanic Gardens. Taken as a whole, it may be considered as one of the finest spring exhibitions yet held by the Society.

Obituary.

The death of Mr. Thomas Perkins, formerly the head of the nursery and seed firm of Messrs. Thomas Perkins & Sons, of Northampton, removes a central figure from the circle of the nursery and seed trade in this busy town. His death was not unexpected. He had been in a weakly state of health for some time past, and on the 3d inst., after a long and painful illness, he passed away, having attained his fifty-eighth year on March 23.

The name of Perkins has for a long time been honourably associated with the nursery business in Northampton. The first of that name to embark as a nurseryman was the father of the Thomas Perkins whose death is now recorded. Commencing in a small way, in course of a few years the business grew in importance, and it is now carried on by Mr. John Perkins, his son. Family circumstances necessitated the establishment of a second business—that known as the firm of Messrs. Thomas Perkins & Sons.

Mr. Thomas Perkins was for some time associated with his father in business, and at the age of twenty-three, desirous of extending his experience, he went to the Handsworth Nurseries of Messrs. Fisher & Holmes, at Sheffield. In 1853 he entered into business at Atherstone, and was making good headway, but upon his father requesting him to return home he gave up his connection at Atherstone, and went back to Northampton. He had not been there long before he deemed it necessary again to make an attempt in business on his own account, and in 1857 he went into partnership with Mr. John Marsh at Northampton, under the title of Marsh & Perkins, as nurserymen and seedsmen. In 1867 Mr. Marsh retired from the firm, and the business was carried on by Mr. Perkins till within the past two or three years, when he retired in favour of his two sons, who are now the partners of the firm. In course of time the business grew into one of great dimensions, and included the cultivation on a large scale of plants suitable for covert purposes; and an extensive connection was formed among the leading landed proprietors in the county of Northampton, and those counties adjacent to it, among whom Mr. Thomas Perkins was highly esteemed. Forest trees, fruit trees, Conifers, Roses, &c., are cultivated on a large scale, and an extensive business is done with the trade. Mr. Perkins was well-known for his honourable dealings; all his enterprises were unvaryingly successful in their results, and his sound judgment and experience were much sought after, especially by country gentlemen. He was an ardent lover of fox hunting, riding to hounds when it was possible to do so, and frequently rising very early in the morning, so as to get his business arrangements forward before mounting his horse. Though he had retired from the nursery business he still followed the avocation of a farmer, and grew Peas, Mangel, Turnips, Kohl Rabi, &c., for seeds. *R. D.*

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, April 7, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest	Temperature of the Air: Lowest.	Temperature of the Air: Range	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point	Hygrometrical Deductions: Degree of Humidity. Sat = 100.	Wind: Average Direction.	Rainfall.
	In.	In	°	°	°	°	°	°	°		In.
April 1	29.47	−0.28	53.1	40.5	12.9	45.0	+ 0.8	36.4	72	WSW: WNW	0.14
2	29.34	−0.41	51.8	37.5	14.3	44.5	+ 0.1	43.0	95	S.W.	0.28
3	29.40	−0.34	61.3	41.1	17.2	51.7	+ 7.1	46.3	82	S.S.W: S.W.	0.00
4	29.21	−0.53	55.8	41.0	14.8	47.7	+ 2.9	42.9	85	S.W: W	0.02
5	29.24	−0.50	54.4	39.0	15.4	45.4	+ 0.5	40.3	83	WSW: WNW	0.31
6	29.17	−0.56	52.2	36.2	16.0	42.6	− 2.4	38.5	80	WSW: W.	0.04
7	29.41	−0.33	58.0	35.0	23.0	44.6	− 0.6	39.6	83	W.	0.00
Mean	29.32	−0.42	55.3	39.1	16.2	45.9	+ 1.2	41.0	84	W.: S.W	sum 0.79

April 1.—A fine bright day, partially cloudy till evening, then cloudless. Frequent rain and hail between 2 and 4 P.M.
— 2.—Overcast and dull till evening, then fine and bright. Rain fell frequently till 2 P.M.
— 3.—A fine bright day. Strong wind. Overcast at night. Mild.
— 4.—A fine day, cloudy, with slight showers at times. Bright and cloudless after 6 P.M. Windy.
— 5.—Generally fine and bright, though frequently dull, with heavy showers till 4 P.M.; fine after, cloudless at night.
— 6.—A dull morning, fine but cloudy rest of day. Cloudless at night. Slight shower, and thunder heard at 5.30 P.M.
— 7.—A fine bright day, cloudy at times. Cool.

London: *Barometer.*—During the week ending Saturday, April 3, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.24 inches at the beginning of the week to 29.34 inches by the morning of March 31; increased to 29.74 inches by the evening of April 1; decreased to 29.45 inches by the afternoon of the 2d; increased to 29.60 inches by the afternoon of the 3d; and was 29.58 inches at the end of the week. The mean reading for the week at sea level was 29.78 inches, being 0.44 inch below that of the preceding week, and 0.17 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 61¼° on April 3, to 50°, on March 28; the mean value for the week was 55½°. The lowest temperatures of the air observed by night varied from 27¼° on March 29, to 44° on April 3; the mean value for the week was 36½°. The mean daily range of temperature in the week was 19°; the greatest range in the day being 28¾°, on March 29, and the least 13°, on April 1.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—March 28, 39°.7, − 3°.3; 29th, 39°.8, − 3°.5; 30th, 45°.6, + 1°.9; 31st, 45°.2, + 1°.2; April 1st, 45°, + 0°.8; 2d, 44°.5, − 0°.1; 3d, 51°.7, + 7°.1. The mean temperature of the air for the week was 44°.5, being 0°.6 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 127½° on April 3, and above 107° on March 28 and 29; on April 2 the reading did not rise above 55°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 23° on March 29, 24¼° on the 31st, and 27° on the 28th; the mean of the seven lowest readings was 31½°.

Wind.—The direction of the wind was variable, and its strength strong at times.

The weather during the week was fine, though cloudy at times.

Hail fell on April 1, and *fog* prevailed on March 29.

Rain fell on three days during the week; the amount measured was 0.53 inch.

England: *Temperature.*—During the week ending Saturday, April 3, the highest temperatures of the air observed by day were above 61° at Blackheath (London), Cambridge, Nottingham, and Sunderland, and below 55° at Brighton, Bradford, and Leeds; the mean value from all places was 59½°. The lowest temperatures of the air observed by night were below 30° at Plymouth, Bristol, Blackheath, Cambridge, Wolverhampton, and Nottingham, and above 34° at Bradford, Leeds, and Sunderland; the mean value from all places was 30¾°. The extreme range of temperature in the week was above 36° at both Cambridge and Nottingham, and below 21° at both Leeds and Bradford; the mean range from all stations was 28¾°.

The mean of the seven high day temperatures was above 56° at Truro, Leicester, Cambridge, and Nottingham, and below 51° at both Bradford and Leeds; the general mean from all places was 54°. The mean of the seven low night temperatures was below 36½° at Brighton, Blackheath, Cambridge, Wolverhampton, Nottingham, and Hull, and above 40½° at both Truro and Sunderland; the mean value from all stations was 37¾°. The mean daily range of temperature in the week was above 20½° at Cambridge and Nottingham, and below 12° at Bradford and Leeds. The mean daily range from all places was 16¼°.

The mean temperature of the air for the week from all stations was 44½°, being 1° higher than the value for the corresponding week in 1879. The mean temperature was above 46° at Truro, Leicester, and Cambridge, and below 43° at Brighton, Wolverhampton, and Leeds.

Rain.—Rain fell on three or four days in the week at most places; the heaviest falls were 1¼ inch at Truro and Hull, and 1 inch at Wolverhampton, Nottingham, Bradford, Leeds and Sunderland, and the least fall was a quarter of an inch at Sheffield; the average fall over the country was eight-tenths of an inch.

The weather during the week was generally fine, but dull and showery at times.

Fog was prevalent at some places on March 29 and 30.

Scotland: *Temperature.*—During the week ending Saturday, April 3, the highest temperatures of the air observed by day varied from 59° at Dundee, to 54½° at Aberdeen; the mean value from all places was 56½°. The lowest temperatures of the air observed by night varied from 27° at Paisley to 32° at Aberdeen; the general mean from all stations was 30°. The mean range of temperature in the week from all places was 26½°.

The mean temperature of the air for the week from all stations was 44¾°, being 1½° higher than the value for the corresponding week in 1879. The mean temperature was the highest at Leith, 46½, and the lowest at Aberdeen, 42¾°.

Rain.—The heaviest falls of rain were at Greenock, 1.35 inch, and at Aberdeen, 1.15 inch; and the least falls were at Leith 0.37 inch, and Edinburgh, 0.39 inch; the average fall over the country was 0.77 inch.

Dublin.—The highest temperature of the air was 58½°, the lowest 27¼°, the extreme range 31¼°, the mean 46¼°, and the fall of rain 0.32 inch.

JAMES GLAISHER, F.R.S.

Variorum.

Sorghum Cultivation for the Production of Sugar in America.—That the Sorghum plant is capable of producing sugar in sufficient quantities to cause it to be grown in some of the warmer parts of the globe for that purpose is well known; owing, too, to the saccharine matter contained in the stems, the plant is often grown as a fodder plant. Quite recently, however, Sorghum has been brought prominently forward for extended cultivation in America as a sugar yielding plant. This question has formed the subject of an official report from the

Secretary of the British Embassy at Washington. It would seem from this report that at a "Sugar Convention," held last year, the claims of Sorghum or Imphee as a sugar-producing plant were fully discussed by very competent authorities. The Commissioner of Agriculture, it is stated, showed that the Sorghum cane gave an excellent fibre after the extraction of the sugar, and that it could be worked up at any paper-mill; he advised, however, that the stalks be returned to the field, so that there would then be no danger of deteriorating the soil. The saccharine matter being derived entirely from the atmosphere, there is no reason why, even by cultivating the plant on the same ground year after year it should not increase in fertility. Again, the crop of seed or profit is very important, for it is as good for stock as any grain raised, and is even good as a breadstuff. The Commissioner of Agriculture is further reported to have said that he believed "that the different agricultural sections will have their central factories; that the farmers will boil their Sorghum or corn syrup to a density of ten or twelve pounds to the gallon, then take it to the factory and get fine sugar in return." It was also pointed out that since 1849, 1,080,000,000 dols., in gold and silver, have been obtained from the earth, and that during the same number of years 1,250,000,000 dols. have been paid by the country for sugar—170,000,000 dollars more than the production from the mines. Therefore this new industry is of the greatest importance to the country. It is not considered that Sorghum will ever compete with Beetroot for the production of sugar, but it has the advantage of requiring less machinery and less capital for its manufacture. Sugar can be obtained from Sorghum in a small way for home consumption better than from Beet. Sorghum contains ordinarily from one and a half to two per cent. more sugar than the juice of Indian Corn. Regarding the deterioration of juices, it is stated that the juice of the Beet will blacken in the course of a very few minutes, Indian Corn in the course of two or three hours, and Sorghum, perhaps, in six or eight hours. Ordinary land will produce from 160 to 200 gallons to the acre, and by special culture it may be made to run up to 250 to 300 gallons. On the Missouri River, where there is a calcareous soil, tolerably rich, 250 to 300 gallons to the acre have been obtained, and without special cultivation. The best manures for use are phosphates, lime, wood ashes, and plaster of Paris, which is exceedingly advantageous. The growth of the stalks of Sorghum may be increased to an incredible extent by the use of plaster of Paris, with some thinning of the juice it is true, but still the average production to an acre would be very much increased by its use. The difficulties which formerly existed with regard to the cultivation and production of sugar from the Sorghum have been, during the past, to a great extent overcome; one of the difficulties was that the crop was liable to failure because of the lateness of its ripening, so that it did not mature until after corn ripened, and was therefore liable to be lost by frost. The seed has now been tried far down in Texas and high up in Minnesota, and it has everywhere been successfully cultivated and has proved prolific. In 1878 there was a considerable quantity of syrup produced in small quantities, but in 1879, from the greater breadth of land cultivated, the production has been largely increased. "The Sorghum cane is prolific in its seed, which is as valuable as Oats or corn for food for domestic animals. The yield of seed ranges from 15 to 30 bushels an acre, which at 25 cents a bushel is equal to from 4 to 8 dols. per acre. The manner of cultivation is the same as for corn. The Commissioner of Agriculture calculates that if every man who plants corn will plant an additional acre of Sorghum, he will be able to supply his own household with sugar and syrup. If he plant an additional 5, 10, or 20 acres he will have sugar and syrup not only at a low cost for his own use, but to sell. Sugar and syrup, which are now among the more costly of family expenditure, will be then within the reach of every man who will plant a few acres of Sorghum, and without reducing his acreage in other crops he will add to his list of productions for sale. The sugar and syrup thus obtained will be of a quality superior to that generally sold by the refineries; it will be the pure product of the cane, not adulterated and poisoned as nine-tenths of the sugar and syrup sold by the grocers now." This is a highly flavoured prospect of a new branch of cultivation for America, and notwithstanding that more might in all probability be done with Sorghum than is at present done, we fear it will be some time before all the prophecies as to its future, contained in the report, are fulfilled.

Orchids Combined with other Plants.—The flowers of nearly all Orchids are either beautiful or singular in appearance, very often both; yet, with comparatively few exceptions, when out of bloom they are amongst the least inviting in appearance of all cultivated plants. Take, for instance, a house filled with the cooler section, comprising Odontoglossums, Masdevallias, and such of the Epidendrums, Lælias, Lycastes, and others that succeed with a little warmth—or the intermediate division, represented by Cattleyas, Oncidiums, and the many species belonging to other genera that need a medium temperature. For a considerable portion of the year, when few are in flower, it must be confessed that the contents of such houses are as little interesting as any assemblage of plants well could be, except to those fully initiated and enthusiastic in Orchids and their cultivation, to whom the promise held out by healthy thriving plants, coupled with their value, offers enough in future prospect to compensate for the sameness of the time being. This is a feeling we have often experienced when viewing even the best collections of these plants, but we never had it so forcibly impressed upon us as by contrast during last autumn, when an opportunity occurred of seeing a valuable and extensive collection of Orchids, where in each house there was introduced a sufficient number of other plants, such as small and medium sized elegant-habited Palms, Ferns, and a few other things, including narrow-leaved Dracænas, Curculigos, and the like. These were not present in numbers sufficient to in any way impart a miscellaneous character to the contents of the houses, or reduce the collection of Orchids in the estimation even of those who care little for other plants than them, much less to interfere with their treatment or requirements, but were used just to take off the monotonous appearance present when Orchids occupy the houses alone, which, excepting such things as some of the stately Vandas, Angræcums, or the drooping Dendrobiums, present little relief in their habit of growth, but which relief is obtainable by introducing a few things like those we have mentioned, without any detriment to the Orchids, as evident by the excellent condition of the collection we speak of.

Answers to Correspondents.

Bolbophyllum: *T. T.* We cannot find any such species as Bolbophyllum speciosum "in the books," and have never heard of it as a garden name.

Caution.—It appears that a man representing himself to be connected with a Dundee firm is victimising gardeners by inducing them to purchase "tweeds" at a price far beyond their value. We have heard of this gentleman before, with "his pilot jacket, Scotch cap, and sailor-like appearance." Such rogues find in gardeners a too easy prey.

Cineraria: *W. H.* Your seedling is one of the largest we have seen, being fully 2½ inches across, and though large, not at all coarse in appearance. It is of a lovely colour, a deep bright violet with a black disk. Its only fault is, that, for its size, its florets are not quite broad enough to completely fill out the circle. As a decorative plant it must be very effective, but we should look to its being made the parent of better formed varieties.—*J. F. Mould.* A batch of large, high-coloured, and very showy sorts, many having the necessary dark disk. They are a little coarse, and wanting in symmetry of form.

Gardeners' Troubles: Erratum.—At p. 436, for the date May 29, read May 17.

Habrothamnus fasciculatus: *W. Simes.* The plant requires greenhouse treatment, and is of the easiest culture. It requires plenty of pot-room, and a rich loamy well-drained soil, such as will induce free vigorous growth which should be well ripened by the end of the summer, and will then flower during the autumn. It is a not unsuitable plant for a conservatory pillar when there is room for it, but being soft-leaved will require to be guarded against attacks of red-spider by keeping it sufficiently watered at the root, and by frequently syringing the foliage.

Insects: *H. H.* Your Chinese Arbor-vitæ trees are being destroyed by myriads of an aphis new to us. Fumigation with brimstone might be applied to any particularly choice specimen under a para-petticoat (invented by Dr. Lindley), but could not be used in an extensive manner; neither does syringing seem available over trees like Arbor-vitæ. *I. O. W.*

Iron Stakes: *C. Tress.* Iron painted stakes, used for Roses and fruit trees, are not at all injurious, but very serviceable on account of their durability.

Melons: *A. M.* We cannot say definitely what may be the cause of the injury, but should imagine that it was the result of sun-scorching. If you give air a little earlier in the morning, so as to dry up any moisture on the plants before the sun gets much power, there will probably be an end to the mischief.

Names of Fruit: *H. Woodmansey.* Your Pear is named Josephine de Malines.

Names of Plants: *W. W. Dagman.* Not the double form of the common wild Daffodil.—*R. S.* 1, Doronicum austriacum; 2, Symphytum officinale.—*H. C.* 1, Pteris hastata; 2, Asplenium monanthemum; 3, Davallia Tyermanni, if with silvery scales; 4 and 5, Cyrtomium caryotideum; 6, too little developed, but probably Goniophlebium vaccinifolium.—*W. E. T.* 1, Blechnum occidentale; 2, Platyloma rotundifolium; 3, not fertile; 4. Lastrea decompositum; 5, Pteris tremula; 6, Pteris hastata macrophylla.—*J. X. E.* 1, Asplenium bulbiferum dissectum; 2, Lastrea patens; 3, Asplenium præmorsum; 4, Pteris crenata; 5, Blechnum cognatum; 6, Asplenium bulbiferum, strong leafy variety. The rest next week—six being the limit at one time.—*E. Fynn.* 2, Aralia Veitchii; 3, Spathiphyllum cannæfolium; 5, Niphobolus lingua; 6, Adiantum assimile; 8, Mimulus cardinalis; 10, Alonsoa incisifolia. The others, not being in flower, are not determinable.—*T. B.* Dendrobium lituiflorum, and D. Wardianum, very poor; a poor variety of Cypripedium venustum, and Phaius grandifolius. None of them were numbered.—*T. Smith.* Your Begonia is not at all like the variety mentioned.

Primroses: *E. J. L.* The crosses are not very apparent. The best are Nos. 5, 11 (too streaky), 2 (lobes too wide apart), 16 (too small); the two prettiest are 9 and 71, but both are pin-eyed; 9 is very bright, with large orange eye and white dotted margin; 71 is remarkably smooth-edged, and will make a good mother; the others, Nos. 1, 51, and 19, are worthless.

Richardia: *D. C. P.* The double-spathed Arum is by no means a rarity. See our vol. ix., 1878, p. 241. Keep the plant, and see if it will repeat the freak.

Tree Carnation: *H. B.* Fine in colour, and doubtless a showy decorative sort, but utterly wanting in all the properties which constitute a good flower.

Veronicas: *C. F. F.* We do not know where you can get seeds of the plants named, but plants can be obtained from such nurseries as Backhouse's, York; Parker's, Tooting; and Ware's, Tottenham.

Vines: *Enquirer.* Your Grapes and Vine-leaves are injured by some scorching heat-fumes—most probably the sulphur from the pipes, the tissues being very tender.—*F. H.* We have examined the Vine leaf sent, and can find no trace of any insect attack. It is probably due to the health of the Vines, or some atmospheric influences.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* Advertisements, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Catalogues Received:—Rawlings, Brothers (Old Church, Romford), Descriptive Catalogue of Dahlias.—Edward Gillett (Hampden County, Southwick, Mass.), Price List of Native (American) Perennial Plants.

Communications Received.—C. W.—W. G. S.—A. D.—W. B. G.—E. W. S.—R. P.—W. Jinks.—J. R. J.—J. E. H.—W. Roberts (Yes).—D. B.—H. J. Ross.—Louis de Smet.—C. W. S.—A. M.—W. H. F.—H. S.—M. P. W.—M. C. C.—O. de K.

Markets.

COVENT GARDEN, April 8.

We have no alteration to quote, prices remaining about the same, with a good supply and a quiet demand. *James Webber, Wholesale Apple Market.*

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Oranges, per 100	6 0–12 0
— American, barrl.	18 0–30 0	Pears, per dozen	4 0– 8 0
Cob Nuts, per lb.	1 0– 1 6	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb.	8 0–12 0	Strawberries, per oz.	0 4– 0 9
Lemons, per 100	6 0–10 0		

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	10 0–14 0	Herbs, per bunch	0 2– 0 4
Asparagus, Sprue, per bundle	1 0– ..	Horse Radish, p. bun.	4 0– ..
— English, p. 100	12 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— French, per bun.	7 0–25 0	Mint, green, bunch	1 6– ..
— French natural, per bundle	3 6– ..	Mushrooms, p. baskt.	1 6– 2 0
Beet, per doz.	1 0– 2 0	Onions, per bushel	8 0– ..
Brussels Sprouts, lb.	0 6– ..	— Spring, per bun.	0 6– ..
Cabbages, per doz.	1 0– 2 0	Parsley, per lb.	1 6– ..
Carrots, per bunch	0 8– ..	Peas, per lb.	1 0– ..
— French, per lb.	0 6– ..	Potatos (new), per lb.	0 3– 0 9
Cauliflowers, per doz.	2 0– 5 0	Rhubarb (Leeds), per bundle	0 9– ..
Celery, per bundle	1 6– 4 0	Seakale, per punnet	3 0– ..
Chilis, per 100	3 0– ..	Shallots, per lb.	0 6– ..
Cucumbers, each	1 0– 2 0	Spinach, per bushel	5 0– 6 0
Endive, per score	4 6– ..	Tomatos, per dozen	3 0– ..
Garlic, per lb.	1 0– ..	Turnips, new, bunch	0 6– ..

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 160*s.* to 200*s.* per ton. German, 6*s.* to 7*s.* 6*d.* per bag; new English, 2*s.* per lb.

Plants in Pots.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ficus elastica, each	1 6– 7 6
Azaleas, per dozen	18 0–60 0	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–18 0	Fuchsias, per dozen	9 0–15 0
Bouvardias, per doz.	12 0–24 0	Genista, per dozen	9 0–18 0
Cinerarias, per doz.	6 0–12 0	Hyacinths, per doz.	4 0– 9 0
Cyclamen, per dozen	9 0–24 0	Myrtles, per doz.	6 0–12 0
Cyperus, per dozen	4 0– 9 0	Palms in variety, each	2 6–21 0
Dielytra, per doz.	9 0–15 0	Pelargoniums, scarlet zonal, per doz.	6 0– 9 0
Dracæna terminalis	30 0–60 0	Primula, single, per dozen	4 0– 6 0
— viridis, per doz.	12 0–24 0	Spiræa, per dozen	6 0–18 0
Erica gracilis, per dozen	9 0–18 0	Tulips, 12 pots	6 0–12 0
— hyemalis, p. doz.	6 0–24 0		
Euonymus, various, per dozen	6 0–18 0		
Ferns, in var., doz.	4 0–18 0		

Cut Flowers.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Narcissus, Paper-white, 12 spikes ..	1 0– 1 6
Arum Lilies, per dozen	4 0– 9 0	Pelargoniums, 12 spr.	1 6– 3 0
Azalea, 12 sprays ..	0 6– 1 0	— zonal, 12 sprays	0 6– 1 0
Bouvardias, per bun.	1 0– 4 0	Primroses, 12 bunch.	1 0– 1 6
Camellias, per doz...	2 0– 6 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	— single, per bunch	0 6– ..
Cyclamen, 12 blms..	0 4– 1 0	Roses (indoor), doz.	1 6– 9 0
Epiphyllum, 12 blms.	0 6– 1 0	— Roses, Fr., doz.	2 0– 6 0
Eucharis, per doz. ..	4 0– 9 0	Spiræa, 12 sprays ..	1 0– 2 0
Euphorbia, 12 sprays	3 0– 6 0	Tropæolum, 12 bun.	1 0– 3 0
Gardenias, 12 blms..	3 0–12 0	Tuberoses, per dozen	4 0– 6 0
Heliotropes, 12 sp. ..	0 6– 1 0	Tulips, 12 blooms ..	1 0– 1 6
Hyacinths, 12 spikes	4 0– 9 0	Violets, Fr., per bun.	1 6– 2 6
— small	1 6– 4 0	— English, p. bun.	1 0– 2 0
— Roman, 12 spikes	1 0– 2 0	White Lilac, Fr., per bundle	4 0– 8 0
Lily of Val., 12 spr.	0 9– 2 0		
Mignonette, 12 bun.	6 0– 9 0		

SEEDS.

London: *April 7.*—Notwithstanding the excitement over the elections there is now an active seasonable demand for all kinds of farm seeds. Holders in London being anxious to clear out their stocks are accepting unusually moderate rates. The choice Canadian red Clover seed, which was sent here on consignment, is obtainable at unprecedentedly low figures. Alsike also is extremely cheap. Trefoils, and especially the lower qualities, are easier. There is no alteration in grasses. Of Sainfoin the stock appears all but exhausted; for the very small quantity remaining 3*s.* per quarter more money is demanded. From France no further supply is obtainable. Lucerne and Timothy continue scarce. There is a good demand for spring Tares, and values exhibit considerable firmness. *John Shaw & Sons, Seed Merchants,* 37, *Mark Lane, London, E.C.*

CORN.

Trade was very dull at Mark Lane on Monday, and quotations were somewhat flatter. In English Wheat there was no material change—being next to nothing passing; but in foreign Wheat there was a reduction of 1*s.* per quarter. Barley met with a slow sale, and about supported late rates. Malt changed hands quietly on former terms. Oats were in moderate demand, and prices improved to a slight extent. Maize was flat, at a reduction of about 1*s.* per quarter. Beans were firm, while Peas were rather dull. Flour moved off to a small extent at somewhat weaker rates.—On Wednesday the tone of the market as regards Wheat was perhaps a trifle firmer than on Monday, the supply being on a limited scale, but the amount of business doing was so small that prices were almost nominal. Barley was very quiet. Malt was unchanged. Oats were in moderate request, at fully late improvement. Maize was dull at Monday's decline. Beans were steady, Peas dull, and flour quiet and without change.—Average prices of corn for the week ending April 3:—Wheat, 48*s.* 4*d.*; Barley, 35*s.*; Oats, 22*s.* 6*d.* For the corresponding period last year:—Wheat, 40*s.* 11*d.*; Barley, 32*s.* 6*d.*; Oats, 21*s.* 1*d.*

CATTLE.

At Copenhagen Fields on Monday the number of beasts was considerably larger than on the Monday previous, and the trade was not so active, consequently prices were lower, and some inferior qualities remain unsold. There was a considerable increase in the supply of sheep, for which there was a fair demand at rather lower prices. Lambs on the average sold lower, yet choicest qualities continued dear. Good calves maintained late rates. Quotations:—Beasts, 4*s.* to 5*s.*, and 5*s.* 4*d.* to 5*s.* 10*d.*; calves, 5*s.* 6*d.* to 7*s.*; sheep, 4*s.* 10*d.* to 5*s.* 2*d.*, and 5*s.* 8*d.* to 6*s.* 2*d.*; lambs, 7*s.* 4*d.* to 8*s.* 4*d.*; pigs, 3*s.* 6*d.* to 5*s.*—On Thursday supplies were short. Beasts were in fair demand, at improving prices. Sheep and lambs were scarce, and decidedly dearer, Calves sold at full prices.

HAY.

The Whitechapel Market report of Tuesday states that the trade was dull for fodder, but prices remained firm for the quotations:—Prime Clover, 100*s.* to 132*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 102*s.* 6*d.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 38*s.* per load.—Thursday's market was fairly supplied with hay and straw. A dull trade prevailed, and prices were steady.—Cumberland Market quotations:—Superior meadow hay, 98*s.* to 108*s.*; inferior, 50*s.* to 76*s.*; superior Clover, 120*s.* to 132*s.*; inferior, 80*s.* to 105*s.*; and straw, 36*s.* to 40*s.* per load.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that supplies have been moderate, and trade remains steady at fully previous rates:—Scotch Regents, 140*s* to 160*s.*; Champions, 180*s.* to 200*s.*; Lincoln ditto, 170*s.* to 180*s.*; Victorias, 160*s.* to 180*s.* per ton; German reds, 5*s.* 6*d.* to 7*s.*; Dutch rocks, 5*s.*; French white, 5*s.* per bag.—During last week 43,771 bags 7271 sacks were received at London from Hamburgh, 7644 Bremen, 1078 bales Harlingen, 400 sacks St. Nazaire, 300 tons Drontheim, and 600 sacks Rotterdam.

COALS.

The following are the quotations current at market during the week:—Walls End—Lambton, 14*s.* 6*d.*; Wear, 13*s.* 6*d.*; South Hetton, 15*s.*; Chilton Tees, 14*s.* 6*d.*; Thornley, 14*s.* 6*d.*; Hetton, 15*s.*; Hetton Lyons, 13*s.* 6*d.*; Hawthorns, 13*s.* 9*d.*; Original Hartlepool, 15*s.*; Tunstall, 13*s.* 6*d.*; Tees, 14*s.* 9*d.*; Radford Navigation, 15*s.* 9*d.*

Alternantheras from Stores.

WM. BALCHIN begs to offer the following varieties:—AMŒNA, SPATHULATA, VERSICOLOR, AMABILIS LATIFOLIA; also MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATUM, and LOBELIA BRIGHTON, 8*s.* per 100, 70*s.* per 1000. MENTHA PULEGIUM, 6*s.* per 100. Terms cash.
Hassock's Gate Nursery, Keymer, Sussex.

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THE FAMOUS SCOTCH CHAMPION,
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Applicants will please state quantity and kind required.
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TWELVE ACRES of ROSES.—Standard, Dwarf, and Climbing, all the popular sorts; also 80,000 choice Tea-scented and Noisette Roses in pots; extra strong Roses in pots for immediate forcing. See Descriptive Price List, free for a penny stamp.

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LIST of all the EVERGREEN FIR TRIBE, suitable for Britain, giving size, price, popular and botanical names, derivations, description, form, colour, foliage, growth, timber, use in arts, native country, and size there, situation, soil, and other information, with copious index of their synonyms. Free by post for six stamps.

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CYCLAMEN hederæfolium.
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SAXIFRAGA } the best sorts.
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SEMPERVIVUM
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COCOA-NUT FIBRE REFUSE,
3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
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EXCELLENT PEAT FOR SALE, on the Mount Mascal Estate, within a mile and a half of the Bexley Station of the South-Eastern Railway. The Peat stands within a few hundred yards of the road, and there is a cart track to it in good order. Price per cubic yard, as it stands ready dug, 7*s.*; or delivered at Bexley Station, 9*s.*; other places, at special rates. For particulars apply to
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Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.
Fresh SPHAGNUM, 10*s.* 6*d.* per bag.
WALKER AND CO., Farnborough Station, Hants.

PEAT.—Superior Black or Brown Fibrous Peat, for Rhododendrons, Azaleas, Orchids, &c., as used by all the noted Growers. Trucks containing 6 tons loaded at Ragshot or Camberley Stations, S. W. R., £4 4*s.* Address, W. TARRY, Bailiff, Golden Farmer, Farnborough Station.

FRESH SPHAGNUM MOSS for ORCHIDS.—Single Bushel, 2*s.* 6*d.*; 5 Bushels, 10*s.* 6*d.* Some splendid Moss for Vases, &c., on application. Pure LEAF MOULD from the Oak and Beech, 1*s.* per bushel.
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COCOA-NUT FIBRE REFUSE.—INVALUABLE for FORCING, PLUNGING, FERNERIES, &c.
4-bushel bag, 1*s.*, bag included; 30 bags, bags included, 21*s.*; truck, free to rail, about 250 bushels, 25*s.*; cartload at Works, 6*s.* Prompt cash. Post-office Order payable at Greenwich.
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COCOA-NUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1*s.*; 30 bags (bags included), 20*s.*; truck free to rail, 25*s.*
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COCOA-NUT FIBRE REFUSE at Reduced Prices, as supplied to Messrs. J. Carter & Co., High Holborn, W.C.; at the International Agricultural Exhibition, Kilburn; and all the Principal Nurserymen and Seedsmen in England. In 4 bushel bags at 1*s.*, bags included; 30 bags, bags included, 20*s.*; or truckload of about 250 bushels, 25*s.* (truckload free on to rail)—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE.—Useful at all seasons. Largest makers in the Kingdom. 1*s.* per bag, 30 bags £1 (bags included), truck 25*s.* free to rail; 5*s.* van-load, at Works, Janet Street, Millwall, E. P.O.O. payable at General Post Office, London. Orders to be addressed to A. FOULON, Fibre Merchant, 32, St. Mary Axe, London, E.C.

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London Agents: HOOPER AND SONS, Covent Garden, and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

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DARLINGTON BROS. ROLL TOBACCO PAPER and CLOTH are the Best Insecticides. Good Strong TOBACCO-PAPER and CLOTH, 6 lb., 3*s.* 6*d.*; 14 lb., 7*s.* 6*d.*; 28 lb., 14*s.* 6*d.*; 1 cwt, 50*s.* ROLL TOBACCO PAPER and CLOTH, extra good, 6 lb., 5*s.*; 14 lb., 11*s.*; 28 lb., 21*s*; 1 cwt., 78*s.* All parcels carriage paid to London or any Railway Station in Kent. The best Paper and Cloth made. *Vide* Testimonials, free on application to

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Cheques crossed London and Provincial Bank; Post-office Orders, Darlington Bros., Chatham.

To the Trade.—Special Offer.

TOBACCO FIBRE, cheapest material for fumigating, 46*s.* per cwt.; TOBACCO CORD, 28*s.* per cwt.; plain DAHLIA STICKS, 6 feet, 15*s.*; 7 feet, 17*s.* 6*d.* per 100. HYACINTH GLASSES, painted and gilt, assorted patterns and shapes, 8*s.* to 12*s.* per dozen. RUSSIAN BAST, 20*s.* per cwt.: SWEDISH BAST, 24*s.* per cwt.

FOWLER AND CO., 18, Finsbury Street, London, E.

SILVER SAND, fine, 10*s.*; coarse, 10*s.* and 12*s.* per ton. PEAT, 8*s.*, 10*s.*, and 13*s.* per cubic yard. LOAM, 10*s.* and 12*s.* per cubic yard. By truckloads. Write for further particulars to

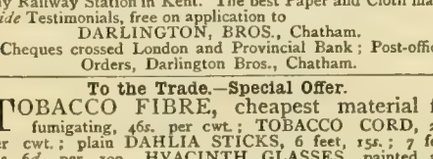
WM. SHORT, Horticultural Depot, Reigate, or 8, Fendall Street, Bermondsey, London, S.E.

WATERPROOF TREE and PLANT LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times. For sample and price apply to the Manufacturers,

FISHER, CLARK AND CO., Boston.

Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

Oil Paint No Longer Necessary.

HILL AND SMITH'S BLACK VARNISH, for Preserving Ironwork, Wood, or Stone. (*Registered Trade Mark.*)

This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom.

UNSOLICITED TESTIMONIAL.

"*Piercefield Park, June* 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Piercefield Park, Chepstow.—I am, Sirs, yours respectfully, WM. COX."

CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.

H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

Large Illustrated CATALOGUE of Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to

HILL AND SMITH, Brierley Hill Ironworks, Staffordshire; 118, Queen Victoria Street, London, E.C.; and 180, Buchanan Street, Glasgow.

"THE GARDEN" POTTERY.—"Your pots are the best."—Mr. PAYNE, *Gr. to the* Rt. Hon. and Rt. Rev. the Lord Bishop of Bath and Wells.

Works:—Chilcompton and Evercreech Junction Stations.

Address:—T. J. HICKES, Shepton Malet.

DOULTON & CO.,

LAMBETH POTTERY, LONDON, S.E.

VASES, PEDESTALS, FOUNTAINS, GARDEN EDGINGS, &c.,

IN

IMPERISHABLE TERRA COTTA

PLAIN AND ORNAMENTAL PAVINGS; TILES FOR LINING WALLS OF Conservatories.

NEW and EXTENSIVE SHOW ROOMS,

ALBERT EMBANKMENT, LONDON, S.E.

A LARGE STOCK OF GOODS ALWAYS ON HAND.

PRICE LISTS FORWARDED on APPLICATION.

DOULTON & CO., LONDON, S.E.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3*s.* per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.

F. ROSHER AND CO., Brick and Tile Merchants.

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SILVER SAND, fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries.

KENT PEATS or LOAM supplied at lowest rates in any quantities.

F. ROSHER AND CO.—Addresses see above.

N.B.—Orders promptly executed by Rail or to Wharves.

A liberal Discount to the Trade.

Geometrical Mosaic and Encaustic

TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.

MAW AND CO., Benthall Works, Broseley, Shropshire.

BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities, of

BETHAM & SON,

9, LOWER THAMES STREET, LONDON, E.C.

B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 200 feet,

Carriage Paid to any Railway Station in England.

Price Lists on application.

ALFRED SYER, Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

Established 150 years.

WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

Inches.	Inches.	
15-oz., 6 × 4 to 8 × 6,	11*s.*, 12*s.*, 13*s.*, 14*s.*	Per 100 ft. Box.
9 × 7 to 12 × 9,	12*s.*, 14*s.* 9*d.*, 15*s.* 3*d.*, 16*s.* 3*d.*	
13 × 9 to 18 × 12,	12*s.* 6*d.*, 15*s.*, 16*s.*, 17*s.*	
20 × 12 to 24 × 16,	12*s.* 9*d.*, 15*s.*, 16*s.* 6*d.*, 17*s.* 9*d.*	
20 × 17 to 24 × 18,	12*s.* 9*d.*, 15*s.*, 16*s.* 6*d.*, 17*s.* 9*d.*	
Inches.	Inches.	
21-oz., Orchard House, 20 × 12, 20 × 13, 20 × 14, 20 × 15, 20 × 16,	20 × 17,	16*s.* 6*d.*, 19*s.* 3*d.*, 20*s.*, 21*s.*

15-oz., for Cutting up, 35*s.*, 39*s.*, 46*s.*, 50*s.* per 300 feet case.

21-oz., for Cutting up, 35*s.*, 39*s.*, 46*s.*, 55*s.* 6*d.* per 200 feet case.

LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.

Lists on application.

REMOVED to 43, Commercial Street, London, E.

BOOTE AND MILLSON, LEAD and GLASS MERCHANTS, 64, City Road, E.C., have always ON THE PREMISES a large Stock of all kinds of Horticultural Glass, at lowest market rates.

IMPORTANT NOTICE.

W. CLARK'S PATENT GRASS CUTTER, For Lawns, &c.

W. CLARK'S PATENT GRASS CUTTER, For Banks, Box Borders, &c.

W. CLARK'S PATENT GRASS CUTTER, For Edgings Round Flower Beds.

W. CLARK'S PATENT GRASS CUTTER, For Trimming Ivy, Creepers, and all kinds of Shrubs.

W. CLARK'S PATENT GRASS CUTTER, Is used for trimming where the Lawn Mower cannot reach.

W. CLARK'S PATENT GRASS CUTTER. No garden is complete without one.

W. CLARK'S PATENT GRASS CUTTER, is patronised by H.S.H. Prince Teck and the Metropolitan Board of Works.

W. CLARK'S PATENT GRASS CUTTER, is sold in three sizes.

PRICES.

The 8-in. machine, complete, with roller and tray ..	21*s.*
Ditto, without roller and tray	18*s.*
The 12-in. machine, complete, with roller and tray ..	28*s.*
Ditto, without roller and tray	24*s.*
The 16-in. machine, complete, with roller and tray ..	38*s.*
Ditto, without roller and tray	33*s.*

To be obtained of all Ironmongers, Horticultural and Agricultural Implement Manufacturers throughout the kingdom, and of the Patentee, W. CLARK, 232, Oxford Street, London, W., the well known Horse Clipper Manufacturer.

LAWN MOWERS — LAWN MOWERS.

New and Improved Machines for 1880.

SAMUELSON & CO.'S

NEW

"VILLA" AND "FAVORITE"

PATTERNS ARE THE BEST.

London Agents: HILL & SMITH, Queen Victoria Street

T. BRADFORD AND CO., Holborn

(and all respectable Ironmongers in Town or Country).

MANUFACTORY: BANBURY, OXON.

LAWN MOWERS at DEANE AND CO.'S

15 per Cent. for Cash off Makers' Lists.

1. Shank's List, 6 in. 25*s.*, 10 in. 70*s.*, 14 in. 110*s.*, 19 in. £8.
2. Green's List, 10 in. 70*s.*, 12 in. 92*s.*, 16 in. 130*s.*, 20 in. £8.
3. Samuelson's List, 9 in. 40*s.*, 12 in. 55*s.*, 15 in. 70*s.*
4. Archimedean, 10 in. 63*s.*, 12 in. 84*s.*, 14 in. 105*s.*, 16 in. £6 6*s.*

Deane & Co.'s 1880 Horticultural Catalogue, post-free.

DEANE AND CO., 49, King William St., London Bridge, E.C.

Hurry's Daisy and Weed Extractor,

FOR LAWNS.

No one possessing a Lawn should be without this wonderfully useful little Invention.

The following particulars, from the *Gardeners' Chronicle* of August 2, 1879, will at once show the value of this useful, and comparatively costless, little invention, which can be used by ladies or children:—

"How to Extract Weeds from Lawns.—A short time since, when at Pampesford, we had an opportunity of seeing used and of using a gouge, which was very effectual in removing Plantains and similar weeds from lawns. By a slight twisting movement the gouge was inserted over the crown of the plant, which was quickly extracted. The soil, removed as cheese would be by a cheese-taster, is readily re-inserted in the hole, a little fresh soil being added, if need be, to keep up the level. By the use of this instrument a lad was enabled to clear a lawn very rapidly. It is the invention of Mr. ALFRED F. O'C. HURRY, of Pampesford, who has registered it."

Another great advantage of this tool is that the plugs of earth extracted can be re-inserted upside down, which not only fills up the hole, but destroys the weed effectually; the plugs discharge themselves, the second pushing out the first, and so on.

To be obtained of all Ironmongers and Florists. Price 3*s.* 9*d.* only. In Polished Wood, fancy handle, 4*s.* 6*d.*

Wholesale Agent: THOMAS TILLEY, 12, Walbrook, London, E.C. Cambridge Agents: G. BEALES & CO.;

Or Carriage Free of the Inventor on receipt of P.O.O. for 4*s.* 3*d.* *and* 5*s.* 3*d.*, *payable at Cambridge or Sawston.*

ALFRED F. O'C. HURRY,

PATENTEE, PAMPESFORD, CAMBRIDGESHIRE.

"ARCHIMEDEAN" AMERICAN LAWN MOWERS,

Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

AWARDED,
Highest Prize—Paris, 1878,
Grand Diploma of Honourable Mention, Vienna, 1873.
Silver Medal, Vienna, 1870.
Silver Medal, Hamburgh, 1869.

PATRONIZED BY
Her Gracious Majesty the Queen,
H.R.H. the Prince of Wales,
H.I.M. the Empress of Germany,
H.I.M. the Emperor of Austria,
The late Emperor of the French,
The Viceroy of Egypt,
And many of the Nobility and Gentry of Great Britain.

OPINIONS of the PRESS.

"Far superior to any of ours."—*Vide* the *Field.*

"Remarkably easy to work."—*Vide* the *Gardeners' Magazine.*

"The quickest, most simple, and most efficient mower ever used."—*Vide* the *Gardeners' Chronicle.*

"We feel bound to recommend it to our readers as one of the best mowers we have as yet made acquaintance with."—*Vide* the *Floral World.*

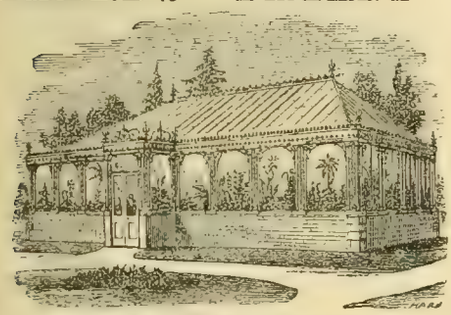
PRICES from TWENTY-FIVE SHILLINGS.
Warranted to give satisfaction.
Delivered Carriage Free to all Stations.
Illustrated Catalogue post-free on application.
CAN BE USED EITHER WITH OR WITHOUT GRASS BOX.

WILLIAMS & CO. (Limited), Manufacturers and Patentees.
Selling Agents: **JOHN G. ROLLINS & CO.,** Old Swan Wharf, Upper Thames Street, London, E.C.; **WALTER CARSON & SONS,** La Belle Sauvage Yard, Ludgate Hill, London, E.C.; and 21, Bachelors' Walk, Dublin. *Selling Agents.*

W. G. SMITH & CO., VICTORIA WORKS,
BURY ST. EDMUNDS,

Sole Manufacturers of

BEARD'S PATENT METALLIC NON-CONDUCTING GLASSHOUSES.

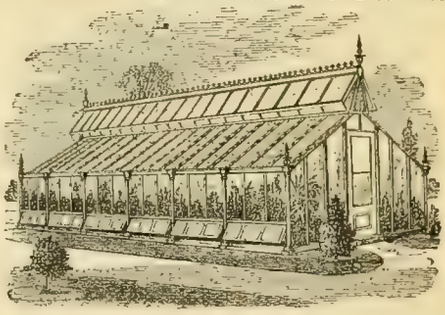


Iron Houses possess many valuable advantages over Wood. They are much more Durable, Lighter and Stronger. The Glass is screwed in between two layers of Elastic Material, whereby a perfect joint is secured without risk of breakage.

Catalogues and Price Lists Free.

HEATING APPARATUS IN ALL ITS BRANCHES.

Plant Protectors, Cucumber and Melon Frames always in Stock.



HORTICULTURAL BUILDINGS OF EVERY DESCRIPTION IN IRON OR WOOD.

RANSOMES' LAWN MOWERS ARE THE BEST.

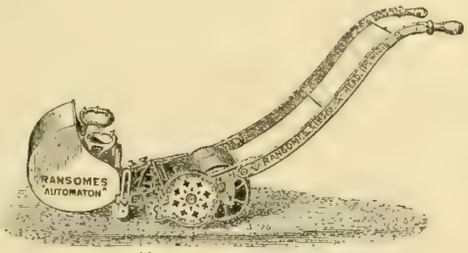
ARE SUITABLE FOR ALL GARDENS.

WILL CUT LONG GRASS, WET OR DRY.

All Sizes from 27s.

A MONTH'S FREE TRIAL ALLOWED.

Sent Carriage Paid.



THE "AUTOMATON."
The best general purpose machine.

THE "REVERSIBLE,"
For Small Gardens and Borders.

THE "AUTOMATON,"
For General Purposes.

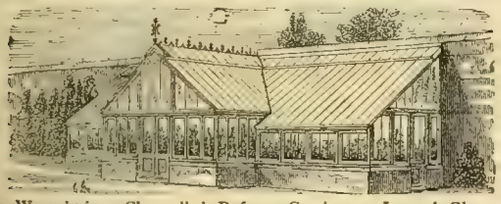
THE "GLOBE,"
An Anglo-American Machine.

THE "HORSE-POWER,"
For Large Lawns, Cricket Grounds, Parks, &c.

Illustrated Price Lists free by post on application to

RANSOMES, SIMS & HEAD, ORWELL WORKS, IPSWICH.

PARHAM'S PATENT SYSTEM of GLAZING WITHOUT PUTTY,



With Wrought-iron Channelled Rafters, Continuous Lapped Glass, and Rainproof Ventilators under Glass Super Roof.

Parham's Patent Registered Plant Preservers,
With "Truss" Hinge, and no Principals. The Ridge always fits close, the interior is free from all obstruction, and the corners are secured in iron angle-plates: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
6 feet by 3 feet	.. ..	£2 7 6	12 feet by 3 feet ..	..	£4 0 0
6 feet by 4 feet	.. ..	3 0 0	12 feet by 4 feet ..	..	5 0 0
6 feet by 5 feet	.. ..	3 15 0	12 feet by 5 feet ..	..	6 5 0
6 feet by 6 feet	.. ..	4 15 0	12 feet by 6 feet ..	..	7 10 0

Any other sizes at proportionate price.

Both systems avoid the heavy expense of re-puttying and breakage of glass, and effect a great saving in cost of re-painting and repairs, combined with absolute freedom from drip.

The sole manufacture of both the above systems is carried on by

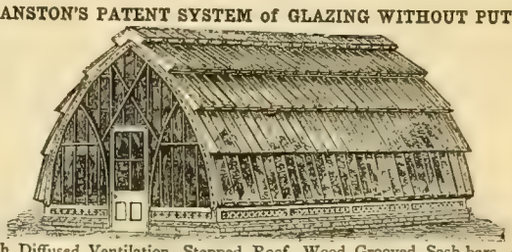
WILLIAM PARHAM,

Horticultural Builder and Hot-water Engineer,
NORTHGATE WORKS, BATH;
AND
280, Oxford Street, London, W.
(Who has purchased the Business of the late Firm of
CRANSTON AND LUCK,
Birmingham).
Specimens of both Systems on view at either address.
Illustrated Catalogues free.

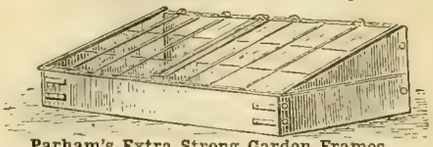
*** Orders amounting to £3 and upwards delivered free to any Railway Station in England and Wales, and to the Principal Ports in Ireland and Scotland.

No Charge for Packing Cases if returned free and in good condition.

CRANSTON'S PATENT SYSTEM of GLAZING WITHOUT PUTTY



With Diffused Ventilation, Stepped Roof, Wood Grooved Sash-bars, and Curvilinear Outline on Laminated Principals.



Parham's Extra Strong Garden Frames,
With 2-inch sashes and 1½-inch red deal framing, secured at each corner with two wrought-iron strap bolts: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
4 feet by 6 feet, 1 light ..		£2 2 0	16 feet by 6 feet, 4 lights..		£7 5 0
8 feet by 6 feet, 2 lights..		3 12 0	20 feet by 6 feet, 5 lights..		8 15 0
12 feet by 6 feet, 3 lights..		5 7 6	24 feet by 6 feet, 6 lights..		10 10 0

Patent Glazed Sash Lights, as above, with Sills and Bearers for Brickwork at proportionate prices.

REARING of BEES in ROVEREDO (Canton of Grisons, Switzerland).

The undersigned are in a position to supply whole SWARMS of BEES, or QUEEN BEES only, at the following prices:—

A.—Queen Bees.

From April 15 to May 15	9 francs each.
From May 15 to June 15	8 francs each.
From June 15 to July 15 ..	7 francs each.
From July 15 to August 15 ..	6 francs each.
From August 15 to September 15..	5 francs each.
From Sept. 15 to end of October ..	4 francs each.

B.—Swarms.

A Swarm weighing 1½ kilo, in May, 20 francs; in June, 18 fr.
A Swarm weighing 1 kilo, in May, 15 fr.; in June, 12 fr. 50 cts.

Orders respectfully solicited.

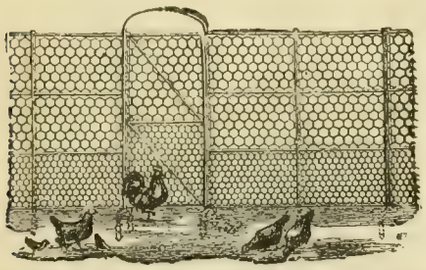
GIBONI AND BELLATTI, Breeders of Bees, Roveredo.

HUNT'S PATENT "AUTOMATIC TEMPERATURE REGULATOR."—Hothouses, Vineries, &c., Built and Fitted up with the above, by A. KRAUSS, Horticultural Builder, &c., Bristol.

ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.

ALFRED GRANT AND CO., Steam Works, 39½, Leather Lane, London, E.C.

BOULTON & PAUL,
MANUFACTURERS, NORWICH.



IMPROVED MOVABLE FENCING for INCLOSING POULTRY and PHEASANTS.

Prices, 6 feet high, 5s. per yard; Gates, 13s. 6d. each; Angle Pillars for Corners, 3s. each.
Carriage paid on Orders above 40s. value.

New Illustrated CATALOGUE, free by post, of POULTRY FENCING, POULTRY HOUSES, PHEASANTRIES, AVIARIES, COOPS, DOG HOUSES and YARDS, New KENNEL FENCING, &c.

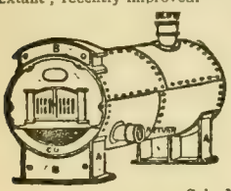
Practical advice given and Gentlemen waited upon in any part of the Kingdom.

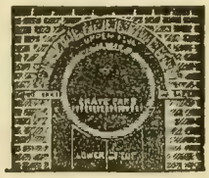
BOULTON & PAUL, NORWICH.

REDUCED PRICES.

STEVENS'
TRENTHAM GREENHOUSE BOILER,

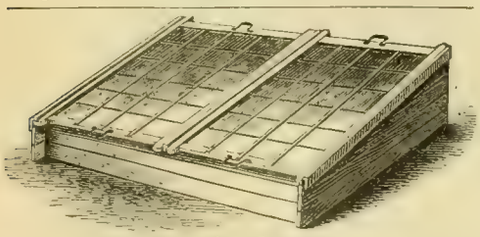
After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.





Sole Makers,
F. & J. SILVESTER,
CASTLE HILL FOUNDRY, NEWCASTLE, STAFFORDSHIRE.

X PIPES.—PIPES.—PIPES. X
The Cheapest House in the Trade for
HOT-WATER PIPES and CONNECTIONS.
F. AND J. SILVESTER, Castle Hill Foundry, Engineering and Boiler Works, Newcastle, Staffordshire.



Cucumber Frames.

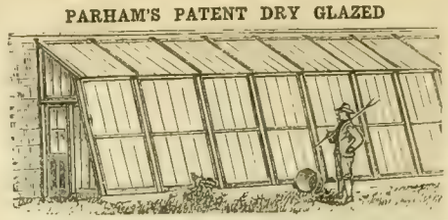
R. HALLIDAY AND CO. desire to draw special attention to their Cucumber Frames, of which they always have a large stock, ready glazed and painted. They are made of the best materials, and can be put together and taken apart in a few minutes by any one.

Prices, delivered to any station in England	£	s.	d.
2-light frame, 8 feet by 6 feet	3	10	0
3-light frame, 12 feet by 6 feet	5	5	0
6-light frame, 24 feet by 6 feet	10	0	0

The glass is nailed and puttied in. Lights and framing for brick pits at proportionately low prices.

R. HALLIDAY AND CO., Hothouse Builders and Engineers, Royal Horticultural Works, Middleton, Manchester.

PARHAM'S PATENT DRY GLAZED



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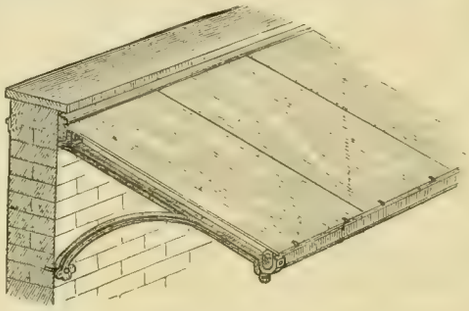

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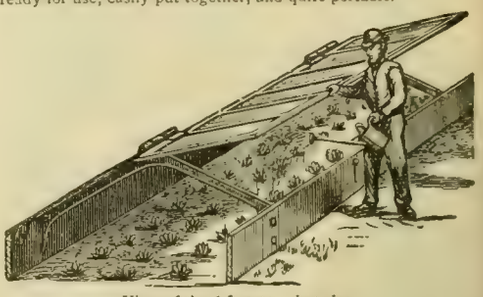

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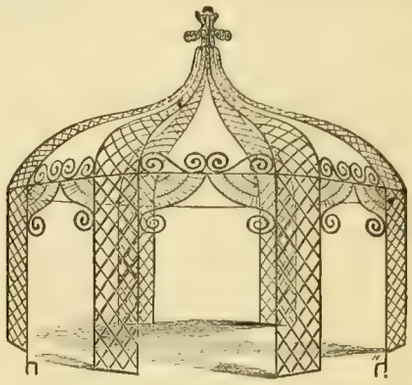

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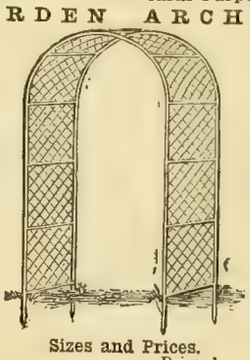

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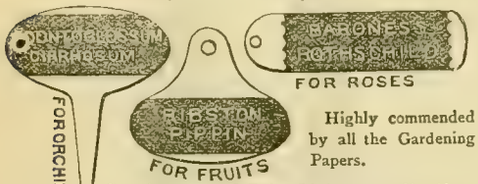

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GARDENER (SINGLE-HANDED, or otherwise).—Age 26, married, no family; understands the profession. Good character.—A. LEE, Highclere, near Newbury, Berkshire.

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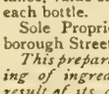
UNDER THE PATRONAGE OF THE ROYAL FAMILY.



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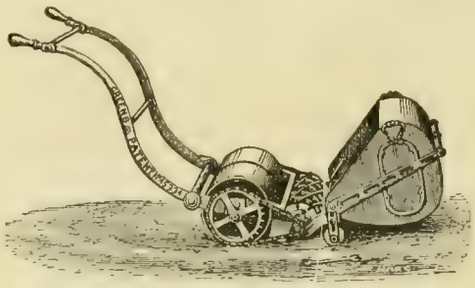

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This can be worked by One Man on an even lawn.

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By a Man and Boy.

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Prices of Donkey, Pony, and Horse Machines, including Patent Self or Side Delivery Box, Cross-stay complete, suitable for attaching to Ordinary Chaise Traces or Gig Harness :—

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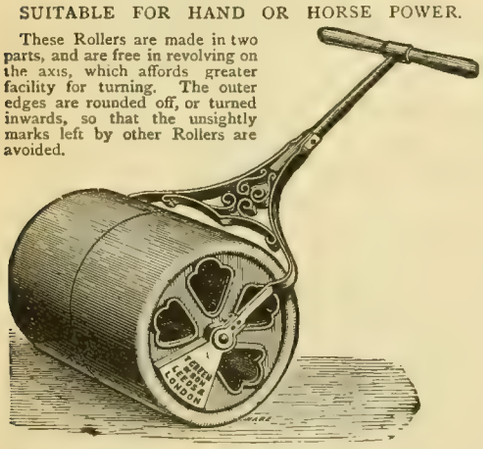

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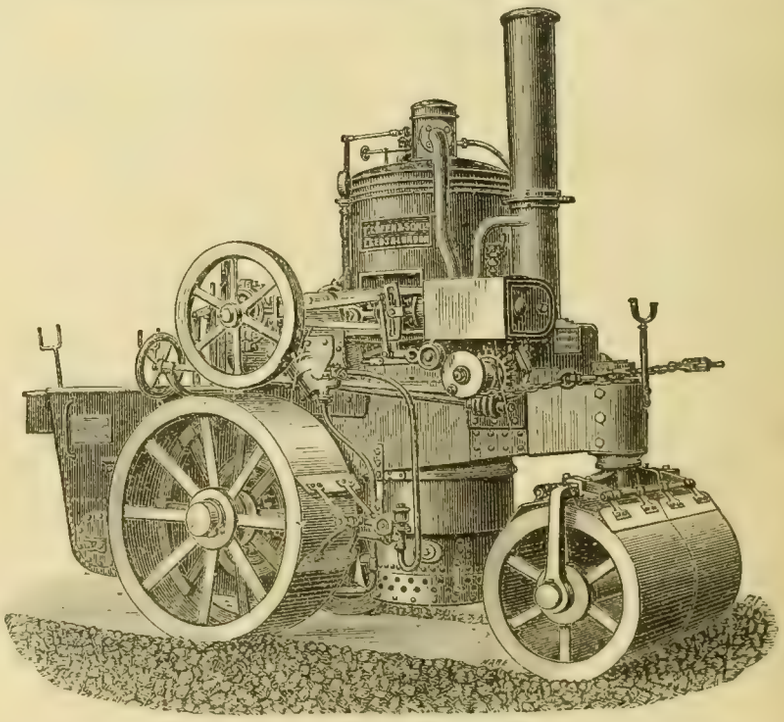

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Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 329.—Vol. XIII. { New Series. } SATURDAY, APRIL 17, 1880. { Registered at the General Post-office as a Newspaper. } Price 5d. { Post Free, 5½d.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 *to the end of* 1878," *to secure them at once.*

The following is a List of those already published :—

1879.—October	11.	1880.—January	10.
„	25.	„	24.
November	8.	February	7.
„	15.	„	21.
„	29.	March	20, 27.
December	13.	April	3.

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ROYAL HORTICULTURAL SOCIETY.—The NATIONAL AURICULA SOCIETY will hold its ANNUAL EXHIBITION of AURICULAS in the Society's Conservatory at South Kensington, on TUESDAY, April 20. Band of the Duke of York's School from 3 o'Clock. Doors open at 1 o'Clock. Admission 1s.

ROYAL BOTANIC SOCIETY. Gardens, Regent's Park, N.W.
EXHIBITION of SPRING FLOWERS, WEDNESDAY, April 21. Gates open at 2 o'Clock. Tickets to be had at the Gardens only, on Vouchers from Fellows of the Society, price 2s. 6d. each

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
HORTICULTURAL MEETING in the Town Hall, Manchester, on TUESDAY and WEDNESDAY, the 27th and 28th inst.
The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1880 will open on May 14. ONE THOUSAND POUNDS in PRIZES. For Schedules, &c., apply to the undersigned,
BRUCE FINDLAY, Curator and Secretary.
Royal Botanic Gardens, Manchester.

THE FARNINGHAM ROSE and HORTICULTURAL SOCIETY.
The ANNUAL EXHIBITION of the above Society will be held at Farningham, on WEDNESDAY, June 30. Schedules are now ready, and can be obtained on application to
FRANK BURNSIDE, Esq., Hon. Sec.
Farningham, Kent.

THE BEVERLEY and EAST RIDING FLORAL, HORTICULTURAL, and POULTRY SOCIETY.
The GREAT ANNUAL EXHIBITION will be held on JULY 7, of PLANTS, FLOWERS, FRUITS, POULTRY, PIGEONS, CAGE BIRDS, and RABBITS (under cover), in the large Assembly Rooms and the Norwood House Grounds adjoining, when £200, together with CUPS, in Prizes, will be given. Schedules on application after May 1.
Walkergate, Beverley. J. S. VICKERS, Hon. Sec.

HORTICULTURAL, GARDENS, South Kensington, S.W.
EXHIBITION of DAFFODILS on TUESDAY, April 20, and following days, by Messrs. BARR AND SUGDEN.

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Floral Commission Agency.

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W. B. ROWE, Barbourne Nurseries, Worcester.

WANTED, to EXCHANGE, good plants of New CROTONS, DRACÆNAS, COLEUS, FUCHSIAS, ZONAL PELARGONIUMS, and a few fine SPECIMEN PLANTS, for large Plants of AZALEAS, CAMELLIAS, EUCHARIS, and SEEDLING FERNS in variety. Particulars on application to
Mr. F. WEBBER, Cliftonville Hotel, Brighton.

WANTED, 400 young ADIANTUM CUNEATUM FERNS. Send sample and price. Spare plants of the above BOUGHT or EXCHANGED.
GEORGE SINCLAIR, Prestonkirk, N.B.

WANTED, CUT FLOWERS of MARECHAL NIEL, Crimson and Tea ROSE-BUDS, and other CHOICE FLOWERS.
TURNER BROS., Florists, 2, Parrer Street, Liverpool.

WANTED, CUT FLOWERS, Choice FRUIT, CUCUMBERS, &c.—Letters and consignments to H. UNWIN, Commission Agent, 14, James Street, Covent Garden, W.C.

WANTED, large-flowered PELARGONIUMS, in Bloom and for Succession. Price per 100 (must be good) to
G. W. JUBB, Beech Grove Gardens, College Road, Leeds.

WANTED, BEDDING GERANIUMS.—Vesuvius, Master Christine, Madame Vaucher, and Ivyleaf; also HELIOTROPES and Small FUCHSIAS. Send samples with lowest price to
R. FOULGER, Florist, Barnes, S.W.

WANTED, GARDENIAS.—When offering state variety and average height, price properly packed, and delivery to rail, or in London warehouse.
THOS. CHRISTY AND CO., 155, Fenchurch Street, E.C.

WANTED, DRACÆNA TERMINALIS and COOPERI, in all sizes.
W. HOWARD, Southgate, Middlesex, N.

WANTED, CLEMATIS ROOTS, for Grafting. Send sample and price per 1000 to
W. B. ROWE, Barbourne Nurseries, Worcester.

WANTED, Sound ESCHALLOTS.—Send price to
GEORGE GAINES, Covent Garden Market, London, W.C.

WANTED, SEAKALE ROOTS.—J. GEO. HILL, The Royal Seed Store, Yeovil.

GERMAN ASTERS. The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

POT ROSES.—The Largest and Finest Stock in the country of hardy well-established Plants for present Planting or Greenhouse Culture.
Priced LISTS free by post.
WM. PAUL AND SON, Paul's Nurseries, Waltham Cross, Herts

VIOLAS, 20,000 fine strong plants :—
„ cornuta, white, } 5s. per 100, 45s. per 1000.
„ „ Queen of Blues, }
LETTUCE, strong autumn sown :—
„ Siberian Cos, } 7s. 6d. per 1000.
„ Giant Brown, }
Cash only. Carriage and package free to London.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

TO NURSERYMEN, FLORISTS, and others Cultivating MARKET PRODUCE.—The undermentioned are prepared to undertake the SALE of the same on reasonable terms.
WISE AND RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

To the Trade.

SHOW and FANCY PANSY.—Our own saving. Price per ounce on application.
DOWNIE AND LAIRD, Edinburgh.

Pyrethrums, Double-flowered.

ROBERT PARKER begs to announce that he can supply the above-named, by the dozen, hundred, or thousand, in nearly 100 named varieties, from 9s. per dozen upwards. Descriptive LISTS, with New General CATALOGUE of Hardy Greenhouse and Stove Plants, forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

Now is the Best Time to Transplant Hollies.

HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d to 31s. 6d. each Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

FERNS from DEVONSHIRE, CORNWALL and SOMERSET (Instruction Book for Making Rockery, Planting, &c., with each 5s. order). Fourteen named varieties, 7s. per 100; Small (Post), 30 for 2s. CLUB MOSS, three varieties, 1s. PRIMROSES, 2s. 6d. per 100. Catalogue, 2d.
GILL, Lodging House, Lynton, Devon.

New Lilies.

TWELVE LILIUM SPECIES, good bulbs, 12s. This is a fine, new, and as yet unnamed species from the Rocky Mountains. The flowers are large, brilliant red, with yellow stamens; a grand addition to its class. Only a few have been imported by J. H. L. Carriage free on receipt of Post-office Order. LIST of other choice Lilies free.
J. H. LEY, Royal Nursery, Croydon.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.
CATALOGUE free. The Trade supplied.

CUCUMBER PLANTS.—Telegraph (true). Strong, healthy plants now ready. Apply to
A. WATKINS, Hockerill Nursery, Bishops Stortford, Herts.

PARIS COS LETTUCE PLANTS (true).—Surplus Plants, spring sown, but fit for immediate planting, 5s. per 1000. Package free. Cash with order.
E. L. SMITH, Market Gardener, Lower Road, Deptford.

Lettuce Plants.

LETTUCE PLANTS.—Strong autumn-sown Bath Cos, at very moderate price. Apply to
Mr. T. DAVIES, Tangley, near Guildford.

For Sale, Drumhead or Cattle Cabbage.

S. BIDE has a limited stock of good DRUMHEAD CABBAGE PLANTS, at 5s. per 1000; RED or PICKLING CABBAGE, 7s. per 1000. Free on rail, and package free, but cash must accompany all orders to
S. BIDE, Alma Nursery, Farnham, Surrey.

CABBAGE PLANTS.—200,000 Red Pickling, at 5s. per 1000. Good strong healthy plants. Cash or reference from unknown correspondents.—Apply to
W. VIRGO, Wonersh Nursery, near Guildford, Surrey.

To the Trade.

HOME-GROWN MANGEL WURZEL and TURNIP SEEDS.
H. AND F. SHARPE will be pleased to give special quotations for their fine selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS.
Seed Growing Establishment, Wisbech.

To the Trade.

MANGEL SEED.—CHAMPION YELLOW GLOBE MANGEL WURZEL.
Guaranteed stock at low price.
SANDER AND CO., St. Albans.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

SALES BY AUCTION.

Orchids, Lilies, Gladioli, and other Roots.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, April 21, at half-past 12 o'Clock precisely, some choice SPECIMEN ORCHIDS, many of them in flower, the property of a Lady, including Aerides Fieldingii, Cypripedium hirsutissimum, Dendrobium Wardianum, Vanda tricolor insignis. Angræcum sesquipedale, &c.; several other SMALL COLLECTIONS of ORCHIDS, including many fine plants; Specimen CAMELLIAS and AZALEAS, ERICAS, ANTHURIUMS, CROTONS, APHELEXIS, PANDANUS, LILIUM LANCIFOLIUM ALBUM and RUBRUM, EXCELSUM, EXIMEUM, TIGRINUM FLORE-PLENO, and NEW LILIES from Japan; Rare Hardy BULBS and ROOTS; 1000 GLADIOLUS BRENCHLEYENSIS.

May be viewed the morning of Sale, and Catalogues had.

MASDEVALLIA CHIMÆRA, Rchb. f., discovered by M Roezl.—Offered for the first time in Europe, and the true variety, with its flowers 2 feet in diameter. Much has been written about this species, and various kinds have been sold for it, but the true Chimæra has not been imported alive before. Illustrations which have appeared give the wrong idea; this species, having never flowered in Europe, could not possibly be illustrated. M. Roezl discovered this splendid Orchid in 1871, and tried, without success and repeatedly, to get it home alive; for some eight years past his nephews have sent us almost annually, but failed in getting it in a living state to Europe, although they came personally home with them. The importation now offered is in fine condition, every plant being sound and healthy. The flower-spike is from 1 to 2 feet long, and the flowers are produced in succession; as many as seven and eight open one after the other, the diameter between the tail ends being above 2 feet, each sepal being over 1 foot long. The marking of the flowers is deep crimson on a yellow hairy ground.

LÆLIA PEDUNCULARIS. — A most beautiful Lælia, flowers 3 to 4 inches across. It is described in the *Gardeners' Chronicle*, 1845, p. 839, that it is one of the most beautiful of the genus; the flowers are one deep rose colour, a little heightened at the lower part of the lip, and they droop gracefully from the end of a slender elastic scape. The unusually long peduncles add to the elegant appearance of this species. It approaches most nearly to the Lælias rubescens and acuminata. From the former it differs in the lip having none of the hairiness of that species, and its flowers being much more closely arranged; from the latter in neither its petals or lip being sharp-pointed; and from both in its very large flowers and very long flower-stalks.

LÆLIA AUTUMNALIS.—Very finest variety, and in grand masses.

EPIDENDRUM NEMORALE. — The finest exhibition species.

CATTLEYA CITRINA.—In very large masses.

ODONTOGLOSSUM CITROSMUM.—Grand masses with flower growths.

ODONTOGLOSSUM LONDESBOROUGHIANUM. — A very splendid importation.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, of St. Albans, to SELL the above, and other consignments of ORCHIDS, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 22, at half-past 12 o'Clock precisely. The whole of the Importations are in splendid condition.

May be viewed the morning of Sale, and Catalogues had.

Cattleya superba.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 22, at half-past 12 o'Clock precisely, a splendid consignment of CATTLEYA SUPERBA, just received from the interior of Guiana. The specimens are in grand health, full of leaves and fine plump eyes, and the importation consists of many masses, with upwards of thirty bulbs, which will speedily make Exhibition Plants. The varieties are the very best, and the old flower-spikes show that this truly superb Cattleya makes as many as nine of its beautiful large flowers on a spike.

May be viewed the morning of Sale, and Catalogues had.

Imported and Established Orchids, Cycads, &c.
MONDAY NEXT.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock precisely, 300 Lots of ESTABLISHED ORCHIDS, mostly from private collections, for sale without reserve, and including many rare and valuable species; a few LAPAGERIAS and FERNS; an Importation of INDIAN DENDROBES, in variety; and several fine pieces of ODONTOGLOSSUM ALEXANDRÆ in splendid condition; together with a consignment, per s.s. *Scottish Lassie*, from Australia, of the rare and beautiful CYCAS MEDIA, varying in height from 9 inches to 3 feet.

Catalogues had at the Mart, and 98, Gracechurch Street, E.C.

Southend.

In consequence of the death of the Proprietor.

The BEECH NURSERIES, about a mile and a quarter from the Southend Railway Station.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, April 26, at 2 o'Clock precisely, the beneficial interest in the LEASE of the ABOVE GARDENS, comprising 8A. 2R. of productive land, partly cropped with luxuriant Fruit Trees in fine bearing condition; 2 large newly-erected Greenhouses, with the whole of the established fruiting Vines, Peaches, &c.; 3 Brick-built Cottages, Stabling, Barn, and other Outbuildings. Lease 21 years unexpired. Ground rent £30 a-year. The Plants in Pots, Crops, and Utensils in Trade will be included in the purchase.

May be viewed. Particulars had on the Premises, of Messrs. MONTAGUE SCOTT AND BAKER, Solicitors, 10, Gray's Inn Square, W.C.; and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Consignment of Orchids from Jamaica, per s.s. *Moselle*, of fine pieces of BRASSIA MACULATA, ANGRÆCUM FUNALE, BLETIA TANKERVILLIÆ, BLETIA SHEPHERDII, and others.

MESSRS. PROTHEROE AND MORRIS will SELL the above on MONDAY, April 26, at the Mart, Tokenhouse Yard, E.C.

Catalogues as above.

Established Orchids.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, April 26, 350 lots of ESTABLISHED ORCHIDS.

Catalogues had at the Mart, and 98, Gracechurch Street, E.C.

Unreserved Sale.

By order of the Executrix,—Willesden, N.W.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Baker's Farm, Harlesden Green, Willesden, on TUESDAY, April 27, at 12 o'Clock precisely, the whole of the GREENHOUSE and BEDDING PLANTS, including 600 Adiantum cuneatum, 500 Tea and other Roses, 250 Azaleas, 100 specimen ditto for cut bloom, 2000 Geraniums, 4000 Stocks, 1000 Pelargoniums, and quantities of other stock, together with the ERECTIONS of seven GREENHOUSES, containing about 9000 feet super. of GLASS and WOODWORK, several PITS and BOXES, a large quantity of 3 and 4-inch Hot-water PIPING, BRICKWORK, and UTENSILS in Trade.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

FOR SALE, the Lease and Goodwill, with upwards of 12,000 feet of Glass Erections (all heated with Hot Water), Stock and Utensils, of an old-established NURSERY and FLORIST BUSINESS, with a good Jobbing Connection—within 4 miles of Covent Garden. If required part of Purchase Money may remain at 5 per cent. Satisfactory reasons given for disposal. Apply to

Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.; and Leytonstone, E.

TO BE LET, for Ninety-nine Years, a SIX-ROOMED COTTAGE and about 10,000 feet of Glass well stocked with Plants for Growing Cut Flowers. The Plants and Houses to be taken at Valuation. Rent £50. Apply to WM. SMITH, Beaumont Road Nursery, Leyton, Essex.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

PHLOX DRUMMONDI GRANDIFLORA. The best varieties only. Price 1s. per packet, post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

STRAWBERRY PLANTS. — Strong and well-rooted young plants of V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other varieties, at 4s. per 100, 30s. per 1000. Terms cash.

W. LOVEL, Strawberry Farmer, Weaverthorpe, York.

THUJA AUREA, THUJA SEMPERAURESCENS, and THUJA ELEGANTISSIMA: beautiful plants of the above, 12 to 20 inches high, 40s. per 100.

W. JACKSON, Blakedown, near Kidderminster.

Azaleas coming into Bloom.

JAMES IVERY AND SON beg to offer as under, in the best varieties:—

Good Plants (in 48's), well set, at 21s. per dozen.
Smaller Plants, well set, at 15s. per dozen.
Cash with orders from unknown correspondents.
The Nurseries, Dorking, Surrey.

PANSIES. The best varieties only. Price 6d., 1s., and 2s. 6d. per packet, post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

HOLLIES and RHODODENDRONS, &c.
HOLLY, Common, 1½ to 2 feet, 28s. per 100
RHODODENDRON, Hybrid, 1½ to 2 feet, 27s. per 100.
Also other sizes. CATALOGUES free.
HENRY DERBYSHIRE, Darley Hillside Nursery, near Matlock, Derbyshire.

DAVEY'S WONDERFUL MUMMY PEA.—The original of this Pea was found in the hand of an Egyptian mummy 2000 years old. Its habit of growth is different to that of any other Pea, the stem being seven times the size at the top as at the bottom, growing to the height of 7 feet, and flowering in a bunch at the top only, and will yield from thirty to forty pods. Price 6d. per dozen.

Sold only by C. DAVEY, Seed Farm, Bedford.

The Largest Rose Gardens in England.

CRANSTON'S NURSERIES, HEREFORD. (Established 1785.)

Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

LOBELIAS from Cuttings.—Splendid plants of Brighton and pumila magnifica, 3s. per 100, 5 0 for 12s 6d., 1000 for 21s. Ebor and St. Martin's Blue, 4s. per 100. DARK WALLFLOWERS, 2s 6d. per 100 500 for 10s.

J. J. MARRIOTT, Highfield Nurseries, Matlock Bridge.

FRENCH ASTERS. The best varieties only. Price 1s. and 2s. 6d. per packet, post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

Russell's Pyramid Primula.

JOHN NEVILLE has a small quantity left of the above, the finest strain of Chinese Primroses ever sent out. It is in its original state of perfection, as sent out by Mr. Geo. Clarke, late of this place, and which gave the greatest satisfaction. In packets, 2s. 6d. each

Stretham Place Nursery, Brixton Hill, Surrey.

To the Trade.

ASPARAGUS, GIANT, 2-yr. Price on application.

JAMES BIRD, Nurseryman, Downham.

DOUBLE GERANIUMS (choicest varieties), named, 12 for 4s.
ZONALS, splendid named sorts, 12 for 3s.
FUCHSIAS, 12 for 1s. 6d., finest named, 2s. 6d.
CHRYSANTHEMUMS, in rich assortment, 12 for 2s.
LOBELIAS and CYCLAMEN, see last week's advertisement.
All package free for cash. Apply for CATALOGUE to
GEO. GUMMOW, 114, Loughborough Road, Brixton, S.W.

NEW REGAL PELARGONIUMS.—
PRINCESS OF WALES, 1 guinea each.
MAID OF KENT, 15s. each.

Mr. WILLIAM BULL is now sending out for the first time the above two beautiful Pelargoniums.

Seven for six New COLEUS, for 1 guinea, viz., Bijou, Duchess of Teck, Empress of Germany, James Barnshaw, Lovely, Royal Purple, and Sensation.

Establishment for New and Rare Plants, King's Road, Chelsea, London S.W.

Verbenas—Verbenas—Verbenas.

STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6s. per 100; 50s. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8s. Terms cash.

H. BLANDFORD, The Dorset Nurseries, Blandford.

FUCHSIAS, 100 nice young plants, in 12 splendid varieties, 8s.
HELIOTROPES, of sorts, 6s. per 100.
AGERATUM, Imperial Dwarf, strong young plants, 5s. per 100.
CALCEOLARIA, Golden Gem, 6s. per 100. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

Cheap **Orchids.**

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

Verbenas, 50,000 Now Ready for Sale.

S. BIDE can now supply, as he has done on previous occasions, really good strong spring-struck Plants of Purple, Scarlet, White, and Pink VERBENAS, at 6s. per 100. Good Exhibition Varieties, 8s. per 100. Package free for cash with order.

Also strong healthy CUTTINGS of the above at half-price, free by post.

S. BIDE, Alma Nursery, Farnham, Surrey.

New Catalogue for 1880.

WM. CLIBRAN AND SON, The Oldfield Nurseries, Altrincham, Cheshire, will have great pleasure in sending their DESCRIPTIVE PRICED LIST on application. Their stock of Florists' Flowers, Bedding and Soft-wooded Plants generally, is surpassed by none either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to purchasers is that none of the Plants offered are taken from a warm propagating-house and sent off immediately, but are all carefully hardened, and most of them potted off singly, and are thereby fitted for transit by post or rail without the slightest injury. A great proportion of the under-mentioned are autumn-struck plants, and can be had in pots if required, and all in a variety of sorts and colours, all good for exhibition or home decoration:—

Our Selection. Per doz.—	s.	d.
Abutilons, in variety ..	3	0
Achimenes, in variety ..	3	0
Ageratums, small plants, per 100, 5s.	1	0
Ageratums, in pots, per 100, 15s.	2	6
Antirrhinums	3	6
Begonias, Tuberous, from 4s. to	18	0
Other sorts	3	0
Bouvardias, 4s. to ..	6	0
Caladiums	9	0
Calceolaria Golden Gem (not in pots) per 100, 5s.	1	0
Carpet Bedding Plants (see Catalogue)		
Carnations and Picotees, 12 plants	7	0
12 pairs	12	0
Chrysanthemums, in great variety, per 100, 18s.	3	0
Clematis, to name ..	9	0
Coleus	3	0
Dactylis elegantissima, per 100, 6s.	1	0
Dahlias, per 100, 20s. ..	3	6
Delphiniums	6	0
Epiphyllum	9	0
Ferns, Stove and Greenhouse, 6s. to	9	0
Fuchsias, per 100, 18s.	3	0
Gardenia florida ..	6	0
Greenhouse Plants ..	9	0
Geranium bicolor ..	3	0
Geranium, Silver-edged	3	6
Geranium, Double ..	3	0
Geraniums for Bedding	3	0
Geraniums, for pot culture, 3s. to	6	0
Gladiolus, splendid seedlings, per 100, 20s. ..	3	0
Gladiolus Brenchleyensis, per 100, 6s. ..	1	0
Gloxinias, 6s. and ..	9	0
Hardy Climbing Plants, in great variety, 6s. ..	9	0
Hollyhocks, Seedlings	4	0
Helianthemums	2	6
Herbaceous Plants, per 100, 20s.	3	0
Heliotropes	2	6
Hepaticas	4	0
Iresine Lindeni, per 100, 10s.	2	0
Iris, German	3	0
Ivies, in variety	6	0
Ivies, Irish	3	0
Lantanas	2	6
Lilium auratum, very fine, each, 1s. and 1s. 6d.		
Lobelias, small, per 100, 4s.	1	0
Lobelias, in pots ..	2	6

Our Selection. Per doz.—	s.	d.
Mesembryanthemum fol. var., per 100, 10s.	2	0
Mimulus, in variety ..	3	0
Myosotis, per 100, 6s. ..	1	6
Pæonies, white, blush, crimson, and other shades	6	0
Pansies, show, per 100, 25s.	3	6
Pansies, Bedding, about 20,000 to select from, per 100, 12s.	2	0
Pentstemons, per 100, 25s.	3	6
Phloxes, per 100, 25s. ..	3	6
Pelargoniums, Show, Fancy, and French, 6s. to	9	0
Pinks, per 100, 25s. ..	3	6
Potentillas, Double ..	6	0
Polyanthus, Seedlings, per 100, 5s.	1	0
Polyanthus, named sorts (see Catalogue)		
Primroses, Double, 4s. to	9	0
Primroses, old Double Velvet, 1s. 6d each.		
Primroses, Single, assorted colours ..	2	0
Pyrethrums, Double ..	6	0
Roses, H.P., fine plants from ground, per 100, 40s.	6	0
Roses, Climbing or Mosses	4	0
Rock Plants, per 100, 15s.	3	0
Salvias	3	0
Saxifrages	3	0
Sedums	3	0
Sedum acre aurea, elegans, and glaucum, per 100, 8s.	1	6
Stove Plants	9	0
Succulents, 4s. to ..	0	0
Tropæolums	3	0
Violas (immense stock of best sorts), per 100, 8s. to 12s.	2	0
Verbenas, stock plants, in pots	3	0
Verbenas, young, not in pots	1	6
Violets, sweet	3	0
Vines, all the leading kinds for planting and fruiting, 30s. to ..	60	0
Strawberry Runners (our collection contains 65 varieties), per 100, 2s. 6d.		
Apples, Pears, Plums, Cherries, Pyramid, 6s. to	18	0
Dwarf-trained, 18s. to ..	30	0

Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.

Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

CALCEOLARIA.
The best varieties only. Price 2s. 6d. and 5s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

JOHN FORBES' CATALOGUE of all the BEST NEW and OLD FLORISTS' FLOWERS, up to the present date, is now ready, and will be sent post-free to all applicants. Fine named Show and Fancy PANSIES from 20s. per 100, my selection.—Buccleuch Nurseries, Hawick, N.B.

Seed Potatos—Seed Potatos.

THOMAS IMRIE AND SONS can still offer Dalmahoys, Red Bogs, Fortyfolds, Flukes, and Rivers' Royal Ashleaf Kidney. Price on application.
Seed Warehouse, Ayr.

Remarkable Clearance.

BUNDLE of FLOWER SEEDS, containing 100 Separate Packets, 2s., carriage paid; Half, 1s. 3d. If not worth six times the amount, or if unsatisfactory, money returned. Agents wanted everywhere, immediately, to fill up spare time.
W. H. HOWELL, Seed Merchant, Flackwell, High Wycombe.

To the Trade.

ROSES.—Marechal Niel, Gloire de Dijon, Madam Berard, on Seedling Brier, in 5-inch pots, good stuff, all last year's working, 75s. per 100
GEORGE COOLING, Nurseryman, Bath.

JAMES LYE'S NEW FUCHSIAS for 1880, for which he obtained four Certificates of Merit during 1879 at the leading West of England Shows, are now ready.

LYE'S FAVOURITE, white tube and sepals, rich magenta corolla. Flowers of fine form, borne in elegant clusters. Plant of good habit and strong grower: 5s. per plant.

BEAUTY OF THE WEST, white tube and sepals, corolla bright vermilion-scarlet: 5s. per plant.

The above have been highly reported of in the *Gardeners' Chronicle*, October 25, in the *Journal of Horticulture*, and *Gardeners' Year Book*.

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All lately transplanted; will lift with fine roots.
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Valuable Plants, Carriage Paid.
New Mode of Packing.

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ALDER, 3 to 4, 4 to 5, and 5 to 6 feet.
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OAKS, English, 4 to 5, 5 to 6, and 6 to 7 feet.
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The above are all stout well-grown Plants, and a very reasonable price will be quoted. Apply to
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Free on rail, all hampers charged cost price. Cash to accompany all orders.

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Also 100 Tons of prime Table Potatos. Buyers send for Price List and state quantity required.

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The greatest success yet achieved in the production of new Roses is the Stapleford Pedigree Roses.

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VERBENAS and CALCEOLARIAS.—Strong, well-rooted Cuttings of White Verbenas, Boule de Neige, Eclipse Scarlet, and Purple King, the best purple, 6s. per 100 free for cash, safely packed Lobelia Bluestone, intense blue.—WILLIAM FIELD, Tarvin Road Nurseries, Chester.

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Has a fine stock of Established Plants of the following most popular and beautiful ORCHIDS, at prices far below their value and less than (equal size plants) have ever been supplied at before. Purchasers' selection from following: 5s. each, 42s. per dozen, in 4-inch pots, flowering-size plants. Several sorts showing spikes of flower.

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Extra strong plants, in 4 and 5-inch pots, 10s. 6d. each, 84s. per dozen, as follows:—

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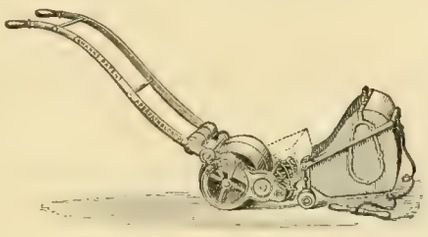

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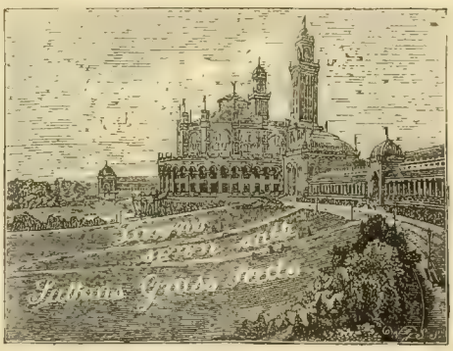

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THE
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SATURDAY, APRIL 17, 1880.

ROBERT FORTUNE.

Of all the pursuits in life by which a man makes fame and fortune none surely are more precarious and more deadly than that of a botanical collector. We need not stay now to give illustrations of this. Those conversant with horticulture and botany know the fact too well to dispute it. A walk through a nursery or well-ordered garden with some one who knows the history of the plants therein gathered together, and the career of those who were the means of introducing them, will suffice to prove what is indeed beyond dispute. This being so, of course it follows that lives so laborious, so honourable to the men, so useful to their fellows, would be duly honoured—medals and crosses would adorn their breasts, titles of honour would be bestowed on them, our universities and learned societies would be glad to enhance their own repute by paying honour to those who have deserved so well. Alas! this is what ought to be, not what is, in this country at least.

The case before us, that of Robert Fortune, is in some sense an exception. Fortune did not meet the untimely fate which befalls most collectors; his health, even, was not materially affected by his arduous labours. By his own prudence and thrift he managed to accumulate sufficient of this world's goods to banish poverty, and so far he had his reward. But of all those honours which raise a man in the estimation of his fellows, which stimulate him to increased efforts, and serve as an encouragement to others, few or none fell to the lot of Robert Fortune, the one who took so large a share in the cultivation of Tea in the Himalayas, the introducer of so very large a number of useful and ornamental plants. We can but chronicle the fact as a source of humiliation to the nation, or rather to its rulers, who have so much to give to the successful, or even unsuccessful, Briton militant, so little to the patriot whose services to the Empire are often so much more important, and so much more enduring, although, it may be, not so attractive to the general public.

Robert Fortune, whose death on the 13th inst. it is now our sad duty to announce, was born in Berwickshire on September 16, 1812, and was educated in the parish school of Edrom. Showing an early preference for gardening, Fortune served his apprenticeship in the gardens of Kelloe, the residence of Mr. Buchan, whence he went to Moredun, near Edinburgh, and after some time he entered the Botanic Gardens, Edinburgh, under the elder MacNab. Here he remained between two and three years, and in 1842 he left that city and came to London, being appointed superintendent of the hothouse department of the Royal Horticultural Society at Chiswick, an appointment he vacated on being commissioned in February,

1843, by the Society, to proceed to China to collect plants. In July of that year he arrived in China, and at once began that career of collecting which afterwards proved so fruitful. In that year began his communications to this journal, which, together with his official report in the *Journal* of the Horticultural Society, formed the basis of the books by which he is best known to the general public. Touching at Java on his outward voyage he collected a fine variety of Dendrobium secundum, which was afterwards sent home, and specimens distributed among the Fellows. A fortnight later he was at Macao, and thence proceeded to Hong Kong. During his stay in this island he collected Chirita sinensis, Spathoglottis Fortunei, Habenaria Susannæ, Arundina chinensis, Mussændas, and other plants. Finding, however, that Hong Kong and the Southern districts of China had been already ransacked, so that there was little hope of getting novelties, Fortune proceeded in the autumn of this year northward, to Amoy, which district he found more barren than that around Canton. In consequence he proceeded again northward by sea, narrowly escaping shipwreck on two occasioas in the Formosa Channel. Compelled to refit, Fortune availed himself of the delay to explore the country around Chimoo and Chinchew, where, in spite of the hostility of the natives, he collected some attractive plants. After some time he arrived at Chusan. In 1844 he writes to us in glowing terms of the hills in the Chusan island covered with Azaleas, and note his introduction of the elegant Buddleia Lindleyana. The scenery and botanical riches of Chusan were in striking contrast with the more southern districts, and the manners of the natives were also more conciliatory. He availed himself of an opportunity of visiting Shanghai, at that time closed to Europeans, and explored the rich plains of the Yang-tse Kiang, where, although the cultivated state of the country was generally unfavourable for botanising, he was fortunate enough to procure and ultimately send home Cryptomeria japonica and Anemone japonica, as well as many Chrysanthemums and Tree Pæonies. He returned to Hong Kong early in 1844, and occupied himself in packing his treasures and in transmitting them to England. At this period he revisited Canton and Macao, noting the arrival of the Moutan Pæonies, which are introduced from the north every year much as Dutch bulbs are annually imported into England. At the end of March he proceeded northward again, and was once more struck with the gorgeous beauty of the Azalea-clad mountains of Chusan, with Daphnes, Wistarias, Weigelas, Bamboos, and various other plants of great beauty and interest. At this time he visited the Tea growing district of Ningpo—his first introduction to a department in which he was destined to reap so much honour to himself, so much advantage to his country. Here he discovered in a garden the beautiful double yellow Rose which bears his name, and a curious sporting variety interesting in relation to the controversy as to the Rose called Beauty of Glazenwood. Of this sporting Rose Fortune says: "Sometimes it produces self-coloured blooms, being either red or French-white, and frequently having flowers of both on one plant at the same time—while, at others, the flowers are striped with the colours already mentioned." In the autumn of this year he returned once more to Hong Kong, to pack and despatch the plants he had collected.

In January, 1845, as it was still winter in the Northern provinces, he sailed for Manilla, the general vegetation of which he states to be similar to that of Java. Here he collected a quantity of the lovely Phalænopsis amabilis, including one plant "with ten or twelve branching flower-stalks upon it and upwards of a hundred flowers in full bloom." In March he left Manilla for Northern China once more. During the summer of this year he visited Foo-chow-foo, and the black Tea districts in the Fokien province. On the voyage from Foo-chow-foo to Ningpo the Chinese boat in which he was, was attacked by pirates on two different occasions, and had he not been well armed he must have fallen into their hands. On arrival at Chusan he was suffering from fever, but managed to proceed to Shanghai, where, in addition to the plants he had collected in the various districts in China, he had managed to get sundry importations from Japan, and brought the whole once more to Hong Kong. Thence he dispatched half his collection, taking with him to Canton the other half. Leaving Canton at the end of December, 1845, he arrived in England in 1846. On one of his visits to Hong Kong the Governor availed himself of his services in replanting the bare hillsides of the island. His adventures, as stated in *Men of the Time*, "were full of romance; and whether feasting with Mandarins, enjoying the hospitality of Buddhist priests, battling with the swarming natives, fighting single-handed with pirates, or gaining admission to city of Loo-Chow in the disguise of a Chinaman, he seems to have exercised equal energy and sagacity."

The results of this journey were summarised in his *Three Years' Wanderings in the Northern Provinces of China*, published in 1847, and from which we were enabled to gain much juster ideas of the populous and decaying empire that had previously been current. Chinese gardening and agriculture of course took up a principal portion of the book, and in particular the history of Tea culture was made known, Fortune having had the rare opportunity of dwelling in a monastery or temple in the heart of the Tea districts. The whole process of manufacture was examined by him, and the important fact made known that black and green Teas are both produced from the same plant—in the northern districts from Thea viridis, and in the southern from Thea Bohea—the difference in their quality depending entirely upon the manner of preparation. In this volume we find accounts of the mode of dwarfing trees, and of their system of gardening, their glorious Azaleas, their many-coloured Chrysanthemums, their noble Pæonies. A second edition of this volume was soon called for.

Shortly after his return to this country he was appointed, in 1846, on the recommendation of Lindley, to the Curatorship of the Botanic Garden of the Society of Apothecaries at Chelsea, and during his tenure of office set himself to work to reform that establishment. Two new houses were built, and heated on the Polmaise system, which was soon abandoned.

In May, 1848, at the instigation of the late Dr. Royle, Fortune was commissioned by the East India Company to proceed to China again, and to collect Tea seeds and Tea plants for transmission to India. He applied for two years' leave of absence to the Apothecaries' Society, but as this could not be consistently granted Fortune resigned his appointment, amid expressions of regret and goodwill on the part of his employers, and proceeded once more to China.

In 1849 we read of his success in collecting Tea plants, and in 1850 he communicated to our columns his discovery of a primrose-yellow Camellia, and his description of the graceful Cupressus funebris. Several of the plants collected in this journey were transmitted to Mr. Standish for distribution.

In 1851 we read of his arrival in Calcutta with nearly 2000 young Tea plants and 17,000 germinating seeds; with these he proceeded to the North-west Provinces of India, and thus served to lay the foundation of what is now a lucrative industry.

In 1852 he paid a second visit to China, in the service of the East India Company, and during his journey supplied these columns as heretofore with particulars of his travels. He made known to us the simple expedients by which the Chinese force their flowers for early spring use, making use of sheds with the crevices filled with straw, and the heating apparatus consisting simply of a charcoal stove. The Kum Quat, Citrus japonica, the Crysanthemums, the Cryptomerias and Cunninghamias, all attracted his attention, and furnished him with materials for graphic description. Were labour sufficiently low-priced, says Fortune, Tea might be cultivated even in Ireland.

In 1853 appeared in our columns the "Leaves from a Chinese Note-book," full of interesting details of Chinese gardens, in particular that of How Qua, known to tea drinkers. The account of this gentleman's garden will be found at p. 631 of our volume for that year, and is specially worthy of notice. The account of the spring flowers in the north of China, Jasminum nudiflorum, Spiræa prunifolia, Daphne Fortunei, various Peaches, Viburnum macrocephalum, Weigela rosea, may be mentioned among others by way of illustration.

Near Ningpo Fortune met with one of those curious cases of mock grafting of which he subsequently furnished us a sketch, here reproduced (fig. 86). In the course of his wanderings he met with a Juniper, such as the Chinese are fond of planting round their graves. "But although a Juniper at the top and bottom, an evergreen tree with large glossy leaves, Photinia serrulata, formed the centre." The Photinia came out from the trunk of the Juniper about 12 feet from the ground, and appeared as if it had been grafted upon it. And such was the belief of the natives, but on examination it proved that the Photinia was rooted in the ground, and had 12 feet of its stem cased in the trunk of the Juniper.

In this year he visited Formosa, of which so little was then known, and, indeed, of which so much still remains to be discovered; there he found abundance of Lilium japonicum, and the now well-known Rice-paper plant, Aralia papyrifera.

In 1855 he writes us a long description of the beautiful Golden Larch, Abies Kæmpferi, and of the locality where it was growing. Subsequent letters contain details concerning the Chinese Yam, Dioscorea Batatas, the Mosquito Tobacco, the hardiness of Chinese plants in England, the dreadful consequences of the Rebellion, as seen in the destruction of forests, gardens, houses, &c., near Shanghai.

In 1857 appeared another work from Fortune's pen, entitled, *A Residence among the Chinese, Inland, on the Coast, and at Sea.* Here we have a *resumé* of his travels in the Tea districts of Chekiang (second visit), Shanghai, Canton, Foo-chow-foo, and Formosa. Subsequently he visited the cooler districts of China, including the silk districts, where he carefully observed the whole process of silk manufacture. The book goes on to record his second journey to India and his return to England.

In 1858 he again proceeded to China, in the service of the American Government, and in 1859 he was awarded a medal by the Paris Société d'Acclimatation, in acknowledgment of the number and value of his introductions.

In 1861 he writes to us from the Yang-tse Kiang River in China, detailing the results of his visit to Japan. These letters are full of descriptions of Japanese scenery, manners and customs, visits to nurseries, and botanising excursions. He notes the fondness of the Japanese for variegated plants, and gives (p. 577, 1861) a list of some of those procured by him and despatched to this country. In a subsequent letter he mentions the Japanese Chrysanthemums (p. 773, 1861), of which he says:—"If I can succeed in introducing these varieties into Europe they may create as great a change among Chrysanthemums as my old *protegé*, the modest Chusan Daisy, did when she became the parent of the present race of Pompons."

In 1862 Fortune returned from Japan and Northern China, bringing with him various specimens, amongst other things an Artemisia used as a stock by the Chinese whereon to graft the Chrysanthemums as standards.

In the following year (1863) appeared a book descriptive of this his fourth and last journey to Japan and China, under the title of *Yeddo and Peking; a Narrative of a Journey to the Capitals of Japan and China, with Notices of the Natural Productions, Agriculture, Horticulture, and Trade of those Countries, and other Things met with by the Way.* This book, like its predecessors, is remarkable for the picturesque natural way in which he describes what he saw.

Thus ended the wanderings of this keen botantist and most persevering collector. What we have said must be taken as a mere outline of his work. Our space will not permit us to do more; nor, indeed, is it needed, for the narratives of his travels are in every well-furnished library; and as to the plants he introduced, many of them are now so well known and so thoroughly appreciated, that it is hard to think

the name and services of Robert Fortune can be forgotten.

Fortune formed one of the Committee of the International Exhibition of 1866, but from that time gradually retired from horticultural pursuits, and betook himself to farming in Scotland. Nevertheless, he occasionally came among his old friends and companions, and only quite recently revived old associations by communicating to us a list (incomplete) of the principal plants introduced from Japan and China by his agency (see p. 11).

To those who are inclined to forget what the Horticultural Society has done for horticulture, it may suffice to mention that through its auspices Fortune first made his mark as a botanical collector, and many of his choicest plants were sent home by him to the Society.

Fig. 86.—Mock grafting as practised by the Chinese. (see p. 488.)

As to Fortune himself, he is one of those whose name can never be mentioned by the gardener or the botanist without feelings of respect, admiration, and gratitude.

THE CULTIVATION OF GARDENIAS.

In a recent run through East Suffolk I was much struck with the exceptionally healthy condition of the Gardenias seen at the Duke of Hamilton's at Easton, Mr. Shepherd's at Campsy Ashe, and Lord Rendlesham's at Rendlesham Hall. This high excellence of particular plants in special localities is one of the peculiarities of horticultural practice. Within the wide range of horticultural practice one is constantly meeting with what may be called smaller circles or areas, in which one special plant or series of plants is done better than perhaps anywhere else. Now it is Orchids, again it is Lilies; here it may be Fuchsias, there Pelargoniums: in another locality it is stove plants, and in yet another greenhouse plants. In the particular district referred to, there are several specialities of culture, and prominent among others is that of Gardenias. The three clever and well-known gardeners, Messrs. Irvine, Keen and Mill, may be said to be running a Gardenian race, and without saying which has won, which would seem invidious and would be useless, I purpose describing the simple means which they all adopt in common, and which appear to form the foundation of their success. These are the employment of young plants, continuous growth and flowering, planting out, abundance of heat and moisture, the use of rough peaty soil and gritty sand, and the gathering of the flowers singly, instead of cutting the branches.

I found all my good friends to have the most boundless faith in young plants. As far as I could learn, none of their large plants, laden with their rich sheets of white sweet blooms, exceeded two years old. A few cuttings are struck every year. These are pushed on rapidly until they fill 6 or 8-inch pots, when they are planted out. They are left to flower twelve, fifteen, or eighteen months, and then removed to give place to young plants again. By this constant renewal of the plants they are always maintained in the full vigour of growth. When practicable two small houses or pits are employed—one succeeding the other; by this method a blank of any duration seldom occurs in the supply of Gardenias. But this brings us to the second point of what, for convenience, I may call the East Anglian mode of culture. It is a mistake to rest Gardenias, and it is one that often proves fatal. It is during this forced rest that they so often get out of health. This I know well from experience. I crippled the finest lot of plants I ever had by attempting to keep them back for a special occasion. Many of the flowers dropped off when the plants were subjected to a higher temperature, and none of them ever recovered their lost health. But it is only needful to notice the mode of growth and flowering of Gardenias to be convinced that the plants thrive best and flower freest when kept always at work. Flowering and growth are simultaneous, and it follows that under favourable conditions the two will run abreast, as it were, in continuity. And they do. Under liberal treatment Gardenias go on flowering throughout the greater part of the year. They also grow fastest and flower freest when planted out. Gardenias are free, almost gross, rooting plants; they are often literally starved in pots—the soil gets sodden on the top and dry underneath, and the roots perish or the plants starve. Planted out the roots have a wider range, and the plants thrive with a luxuriance, and grow and flower with a vigour, seldom witnesssed in pots.

Gardenias also require abundance of heat and moisture. The old cultivators had a saying, that dry heat was essential to the successful culture o Gardenias. The finest of those met with had no bottom-heat, neither from dry nor hot-water pipes. Some of those seen, however, though by no means the best, had bottom-heat. In all other respects the top temperature and treatment were the same—from 65° to 75°, with a semi-saturated atmosphere, were the atmospheric conditions provided. Frequent and heavy syringings were also given for the double purpose of maintaining a sufficiently moist atmosphere, and keeping the plants free of mealy-bug, for experience is daily proving that there is no remedy for this mealy pest equal to the cold-water cure, which was, I believe, first propounded by myself in your pages. Gardenias also prefer peat and sand only. I have seen them well grown in the usual regulation mixture of half peat and half loam; some also prefer leaf-mould, and even a small portion of thoroughly decomposed cow-dung; but on the whole nothing seems to suit them like rough lumpy fibry peat with about a sixth portion gritty sand and a sprinkling of smashed charcoal. The drainage should be ample, as it is almost impossible to over-water Gardenias when they are in full growth. Nevertheless, they quickly resent stagnant water at their roots, and hence the necessity for liberal drainage.

A mass of soil 18 inches or so wide along the centre of the pit or bed, and 2 feet deep, will, however, grow magnificent plants of Gardenias a yard high and as much through. When the roots come through the soil to the surface it is easy to top-dress with a few inches of fresh earth. This can hardly be pressed too firmly against the root-filled mass of old soil, and the plants speedily occupy the fresh feeding ground, and go on growing and flowering the better and the longer in consequence.

Our last point—and it is one of immense importance—is the gathering of each flower separately. This seems a small matter, but as each flowering branchlet breaks into three or more shoots above the flower—and these shoots form succession flowers—it follows that for every flowering shoot cut off three or more flowers are lost to the plant. Hence the importance of gathering each flower singly, and never cutting a branch. The flowers may be mounted with other foliage, such as the broad-leaved Myrtle, small leaves of the Sweet Bay, Portugal Laurel, Ferns, Lycopods, &c. Those who insist on having Gardenia foliage, which undoubtedly is the best—every flower should, in fact, be garnished with its own leaves or branchlets—should grow a few plants in pots for this purpose; but every cultivator who aims at the richest harvest of blooms from his specimen Gardenias should lay it down as an unalterable law, that no shootlet or branch shall be cut off. The plants break back readily enough, but such breaks seldom flower within reasonable time, whereas the terminal shoots, after making a few joints of wood, speedily mature blossom-buds, and thus a sure and plentiful succession of flowers is kept up. *D. T. Fish.*

Agave Regelii macrodonta.—A noble specimen of an Agave bearing the name of A. Regelii macrodonta is flowering for the first time in Mr. J. T. Peacock's collection in the Temperate-house at Kew. Mr. Croucher looks upon it as a large form of A. horrida.

HARDY CYPRIPEDIUMS.

There is no reason why a still greater number of our plant-loving amateurs should not gratify their taste by cultivating a goodly number of Orchids, although they may not possess warm or cool glass-houses.

There are in the Orchid family very many handsome species which, if cultivated under favourable conditions, are perfectly hardy. I cannot give the exact number of species and varieties which are *bonâ fide* hardy plants in our ever-changing climate, but there are at least representatives in typical species, to say nothing of varieties, of twelve genera, and if we include Disa, which is hardy in the south-west, that gives us another genus. To the amateur botanist who does not disdain the gorgeous, as well as the structurally curious, such an array of genera which represent well the differentiation in the Orchid family should certainly be an inducement to cultivate them, especially now that we have learnt what great interest attaches to Orchid flowers. As to the Cypripediums which are the subjects of this short paper they are among the most beautiful and most interesting. All who know the hardy species of this genus must admit their great beauty; in fact, as far as floral colouring goes, they are even more beautiful than most of the numerous exotic species grown in our stoves. Take, for instance, C. spectabile when in good order; it is certainly as showy as any of the species.

Cultivation.

Some Orchid growers recommend frames for their successful culture, with which I agree *in toto*, but at the same time they may be successfully cultivated without a frame. It is advisable where sufficient stock is at hand to grow them in a frame in pots or pans, and in a border outside as well. This will afford a double amount of pleasure to the cultivator. If grown in a frame they only require potting and tending as other Orchids; but if we are to grow them outside there should be a shady border selected—I do not commend excessive shade—from which the soil should be removed about 15 or 18 inches, placing a layer of drainage about 6 or 8 inches deep, when the hole should be filled up with good peat and pure leaf-mould, about one part of the latter to two of the peat, adding a good supply of sharp sand, and then the bed is quite ready to receive the plants. Probably the best time to plant is about March or April. I might add that if the position is damp so much the better, as they prefer moist places; and in the summer they must not be allowed to become dry, or the flowering force for the following season will be scanty. They must not be planted very deep, say about 2 inches under the surface, as it is better to give them a slight protection during the winter than to plant them deep. The back part of the border may be planted with the peat-loving Liliums, such as L. canadense, superbum, &c., which will be equally at home in such a bed, and when in flower will give a stately and beautiful appearance to the bed. Many plants also might be selected to carpet the bed, such as Erpetion reniforme, which, however, is rather apt to suffer in severe winters; Linaria pilosa, or Wahlenbergia hederacea, all of which are rapid growers and very pretty, while there are many others equally as good; and we must not forget that there are numerous other pretty hardy Orchids which might also be planted if there was sufficient room. I shall notice them another time, confining myself for the present to the Cypripediums which are enumerated below.

C. acaule.—A beautiful small-growing North American species, at once distinct from the rest; the flowers are very large, quite 2 inches or more long, issuing from a pair of large opposite, ovate, hairy leaves, which are supported on stems 6 inches high. The colour of the flowers is variable; usually they are beautiful rose, sometimes shading to white. This is one of the easiest to grow in such a border as described above, or it does in a shady position on any rockwork with soil as recommended. Flowers in June.

C. arietinum.—This is commonly known as the Ram's-head Lady's Slipper, although the resemblance is not close. The stems are very slender, from 4 to 6 inches high, copiously leafy, with a single flower at the extremity; the sepals and petals are greenish brown, while the labellum is white freely veined with red. This is a rare species and requires a very damp situation, which, if not in the border, must be supplemented by a good supply of water. It is a native of North America, flowering with us in May.

C. Calceolus.—This is a British plant, but rarely met with. It is a beautiful species, and must be placed with the cream of British plants. It grows about 9 inches high, with slender stem bearing several ovate-oblong hairy leaves; flowers from one to three on each stem, with brownish-purple sepals and petals, and a bright yellow round lip. It is not difficult to grow but rather uncommon; it is, however, to be secured from our best collections. It enjoys a moist place. Flowers in June.

C. japonicum.—This is a very uncommon species, and quite distinct from all others. The stems are from 6 to 12 inches high, supporting two large roundish cordate leaves, with crumpled edges of a light green colour and pubescent. The flower, which is always solitary, issues from between the leaves, with greenish sepals covered with red spots; the petals and labellum are white, stained and tinged with crimson, forming a lovely contrast of colours, and it lasts a considerable period in beauty. This does also well in the border. Native of Japan, flowering with us in June.

C. macranthum.—This is the large-flowered Lady's Slipper, as its specific name implies. It is a native of Siberia, and has been introduced into the country ever since the beginning of the present century, but was almost annihilated until recently, when it has been imported rather freely. I should advise purchasers, however, to secure it while they are sure it is correct, as I have once had C. Calceolus sent to me for it. It is one of the finest in the group. Stems usually a foot high, producing one to several large flowers from 2 to 3 inches in length, of a rich purplish-red colour. It is a strong grower, and will flourish well if planted in a damp place. Flowers during May and June.

C. montanum.—This species is by no means common, being comparatively of recent introduction from the Rocky Mountains. It is a strong growing plant, producing stems 15 or 18 inches high, with large ovate-lanceolate hairy leaves, flowers solitary, with deep brown sepals and petals, while the labellum is much inflated, white, tinged with red. This is a very striking species, and well worthy a place in any Orchid collection.

C. parviflorum.—This is a strong growing North American species, which has been introduced into this country over a century, yet is but little known at present. The stems grow from 18 to 24 inches high, copiously foliaceous; flowers one to three on a stem, with sepals and petals brownish-purple, and the labellum bright yellow; the flower as well as being very showy is delightfully fragrant. The size of this species depends upon the position it occupies; if favourable it will grow to the height described above, but I have known it to grow only a foot high. It revels in moisture. Flowers in June.

C. pubescens.—This species has also been introduced about a century, from the same part of the world. The stems are from 1 foot to 18 inches high, with large very pubescent leaves. Flowers precisely similar to those of C. Calceolus, but larger; in fact, the plant is altogether like that species but more robust. It is most likely a variety of C. Calceolus, differing through the place of growth. It is, however, a very beautiful plant. Flowers in June or July.

C. spectabile.—This is unquestionably one of the finest hardy plants in cultivation, and as a species of the Orchid family surpasses in beauty many of the exotic forms which are universally esteemed. It grows when in good health, and cultivated under favourable circumstances, from 18 to 30 inches high, with leafy stems, the leaves being ovate-lanceolate and pubescent; the flowers are 2 to 3 inches across, with white sepals and petals, while the labellum is more or less rose-coloured, sometimes delicate, or deep and much inflated. It requires a copious supply of moisture when growing, and when once established, which it readily is, presents a grand appearance. It is happily employed at Kew mixed with the hardy Ferns, where the flowers are very effective.

Before leaving the subject I may add that it is not absolutely necessary to prepare a special border for these plants, although such a method is decidedly best, as they may be planted on the rockery in suitable soil, but the position must be shady; and they may also be planted with hardy Ferns. I have seen them very beautiful, when planted in hollowed-out tree stumps, where they receive drainage and partial shelter. *N.*

EREMURUS ROBUSTUS AND TURKESTANICUS.

Noticing some notes in recent *Gardeners' Chronicles* regarding these plants, I venture to mention my experience with them. In the fall of 1877 we received a bulb of each from Max Leichtlin, Baden Baden. We potted and kept them in a cool greenhouse till the spring of 1878, when I planted them in an outdoor and sheltered rockery. They grew strongly, and E. robustus flowered in June, when it bore a scape 6 feet high; it also ripened lots of seeds. Inspired by the possession of plenty of seed, and knowing no reason why they should not be hardy, coming, as they do, from the home of so many hardy plants, I left them out over winter, but covered them up pretty well. The next spring (1879) they emerged stronger than before, and in June both were in blossom. E. robustus was grand. Its flower-scape was 8 feet high, terminating in a dense raceme 3½ feet long, containing over 400 pale pink flowers, of which 120 to 140 were in bloom at one time. Each blossom measured about 1¾ inch across. When in flower it is remarkably handsome, and the most striking plant I know of. It ripened lots of seeds last year, too.

E. turkestanicus is by no means such a strong-growing or ornamental species as robustus. It starts earlier into growth, and is done blooming (it flowered during the last week in May and the first week of June) by the time its gigantic relative begins. It bloomed with us last year. Its flowers were dark red and brown, on a 16 inches long raceme, terminating a scape 4 feet high. Several seed-vessels formed, but no seeds ripened.

Both plants have been left undisturbed, and I noticed yesterday (March 29) that, solidly fastened in the frozen earth, their crowns are at the surface of the ground, plump and healthy-looking, and instead of one crown, E. turkestanicus has several. I did not cover them up much this winter; merely placed a piece of board over their crowns, to ward off rain and drip, and over that a little sedge-grass. And I am now convinced a slight covering is better than a heavy one, because this year the plants have not started into growth so early as they did last, and that is a decided advantage in our severely changeable spring weather. But at planting time I made a mistake. I did not plant them deep enough; the settling earth in the rockery, the washing by rain and heaving by frost, have left the bulbs almost at the surface of the ground.

Now as to their hardiness. Our two last winters have not been steadily severe, but they have been very variable, and a few times each season the thermometer indicated some degrees below zero, Fahr. The winter of 1878-79 was exceptionally destructive to herbaceous plants; this (1879-80) comparatively open till this month (March), which has been cold and stormy. I do not winter-cover our rockeries till they are well frozen; and in that way I can preserve them from thawing till February or March, and in shady places till April. *Wm. Falconer, Botanic Garden, Cambridge, Mass.*

New Garden Plants.

Anthurium Andræanum.* (See fig. 88, p. 497.)

This is the very striking plant which we noticed last week as having been exhibited at Ghent, where it attracted much interest. A similar feeling was experienced here when the plant was shown before the Floral Committee of the Royal Horticultural Society. The plant is an Aroid of tufted habit, with oblong, cordate, glabrous, leathery leaves, dark green above, paler beneath, and marked by comparatively few but prominent nerves; the leaf-stalks are ascending, cylindrical, slender, and thickened at the top, the blade being attached, as it were, hinge-wise, so as to allow of varying positions, deflexed or spreading. The flower-stalk is double the length of the leaf-stalk, erect, slender, and bears at the summit a spreading, heart-shaped, acute, leathery spathe of a brilliant shining scarlet colour, the surface irregularly corrugated, like the cartilage of the ear, and of so firm a texture and brilliant a colour as to suggest the idea of an artificial rather than of a natural production. The spadix, which is about 3 inches long and of the thickness of a swan-quill, is ivory-white at the base, greenish-yellow at the tip. The plant is a native of New Granada (province of Choco), where it was discovered by M. André, and by him introduced into M. Linden's establishment.

Mr. Worthington Smith's drawing gives a good idea of the plant, for a full technical description of which we refer to Dr. Engler's monograph, cited below. It is included in the section Cardiophyllum. Undoubtedly the plant is one of the most brilliant and remarkable introductions of recent times. The figure given in the *Illustration Horticole* in 1877 was taken from dried specimens, and by no means does justice to the plant. Those who remember what A. Scherzerianum was on its first introduction and what it is now are justified in looking forward to the career of the present plant as likely to be of quite exceptional importance. M. André saw it for the first time growing on the forks of an immense Indiarubber tree, Ficus elliptica, when he mistook it for the Cardinal-bird (Loxia), but subsequently found other specimens growing on the ground. The cultivation of the plant is likely to be easy. *M. J. M.*

* *Anthurium Andræanum*, Linden, *Illust. Hortic.* 1877, p. 43, t. 271: Engler, in DC. *Mon. Phan.*, vol. ii., Araceæ (1879), p. 160.

THE YORK NURSERIES.

The nurseries of Messrs. James Backhouse & Son at York may almost be said to be too well known to need description, but in nurseries of such large extent as these there is always something of an interesting character to notice, something to please and to instruct. Besides the usual run of nursery stock required in a large business, there are here a few specialities that are not seen so good anywhere else. There is also a rather large collection of Orchids, and the firm has introduced some high-class novelties; amongst others may be mentioned the quite recent Odontoglossum Londesboroughianum, of which there are some enormous masses starting into good growth. Worthy of high commendation, too, are the many fine varieties of O. vexillarium. Messrs. Backhouse were fortunate in introducing many fine varieties of this splendid Odontoglossum, some of which were sold at Stevens' Rooms last year, and realised from 25 guineas to 30 guineas each for very moderate-sized plants; the immense size of the flowers and their rich colours being the reason that such high prices were realised. At present there are a number of well grown examples in flower, some of the flowers quite 4 inches by 3 inches. Bollea cœlestis is an Orchid not too well known; it was introduced only a few years ago, and promises, when well-established, as it has been in some gardens, to be a very distinct and attractive species. It does well in the York Nurseries in the same house with Odontoglossum vexillarium, in a temperature of about 60° at night. In the cool-house I noticed a very richly coloured form of Masdevallia Harryana. M. Backhousiana had a few very fine flowers: this species seems to be very near M. Chimæra. I noticed that slugs were kept from the flowers by a thin strip of silk wound round the stem.

Filmy Ferns have special attention paid to them. There are two small houses filled with specimen plants in good health, and very interesting they are. Although the plants were exposed to very low temperatures during the late severe winter they look none the worse now. Todea superba had been subjected to 15° of frost; Trichomanes reniforme is a very distinct species, and stands frost well; T. trichoideum is a very pretty, finely-cut, graceful species with slender fronds; T. umbrosum maximum has long fronds, which are very beautiful; T. Luschnathianum is also very graceful and pretty, climbing up earthenware stems; T. auriculatum clings closely to these stems, and its drooping transparent fronds, not unlike Asplenium marinum in shape, are very distinct. T. meifolium is perhaps the most graceful of all, its very slender fronds are exceedingly pretty. Hymenophyllum demissum var. nitidum is an improved form of the species, and H. crispatum is very distinct. Noticeable in one of the houses is a group of plants of a greenhouse Fern that should be in every collection—Lomaria L'Herminieri; it soon forms slender stems, crowned with a tuft of fronds, the young ones being quite of a crimson tint.

But the glory of the York Nurseries is the rock garden. Though it has been laid out at a great expense, the money has not been wasted, as often happens when works of this kind are undertaken. The plan must have been well thought over before it was worked out, and the result has been eminently successful. Here we have a natural system of rock and water combined, so that plants preferring dry localities find what is best adapted for them, and moisture-loving subjects revel in the enjoyment of moist peat or loam, as the case may be. At present the hardy species of Primula are most interesting, and they look quite at home in different positions amongst the rocks. Here are P. viscosa nivea, usually known as P. nivalis, which is wrong, as the name P. nivalis belongs to another species with purple flowers. P. marginata grows very freely, speedily forming large masses; its rosy-purple flowers are very pleasing. Primula Auricula marginata and another variety named Balbisiana are much superior to the normal forms of the wild Auricula. They have been gathered in a wild state by Mr. Backhouse's collectors: the flowere are quite golden. Primula ciliata, deep crimson with yellow eye, deserves great prominence. I also noticed Primula pubescens, mentioned in the *Gardeners' Chronicle* last week. P. Dinyana must also be noted as a desirable species to grow. Of P. spectabilis there are large healthy masses growing in places where the loam is deepest; this species at once attracts with its trusses of purplish-rose flowers, of which eight or nine can be counted on a truss. P. pulcherrima and P. cashmiriana are growing in patches of a dozen or more plants together, and the different shades of colour enhance their interest and beauty. However, the most striking and beautiful of all is P. rosea; it has been abundantly planted, and in different positions, but its home is evidently in the interstices of the rocks, where it is growing and flowering very freely indeed, and the colour is more intense than any I have yet seen. Growing in pots under glass, the flowers are flimsy and washed out; this I have proved in our own garden, as I did not see it under glass at York.

All the Soldanellas were in flower, and if they are amongst the smallest they are also the most beautiful of alpines. S. montana has pretty lilac-purple flowers in umbels and deeply fringed. S. alpina had fewer flowers on an umbel, of a deeper purple and beautifully fringed. S. minima was also in flower; it is similar in structure to the others, very small, and had pale rose flowers. Saxifraga pyrenaica is said to be a very pretty species, but it was not in flower. S. retusa was in flower, and is very pretty. The Androsaces are also in flower, and amongst them A. carnea is very pretty. A. tomentosa is not yet in flower, but it succeeds well in open places. Viola hirta flowers very freely, and is very conspicuous even at a distance, but it lacks fragrance. Of the beautiful Hepatica angulosa there are very large masses; fancy the effect of one when in flower nearly a yard across. Anemone blanda had formed very large masses, and its deep sky-blue flowers are very striking; it comes near to A. apennina, of which it may be a variety. This was introduced by the firm from Greece a few years ago, and it should be grown as extensively as A. apennina.

In sheltered rather shady positions are to be found numerous examples of Meconopsis nepalensis, which had formed fine flowering specimens. M. aculeata had flowered very strongly last year: this, like M. nepalensis, was thought to be biennial, but it is not so, as the plant proves itself to be perennial under the shady side of a ledge of rock here. M. Wallichii is also starting into vigorous growth.

Last, but not least, are the Sarracenias. With the glass down to 5° Fahr. thermometer, S. purpurea has stood well, and even S. Drummondii is sound at the crowns, as also is the Cephalotus follicularis. It is interesting to know that these remarkable plants are quite hardy in the coldest districts. *J. Douglas, Loxford.*

ANNUALS FOR POT CULTURE.

Evanescent as most of the annuals are, especially many of those generally cultivated in the open borders, there are some that are almost indispensable for pot culture, chief among which are the Celosias, the inflorescence of the best strains being of a peculiar plume-like character and producing a most pleasing and striking effect. Not only are they most valuable for general decorative purposes, but they are equally serviceable for supplying cut flowers, the rich feathery appearance of which renders sprays of it exceedingly telling in any vase, where, if judiciously used so as to droop over the sides, it imparts a fine finish. To have plants of Celosias in good condition by about the end of July, seed should be sown at once in fine light soil, and placed in moist heat, where it will soon germinate, and the seedlings become large enough for pricking off or potting singly in small pots, to be nursed on again in a warm, genial atmosphere, till they are fully established. There is no place better suited to grow them in than an ordinary dung-frame, the vapour continually rising in which keeps down red-spider, an insect they are very subject to during the summer months, but by having the plants in a place to themselves, these pests may be easily prevented from doing any harm to the foliage.

Celosias, being naturally pyramidal and branching in their habit, require no stopping or training, and all that is necessary to get well furnished symmetrical specimens is to afford them plenty of room in order to admit full light and sun between, which, with the proper amount of air, induces sturdy stems, and enables them to stand and maintain themselves erect without any support. Although the plants delight in rather strong heat during their early stages, they stand well afterwards in the ordinary temperature of a greenhouse or conservatory, where, if placed out of reach of draughts, they form handsome ornaments, and maintain their full beauty for months. To keep up a succession and have others to come on in the winter another sowing should be made in August, plants from which, if stood in a warm dry stove late in the autumn, will yield flowers continuously till long after the turn of the year. The soil best adapted for the culture of Celosias is a mixture of loam and leaf-mould in about equal proportions, in which the roots ramify freely; and as the pots fill with these liquid manure will be found of great assistance to the plants in producing good heads of bloom. The most desirable kinds to cultivate are plumosa coccinea and plumosa aurea, the two sorts yielding many shades of colour; but to keep up a pure stock of the most feathery of these and preserve a strain worth having it is necessary to select such as show the greatest merit to save seed from, otherwise they soon degenerate, and the plants revert more or less, and often in a considerable degree, to the old stiff-looking Cockscomb.

Next in point of merit and usefulness to Celosias come Balsams, which have been so much improved of late years, that it is no uncommon thing now to see them with flowers almost as large as a Camellia and as beautifully striped as a Carnation; but the worst of it is, these very double blooms set but few seeds, and this makes them somewhat scarce and dear at starting. Such superior strains, however, are always worth all they cost, as compared with them others look mere weeds, and are scarcely worthy the trouble of potting or house-room. Balsams, like most other soft sappy-stemmed quick-growing plants, have a great tendency to rush up and become attenuated when grown under glass, to check which it is necessary to have them well up to the light from the moment they appear above the soil till they get into bloom. During their early stages, a shelf near the glass suits them best, and as they gain size a pit or house where they can be plunged in a little bottom-heat and kept fully exposed to the sun. This with plenty of air will induce a close short-jointed habit, and cause them to send forth such robust side shoots as to render the plants well furnished throughout.

Being very gross feeders, the soil in which Balsams are grown can hardly be too rich, and if the manure used be of a mild nature, such as that from an old hotbed, and thoroughly decomposed, a third of it with the loam will not be too much. The two ingredients before using should be thoroughly incorporated, and in potting, to get the plants as stocky as possible, they should be dropped a little lower at each shift, till at last the bases of the two bottom branches are brought on a level with the soil. To force these in a horizontal direction it is often necessary to give them a peg or tie them down: by doing this the foundation is at once laid for well furnished specimens. The size of the pot will depend on the dimensions it is desired to secure; but fine plants fit for most purposes may be grown in those of 9 inches or a foot across, as when they become filled with roots liquid manure may be given in any quantity provided it is not too strong. The drainage from cow-yards or dunghills suits best; but any of the artificial stimulants answer the purpose if given weak and often, the danger of these being an overdose, as from their concentrated form most of them have to be used with great caution. In saving Balsams for seed it will be found that they set and ripen better by being placed out in a south border, but before doing this they must be properly hardened off, and always kept well watered afterwards. As the pods burst as soon as ripe and disperse the seed, they require watching and picking when fully grown, and if laid in pans in some dry place they soon become sufficiently hardened for storing.

Another very beautiful annual for pot culture is the Schizanthus papilionaceus, the flowers of which, as its trivial name implies, resemble butterflies, and this not only in shape and form, with outspread wings, but in some of the most peculiar and lovely markings of these much admired insects. Some idea may therefore be formed of the fine display they make in a house when in full bloom, and what an acquisition they are for general decorative purposes during the summer. Seed obtained at once and sown in gentle heat will afford plants that will be in perfection by the end of June or July, and another sowing made in either of these months will give another batch to succeed them in the autumn. The latter lot will be found to do best plunged in some open sunny spot out-of-doors, but those started now must have the protection of a cold frame for a time, when they, too, will be benefited by a little exposure, as they always grow more dense and bushy treated in this way, and are more floriferous than when kept

under glass. The way these Schizanthus look best is by growing three in a 7 or 8-inch pot, as singly they have rather a spare look, their habit being somewhat thin and fragile, but three together form a fine mass if placed triangularly near the sides of the pots. Schizanthus retusus Grahami is equally desirable as the above-named, the flowers of this variety being exceedingly handsome, resembling some of the choice Orchids in their formation and markings. Like most annuals, they are both fond of light rich soils, and require a free supply of water when growing and carrying their bloom.

Rhodanthes, again, are perfect gems for the embellishment of greenhouses and the adornment of window recesses in rooms, for the latter of which purposes they are held in high estimation in our cities and towns, where the sale of them is something enormous. Being rather tender and delicate when young, they require a little heat at starting, such as may be afforded in a dung frame, from whence they may be transferred to any light shelf at the back of a pit till they come into bloom. Refuse peat, or soil containing a good proportion of leaf-mould, suits them best, in which they should be potted three in a 5 or 6-inch pot, and the points of the shoots of the plants nipped out once so as to cause them to branch out and furnish better than they otherwise would.

Gomphrenas, being of much the same nature and general character as the Rhodanthes associate well with them, and are plants worth growing, as they, too, form bright cheerful looking objects, and are very distinct among others. The flowers of both being dry, are very durable and exceedingly ornamental in a cut state mixed with other everlastings and grasses—an arrangement that is both pleasing and beautiful, and groups so formed look fresh and attractive the whole winter through.

Salpiglossis is another annual well deserving of pot culture, as although it may be grown in beds or borders outdoors it is only seen in perfection in warm summers. A packet of seed affords endless variety, as scarcely two plants in the lot yield flowers exactly alike, the rich ground and markings of some being most striking. In size and form the blossoms bear a close resemblance to those of the Lily, and it will therefore be seen how ornamental they are.

The old Martynia fragrans should not be forgotten, as it is as useful for greenhouse decoration as anything that can be had; and the great merit of all these annuals is that they can be got up quickly without much expense or taking up glass room that is valuable for other purposes, as they can be stood in the open the principal part of the time they are growing.

J. S.

GARDEN GOSSIP.

By a Lady.—No. IV.

The Daffodil.—Those to whom this name is only associated with the common double Daffodils of cottage gardens must have some difficulty in appreciating the fitness of the title "fair" which Herrick bestows on them in his well-known poem, or their old name of "Lenten Lilies;" for certainly the golden balls of the double Daffodil but little resemble Lilies. But in Herrick's time the wild Daffodil must have been much more common than in these days of high cultivation, when farmers ruthlessly exterminate it as a noxious weed; and probably it was the only Daffodil known to him.

Perhaps before long those farmers who chance to live within reach of large towns may find it not such an unprofitable plant to grow, since the fashion of decorating churches with flowers has been revived in England. When I was young I had never seen a church decorated except at Christmas, when our clerk would always stick a branch of Holly into a hole (made for the purpose) in the top of each carved Poppy-head that ornamented the old oaken seats (built up into pews) in our church. Lenten Lilies, therefore, awoke no association in my mind with Lenten services, and consequently Herrick's lines lost half their meaning to me.

I knew the wild Daffodil in the fields, and as it remains in blossom rather longer than many spring flowers, I could not understand why Herrick should speak of their "hasting away so soon;" but if these lines were suggested to him by cut Daffodils placed in a church, the full meaning of his poem is apparent.

We can fancy the Devonshire parson glancing round at his church decorations after morning service, and regretting that the "fair" Daffodils (an entirely appropriate epithet to the delicate pale wild flower), would be quite faded before the time of evening service. For be it remembered that the modern contrivances for keeping flowers fresh through a long day's services must have been quite unknown and unattainable to the church decorators of olden times, who lived before the puritanical ideas prevalent in the days of the Commonwealth had banished all ornamentation from our churches.

But though the wild Daffodil, in my opinion, far exceeds the garden variety in beauty, I can quite believe that the latter is more effective for decorative purposes, and that when it was first introduced it may have come into favour so rapidly as to cause the wild flower to fall into neglect; indeed, I never remember to have seen the latter grown in any other garden than our own.

I have just heard of a church that has been decorated this Easter with double Daffodils, set off with Hart's-tongue Fern and Moss, and I am told that their pure bright colour proved very effective. So large a quantity was used that the church was aglow with them; and I can certainly imagine that their golden hue must have given it great brightness and cheerfulness, and been entirely appropriate to the joyful services of an Easter Sunday. Still, it seems to me that the bowed heads of the Lenten Lilies are better suited to Lenten services, and that it is to them that Herrick's lines apply:—

"Fair Daffodils, we weep to see
You haste away so soon;
As yet, the early-rising sun
Has not attained its noon.
Stay, stay
Until the hasting day
Has run
But to the even-song;
And having prayed together, we
Will go with you along."

A. B.

DR. AINSWORTH'S ORCHIDS.

Dr. Ainswoth's garden at Lower Broughton, Manchester, has for many years been celebrated for its fine collection of Orchids, and those who have visited the Manchester show during Whit-week have doubtless, like myself, had the pleasure of seeing the groups of these fine specimens which Dr. Ainsworth has exhibited. There are some wonderful specimens in this collection, especially of East Indian kinds, which I wish more particularly to bring before the public, as among them may be found some of the most beautiful of this lovely class of plants. Many of the Saccolabiums, Aerides, Vandas, Angræcums, and Phalænopsids, have been growing here from ten to nineteen years, and have chiefly been grown from small plants which I shall endeavour to describe.

The illustration (fig. 87), prepared from a photograph, shows a wonderful example of the plant it represents, Aerides Schrœderi. It is a perfect specimen as regards health and vigour, and has been grown from a small plant, and exhibited for twelve years at the various shows. I mention this fact for the reason that many people fear that exhibiting their plants injures them as regards cold and travelling, but that is not the case when they are carefully tied and packed for their various journeys. The plant now illustrated, and most of the others I am about to notice, have been about to exhibitions in the same way, some of them being shown at three different times the same year. No doubt some flowers get injured, but where careful attention is bestowed upon them as regards packing, &c., little damage, if any, is done to them. The great secret in taking Orchids into a different temperature is to give them but little water before they are removed, to keep the flowers perfectly dry, and the house not too hot.

The houses here are not built with any pretentious views, but with a view to suit the purposes for which they are employed. The East India and Cattleya houses are three-quarter span-roofed, 50 feet in length, 17 feet in width, and 12 feet high in the centre of the ridge, and are divided into two parts, one for the Cattleyas and Lælias and the other for the East Indian Orchids, which is the largest portion of the house and next the boiler. There is a centre stage, the front part of which is about 3 feet from the roof, so that the foliage of the plants is not more than 1 or 2 feet from the glass, and the plants receive all the light possible. It is a grand stage of specimen plants, and well worth a journey from London to Manchester to see. The back row consists of Vandas and Aerides, including an extraordinary plant of Vanda suavis, the centre stem of which is 4 feet high, and there are seven others 3 feet high, with fine healthy foliage: when in bloom it presents a grand appearance. Mr. Mitchell has had this plant under his care for about nineteen years; it was bought in as a small specimen, and has been grown to the perfection we now see it in. The next specimen is a well grown Vanda suavis Pescatorei, with many stems and perfect foliage. Vanda tricolor Ainsworthii is represented by a specimen 4 feet in height with fine growths. It is a splendid variety. Equally well grown is Aerides virens Dayi, with five growths and forty leaves on each—a most perfect specimen. The original variety of A. nobile is also present in a perfect specimen, 3 feet in height, with seven leads from 2 to 3 feet high. It is a very rare plant, and this is the best specimen of it I have ever seen. Next in order is Aerides Schrœderi, of which fig. 87 is an illustration. Its main growth is 2 feet 6 inches high, while the three in front are each 2 feet high. It is a most rare and wonderful specimen. The best specimen of Angræcum sesquipedale is a magnificent one, being 3 feet in height, in perfect health, and showing four spikes of bloom. Another is 2 feet high, with three spikes of flower. A. eburneum is 4 feet in height, with three spikes.

The next row of plants consisted of a specimen of Saccolabium guttatum with six growths, and from twelve to twenty leaves on each growth, the main growths being 12 inches high—a splendid specimen. A fine plant of S. giganteum measures 2 feet in height, and has five growths; it is a most useful winter-flowering, sweet-scented Orchid. Aerides Fieldingii is represented by a very fine specimen having two growths 2 feet high, and thirty-three leaves on each, perfect to the bottom. It is one of the best of the Aerides family, producing long spikes of richly-coloured blossoms. Another plant of the same species has three leads, 18 inches in height, and leaves reaching to the pot below. Associated with this is Aerides Larpentæ, the main stem of which is 2 feet high, while two others in front are 18 inches high, with leaves touching the pot. Another grand plant is Aerides maculosum, with sixteen leading stems, some of which possessed eighteen leaves each—an extraordinary mass. I also noticed a good plant of Aerides Veitchii, a rare species, also one of Aerides Lobbii Ainsworthii, the flowers of which were the richest coloured I have seen. It was exhibited at the Preston Horticultural Exhibition with branching spike 3 feet in length, and secured the admiration of all who had the opportunity of seeing it. Another splendid specimen is Vanda Denisoni, the main stem of which is nearly 3 feet high, having forty-two leaves, while two other growths in front measure each a foot in height, and its foliage was perfect to the bottom.

At the end of the same stage was a fine lot of Phalænopsis which have been growing in the same place for many years, and are growing well. Among them are some grand specimens, such, for instance, as of Phalænopsis amabilis, a plant of which measures 2 feet across the foliage, showing five spikes, some of which were 2 to 3 feet in length; also three other plants of amabilis, equally well grown. Many plants of P. Lüddemaniana have nine leaves on each, and some of them are 10 inches in length. This variety produces young plants on the flowering stems very freely. Six plants of P. Schilleriana, with exquisitely spotted leaves, in a pot 2 feet in diameter, were in perfect health and showing several spikes of bloom. Next to this was P. grandiflora, 2 feet across, and showing well for bloom. Many other specimens are equal to these in size and condition. These specimens have been growing in the same place for fifteen years, and many of them have produced young plants on the flower stems, which after having been rooted have been removed and are now almost equal in beauty to the parent plants. On the side tables there are also some examples of good cultivation, noteworthy amongst them being the rare Dendrobium Ainsworthii roseum ×, a most lovely Orchid raised from seed at this place by Mr. Mitchell; also Cypripedium Ainsworthii ×, a cross between C. Roezlii and C. Sedeni, which has the leaves of Roezlii and the flowers of Sedeni, only much larger and of a brighter colour. This will prove a very useful and free flowering plant. I also noticed suspended from

the roof some fine plants of various Dendrobes in baskets.

In the next house there are many good specimens of Cattleyas and Lælias, amongst which are some of the best varieties in cultivation. Dr. Ainsworth has for many years been selecting the finest species of this tribe, and has met with great success as the result. Lælia elegans is represented by a fine specimen, 3 feet high, it has many bulbs. The variety L. elegans Schilleriana has nineteen bulbs, and is also 3 feet high, and when in bloom must make a grand show with its white sepals and petals and richly coloured lip; also L. Turnerii, which is very rare, and will be found illustrated in Warner's *Select Orchidaceous Plants*. The plate was taken from the original plant in the collection of the late J. Aspinal Turner, Esq., after whom it was named, and the Broughton plant is, I believe, a part of the original; it is the finest one of its class, with its rich rose and magenta coloured flowers.

Next to this is the rare Lælia elegans Warneri, another of the finest Orchids in cultivation. It flowers in summer, and has sepals and petals of a light rose colour, while the lip is of the richest crimson. This, too, is figured in the third series of Mr. Warner's illustrated work. Of Lælia gigantea there is also a good plant; it is rare, and of a distinct type, the flowers being 6 inches in diameter, the sepals and petals of a pale lilac colour, delicately spotted with rose-purple, and the lip dark rosy-purple. Of L. purpurata there are some good specimens, also of Cattleya exoniensis, which was thriving well, and is one of the most useful and ornamental Orchids in cultivation, being a free flowerer and comparatively easy of cultivation. Many plants of C. Trianæ were in full luxuriance, making strong sheaths. Mr. Mitchell informed me that amongst them were some very fine varieties, all of which are most useful for winter decoration. I was pleased to see the true C. labiata in great beauty.

On the side tables were some large masses of Pleione maculata, with their white and crimson blooms. P. Wallichii was also thriving well, with its rose-coloured flowers. The P. lagenaria was also well in bloom. These are extremely useful subjects for autumn decoration, when flowers are comparatively scarce, and require but little space to grow them in. Here also was a fine Bollea cœlestis, also the rare Batemannia Burtii, which was growing strongly; and hanging from the roof was the rare hybrid Cattleya Mitchelli ×, which was obtained from a cross between C. Eldorado and C. Leopoldii, but it partakes chiefly of Eldorado in growth. I am glad to see that Mr. Mitchell has been rewarded for his pains in endeavouring to raise new hybrids, and I hope he will continue to be successful in so interesting an occupation. There is a good deal to be done in crossing, but it requires time to see them bloom.

Fig. 87.—Aerides schrœderi. (see p. 492.)

The next house is a low structure for Odontoglossums, facing the East India-house, and about 20 feet in length, 9 in width, and 7 in height, with a 4-inch pipe running round the house. It is a very cheaply-built structure, but for all that it contains many fine plants, including some excellent examples of O. Pescatorei, showing well for bloom. One of the plants was in flower; it had two spikes, and forty flowers on each. Of O. Alexandræ there are some well-grown specimens; also of O. Hallii, which had spikes 3 and 4 feet long in bloom. Next this was a good specimen of O. nævium majus, also of O. triumphans and O. Andersonianum, which is a rare species.

Masdevallias thrive well at the end of this house, where they seem quite at home. I noticed fine plants of M. Veitchii which had good flowers, and of a splendid colour. M. tovarense was in full beauty, with its white, sweet-scented blossoms. The flowers of this Orchid are most useful for cutting, as they last a long time in water, and make good buttonhole flowers. The curious M. Chimæra was throwing out its blossoms from the side of the pot. Of M. Harryana there were good plants and fine varieties. I also noticed some nice specimens of Restrepia antennifera, with its peculiarly spotted flowers and constant blooming habit. Associated with this is the rare and beautiful Dendrobium infundibulum, which apparently thrives well in a comparatively cooler temperature than that it has generally been subjected to. Many try it in too much heat, which kills the plant, and so makes it rare. Now that the correct method of treating it has been discovered, I should rejoice to see a large importation arrive in good condition.

Ada aurantiaca is also a good cool Orchid; it was thriving well and blooming freely with its rich orange-coloured flowers. Mr. Mitchell is experimenting in a cool house on many plants which we have always thought required so much heat; among others I was surprised to find Cypripedium caudatum, which has been grown in this cool house for upwards of three years, and is making a fine plant. It came originally from the East India-house as an invalid, and from that one gains a wrinkle, although I have seen it equally well grown in heat. For those who have only a cool house it will be a pleasure to know that it can be grown in such a structure.

The next house is a three-quarter span-roofed structure, 30 feet in length, 11 feet in width, and 8 feet in height. It has a table on each side, and a path through the centre. I was attracted by a perfect mass of Cœlogyne cristata which was 3 feet across, and in perfect health. Manchester is celebrated for its specimens of Cœlogyne cristata, which are so well adapted for cutting and so delicate in appearance.

The Odontoglossum citrosmum is an enormous specimen, 3 feet in diameter; I have seen it exhibited at Manchester, and it has been grown here for seventeen years from a small plant. Near this is a large specimen of Cattleya Mossiæ 3 feet across, also C. labiata pallida, which measured 2 feet in diameter, and the rare Cattleya Ainsworthii, which is a fine species [?]. There are some good plants of C. Mendelii, which produces its showy flowers in May and June. Associated with this is a good specimen of the beautiful Cattleya Warneri, of which there are numerous varieties, all of them flowering in May and June, when they are so useful for exhibition purposes. Of Cypripedium Stonei there is also a grand specimen, 3 feet across. It is one of the most distinct of the species. C. villosum measures fully 3 feet in diameter, with strong growths. This continues in perfection for seven weeks—a quality which makes it so useful for winter decoration.

Amongst all my favourites I must not omit the rare Trichopilia crispa, of which there is here a specimen with about a hundred bulbs, which when in bloom makes a grand show with its curiously twisted flowers. Of Miltonia Regnellii there is a good specimen, 2 feet in diameter; Lælia Dayana was beautifully in bloom, and is a cool-house plant. There were many other plants worthy of notice in this house, but of those that attracted me the most I have already given particulars.

The last house is one which is devoted to Camellias, many of which were in bloom at the time of my visit. I also noticed fine specimens of Lycaste Skinneri, some of them having forty bulbs, and which have been grown from small plants imported twelve years since. It is most satisfactory to know and see plants increase as these have done. I also noticed some large masses of Odontoglossum Rossii majus, and other fine specimens.

Great credit must be given to Mr. Mitchell for his perseverance and success in growing such fine specimens, especially as he does all without assistance. Dr. Ainsworth is a great lover of Orchids, and derives great pleasure from allowing his gardener to exhibit his favourites. *B. S. Williams.*

The Waldsteinias.—Although not extremely showy, the species of this genus can fairly claim to be interesting and pretty plants, and desirable occupants of the herbaceous border. All are dwarf herbs with palmately-divided trifoliate leaves and terminal corymbs of yellow flowers. W. geoides, from Central Europe, is probably the most generally known; W. trifolia is a native of Austria, and W. sibirica is, as its name implies, a Siberian plant. The three species just named are now in bloom in the herbaceous ground at Kew.

Forestry.

One of the most difficult and perplexing subjects connected with forestry is that of adapting the various species of trees to the soils in which they are to grow. It is one of the most common questions we put, both to ourselves and others, what species of trees should be planted in the soil. Soils of a general average and quality are adapted to a greater variety of trees than exceptional soils are, and when we come to extremes we are then more than ever perplexed what trees to plant. The first thing to do in connection with all planting is to determine the prospective results; for unless we have a definite and specific object before us, we cannot expect to attain it. That much, and by far too much, of the planting hitherto done, and perhaps even still perpetuated, is of a random and hap-hazard kind, is to be deeply regretted; and in forming any plantation, small or great, a clear and well-defined object ought to be before the mind.

Planting ground in its natural and uncultivated state, where nothing artificial has been done to it, is comparatively simple and easy; but to deal with a subject such as poor thin land—too poor for profitable cultivation, and such as, having proved unprofitable under the plough, had to be given up and devoted to trees—such subjects as these are very difficult to deal with successfully, and strain the best skill and contrivance to know how to deal with them.

The growing and maturing of a crop of forest trees necessarily requires such a length of time to complete it, that when any germ of disease exists in its structure it has time for full development before the tree is cut as mature and perfect. A crop of trees, therefore, that requires to stand fifty years in order to attain perfection and ripeness requires to have all the influences that conduce to health properly adjusted, and on their side; but the crop that has to stand to 150 years without anything going wrong requires still further adjustment, and all the influences that contribute to health and longevity still better regulated and accurately applied.

Planting light poor moorland, let out of rotation of cropping because of its unprofitableness for that purpose, is just the one subject of all others most difficult to deal with, and which has probably produced greater disappointment to the proprietor than any other. Such land is very commonly planted with Larch and Scotch Fir, and a mixture of Norway Spruce. Now it is very discouraging to state that any and all of these species of Conifers are quite unsuitable for planting the description of ground under consideration. On the Marquis of Lothian's estate in Roxburghshire such descriptions of ground were somewhat extensively thus planted about fifty years ago, and invariably proved to be great failures. At about twenty to twenty-five years old the Scotch Pine died in great numbers, and without the trees individually giving any premonition of the result. One year the Scotch Fir tree looked healthy and growing, and next year it was dead and withered. The Larches, unlike the Scotch Pines, gave indications of decay usually two or three years before death ensued, and thereby allowed time and opportunity for cutting and turning them to profitable account. The Norway Spruce, though equally vitally diseased, did not manifest the symptoms by any visible outward signs. Its disease consisted in decay of the central part of the stem, emanating from decay of the tap-root, which first decayed and from whence decay extended into the stem. Without further describing the diseases, or causes leading to them, I shall point out what I have seen and experienced as the best and most profitable mode of planting poor, profitless, and exhausted lands that had been manured as well as tilled.

Assuming that the land is dry (and if it is not it is of no avail planting it till it is rendered so by drainage), I would plant all the best soil and most sheltered parts with Larch about 6 feet apart, and the poor and bare and exposed parts with Silver Fir, also 6 feet apart.* I would also, if the landscape is a consideration, plant groups of Beech here and there, and also some single trees throughout, the latter to remain to clothe the landscape after the Larch and Silver Firs are cut down.

If the soil, however, is not dry and light, but clayey, I would plant Silver Fir and Oak, the former to be cut and cleared at say seventy years' growth, and the latter to stand to say twice that age. By this means it will be observed that the ground is never rendered entirely bare and treeless, and by planting one species, as the Silver Fir or Larch, the trees can be grown so as to produce clean and valuable timber. The Silver Fir is an excellent tree if well grown, but is too much inclined to branches when growing alone or amongst hard-woods as a mixture. Clay soil also produces the very best quality of both Silver Fir and Oak. *C. Y. Michie, Cullen House, Cullen, Banffshire, April* 12.

* This distance apart is commendable only when the area is great, and there are no game to damage the trees; but when the plantation is small and injuries apprehended, 4 feet will be a better distance.

Garden Operations.

FLOWER GARDEN, ETC.

Dressing Lawns, &c.—These directions being founded on the writer's own practice, a certain amount of repetition—as the various works in connection with the flower garden, &c., are presented—is necessarily unavoidable. This must be my excuse for again referring to the importance of at once getting lawns in perfect trim by well rolling, and mowing with machine, before the "bents" get hard, which would necessitate scythe-mowing; and if, as in our case, some parts of the turf has a yellow, sickly tinge, it is for want of support, and a dressing of soot, wood-ashes, or guano, applied immediately before rain, would soon change the hue, and so stimulate the growth of the grasses, that Daisies, Plantains, &c., would have but little chance. If worms are troublesome, the best antidote is lime-water. There need never be any fear of getting this too strong; we usually put a wheelbarrow load of fresh lime in a large tank of water, and as soon as clear it is ready for use. Showery weather is the best time to apply it, as, the ground being soft, less water is required to bring the worms to the surface, when they may either be picked up at once or left to die, and be swept up next day; after which well roll, and the improvement of the turf will be visible in a very few days. Lawns that have been formed by the sowing of grass seeds will need to be guarded against the depredations of sparrows and chaffinches, and the ground should be kept well consolidated by rolling it at least once each week.

Roses and Climbers.—Complete the pruning of Roses; stake standards and others that are likely to be affected by wind waving. If the Roses do not entirely fill the beds, the larger spaces may be planted with Gladiolus and Lilium auratum; and the smaller, and those nearest the verge, with Violas, Pansies, and Stocks, or be sown with Mignonette. Gladioli and Liliums are most valuable in such a position, as they flower after the Roses are over, and so keep up the display; whilst Pansies, Violas, Stocks, and Mignonette, flower more or less continuously the entire summer and autumn. At this season Clematis and other climbing plants grow so freely that if not attended to methodically—say once a week—they soon get matted together. At first starting, the leading shoots of Ivy may require tacking to the wall, but they will cling naturally afterwards. Watering and mulching may be necessary for those that have been recently planted, particularly any that are under eaves of houses or verandahs, where rain cannot reach them.

Spring Flowers.—These are now very brilliant, and to preserve them as long as possible in perfect condition mulch with cocoa-fibre, to prevent the surface soil cracking, which occurrence soon dries up the soil, and, bulbs excepted, all other spring flowers quickly resent anything like dryness. Plots of Lily of the Valley should now have the inert surface-soil, moss, and weeds removed, by carefully working out the same with a handfork, after which give a dressing of new soil, intermixed with rotten manure or guano. New plantations may also now be formed, as also of Violets where early runners can be had; of the Russian section by far the best is Victoria Regina, it being both larger and more highly perfumed than the Czar. Besides planting these in regular order in beds and borders, patches of three or five plants each should be put in the most shady spots amongst hardy Ferns; here they are quite at home, and virtually take up no space, yet frequently produce flowers when the better cared for plantations are flowerless.

Hardy Bedding and Edging Plants of several kinds may now be planted as opportunity offers. The following are a few of the best for edgings that are formed on the slope:—Cerastium arvense, Herniaria glabra, Sedum glaucum, Veronica repens, Saxifraga rosularis, and Sempervivum montanum; all these withstand drought well—a quality most desirable in plants that are to occupy such positions. Of hardy plants that are well suited for the formation of designs, or, say, the framework of designs, the list is somewhat meagre, but the following are among the best:—Sedum glaucum, S. lydium, Cerastium tomentosum, Sedum acre elegans, Antennaria tomentosa, Mentha Pulegium gibraltaricum, and Ajuga reptans purpurea. As soon as the framework of designs is complete, the central or dot plants should be put in, of which there are now many thoroughly hardy kinds that are in every way suited for summer bedding, or, rather, that harmonise well with summer bedding plants, such as Yucca recurva, Y. filamentosa, Retinospora pisifera aurea, Cupressus erecta viridis, Juniperus Birkii, Thuja aurea, &c., a moderate proportion of which, if dispersed at regular intervals about the parterre, tones down the high colouring that is inevitable when the bulk of the plants used consists of Pelargoniums, Calceolarias, and Lobelias.

Subtropical Plants, &c.—Seedlings of these must have every attention as regards potting and warmth, for if once they get stunted the growth fails to start again kindly; moreover, the aim should be to have but a few large sturdily grown plants rather than a great number of inferior ones, as will be the case if left in the seed-pan till the roots get matted together, or if grown under the shade of Vines, &c. Solanums, Ricinus, Wigandias, Acacias, Eucalyptus, Acanthus, Cannabis, Tobaccos, and Cannas, all should be grown in full daylight, as they should all be sturdy plants in 5-inch pots by the middle of May. To make room for these the hardier Pelargoniums, Petunias, and Ageratums will now do in cold pits, whilst Calceolarias, Lobelias, and Verbenas may be planted out in turf pits, and be protected with straw hurdles, &c., on frosty nights. Variegated Mesembryanthemum is invaluable for either succulent or foliage arrangements; the quickest mode of propagating this we have yet hit upon, is to put the cuttings in pans, or boxes of fine soil, half sandy loam and the other half leaf-soil; this is made very firm, and the cuttings inserted a couple of inches apart. A good watering is at once given, the boxes placed on bricks over the pipes in vineries or other houses; in a fortnight all are struck, and are transferred to colder quarters, the plants remaining in the cutting-boxes till planting-out time. Alternantheras may be struck in the same way, but require more water. These are the least trouble when struck and grown in dung frames; but whichever plan is adopted, their propagation should now be commenced in earnest. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

The favourable change which the weather has taken during the past fortnight has had a wonderful effect upon vegetation generally, and I think fruit trees, as a rule, are fully a fortnight earlier than last year. The beautiful days we had in the latter part of last month, although changing frequently to very low temperatures, with keen winds from the north and east, and white frosts of so threatening a character, have happily been succeeded by weather which for some time past could hardly afford better conditions for the setting of fruit. Gentle showers and moderate sunshine, enough to dry the pollen and render the organs active—such a consummation as has not been conferred upon us so opportunely for a good few years. Still we must be vigilant; the wind has veered round to the east, and our efforts towards protecting the few blossoms that are now visible upon some kinds of fruit trees must not be relaxed. Cherries upon south walls are setting beautifully, and what few blossoms there were upon Apricots in the same aspect are already out of danger unless a very unfavourable change for the worse should set in. Standard Cherries are smothered with blossoms in an orchard where the soil is not over 18 inches deep—another proof, if wanting, that extreme conditions sometimes return under certain circumstances a golden harvest when trees cultivated under a more elaborate system are a signal failure.

All kinds of hardy fruit trees are now sufficiently advanced to enable one to judge of the prospects of a crop if nothing occurs to interfere with present appearances. Plums, under all systems of training and in all aspects, are better supplied with blossoms than any other kind of fruit trees, Cherries excepted. Pear and Apple blossom is very scanty indeed, a few trees of the Pippin section only promising anything well. It is noticeable that espalier and standard trained Pear trees are with few exceptions but scantily furnished with blossoms, while those upon walls are certainly several degrees better even in the worst situations. The position with regard to hardy fruit may be pretty accurately estimated now, always of course allowing for contingencies in the shape of unfavourable weather returning, which would upset all calculation. Every preparation, however humble it may be in construction, should be at hand, in case it is required to shield the later varieties of fruit trees as they come into flower. The chief danger we have to guard against is extremes of temperature, while a thick covering left on for too long a time will have a debilitating influence upon the blossoms, as well as upon the young growths, and give them a sickly appearance. When there is a movable covering, this is as easily remedied as it is to run a roller-blind up and down upon a hothouse; but permanent coverings, such as branches, are not so manageable; still, the covering may be increased or reduced according to circumstances with-

out interfering with the base of the structure for adjustment, with great advantage to the health of the young growths, which are so liable to the attacks of insects after sudden exposure. The past fortnight has been most favourable for grafting operations, which are always most successfully carried out during the moist weather in the early part of the present month. With respect to small fruits, I notice amongst Raspberries that several of the grosser canes are killed to the ground, but the main stock are breaking regularly and well. Gooseberry and Currant trees are amply laden with crops that will be of some value this season. Strawberries are looking the picture of health and fertility; they comprise forced plants of last year and young plants grown from runners in 4-inch pots and planted out early in August last. These are throwing up from three to four vigorous spikes from each crown. With the inevitable dearth of hardy fruit which will have to be met this autumn, a special effort should be made to have but a short "break" in the supply of Strawberries from out-of-doors until the middle of next October. This is accomplished by hardening off a few batches of forced plants and planting them out at frequent intervals for the next six weeks in warm situations where they will have the full benefit of sun and air. Two never-failing kinds for this purpose are Vicomtesse Héricart de Thury and Underhill's Sir Harry; both have excellent constitutions, and will succeed almost anywhere until the flowers are cut off by autumn frosts. *W. Hinds, Canford Manor.*

FRUIT HOUSES.

Vines.—Look over the Grapes in early houses, and if any of the bunches are likely to bind the removal of a few of the least promising berries with a pair of finely pointed scissors will give immediate relief, and greatly improve the quality of the fruit when ripe. The inside borders should be examined and supplied with sufficient water to keep the soil in a moist healthy state until after the Grapes are cut. A fine bright morning is the best time for watering, as all superfluous moisture will then disappear before the air is reduced for the day; and to prevent its escape from the soil a little fresh mulching or short stable-manure may be spread over the surface. The ammonia from this, combined with the stimulating influence of the liquid to the roots, will keep spider in check, but in the event of its spreading careful sponging with a weak solution of Gishurst, although a tedious operation, is a very good remedy for its removal, particularly where delicate skinned kinds, like Frontignans, which are often injured by the fumes from sulphur, are grown with Hamburghs. Give air night and day when the berries begin to colour, and increase it as they approach ripeness, when the temperature may be gradually reduced, but fire-heat must not be entirely discontinued, as what are termed "new" ripe Grapes improve after they are considered fit to cut, and it often happens that the last bunch is much better than the first. Houses in which Muscats and other shy-setting kinds are now in bloom will require a high temperature by day, with a good circulation of air and a fair supply of atmospheric moisture to prevent the young foliage from suffering under bright sunshine. Fertilise with Hamburgh pollen if it can be obtained, and reduce the strain on the Vines by giving them rest at night. In efficiently heated vineries a night temperature of 70° is easily maintained, but assuming that the roots are active a few degrees less, with a little air, will be found more satisfactory than hard firing to maintain a given point through all weathers. Take advantage of solar heat for pushing on late houses, as Lady Downe's and other winter kinds cannot be over-ripened if they are to be kept fresh for some months after they are removed from the Vines. Give air early on fine mornings; allow the temperature to rise to 80° with plenty of moisture, and close in time for it to rise up to 90° from solar heat on bright afternoons. A night temperature of 60° will be sufficient until the Grapes come into flower, when a range of 5° more will increase the length of the bunches, and produce conditions favourable to the setting of the fruit. Late Grapes, particularly such kinds as Black Morocco, one of our finest and perhaps worst-managed winter Grapes, do best when planted inside the house with the run of external borders, which should be elevated, well mulched, and exposed to all the rain that falls from the time the Grapes are cut in January until the succeeding crop is ripe in September. It should be understood that nearly all the occupants of these late houses require artificial impregnation. A camel-hair brush is best, as it completely removes a glutinous substance from the stigma in Black Morocco, the which, if left undisturbed, will prevent every berry from setting, while its removal with the brush will render this variety as fine as a Hamburgh. *W. Coleman, Eastnor.*

Melons.

In the early house or hot-water pit, as the case may be, these will be approaching maturity, and will therefore require syringing less frequently, and in damping the plants and house in general avoid damping the fruits as much as possible, as that would cause them to crack. A somewhat dry, high, and airy atmosphere will be congenial to their present condition. It would appear needless to say that the cleaner and healthier the plants are at the ripening period the greater the probability of a highly-flavoured and finely-finished fruit resulting therefrom. We have allowed a second crop to set in this our early house without in any way interfering with the size of the fruit now ripening. We now treat the plants as previously advised, so far as picking off all male and female blossoms, with the usual stopping, &c., until the same second crop has nearly completed the swelling off of its fruit, when we again try for another good set, and so on in the case of each successional crop, without in the least deteriorating the preceding one. After each batch of ripe fruit has been cut we stir the surface of the bed, and tread and add more soil if necessary, after which the whole receives a thorough soaking of clear water, preparatory to the application of the thicker fluid from the manure-tank in the dung-pound, which immediately follows, and which, where the bottom-heat is supplied by dung and leaves, will be sufficient moisture to the roots for the ripening of that crop, the syringe being again applied freely on all favourable occasions. Where the winter-bearing Cucumbers can be dispensed with, the house should undergo a thorough cleansing, the brickwork washed with hot lime, the glass with clean water, and the woodwork with soft-soap and warm water, and the whole made clean and sweet for the reception of Melons. The soil should consist of good turfy loam, if obtainable, with an admixture of old lime-rubble and road scrapings; and should the loam be of a stiff and adhesive nature sufficient charcoal should be added to render the whole somewhat porous; this should be got into the house a few days previous to planting, so that it may become warm. The soil should, as a matter of course, be pressed firmly around each plant when being planted. Successional houses, pits and frames, will, independent of ventilating, require daily attention in stopping, tying, and thinning of the shoots and impregnating the blossoms in the middle of the day when the pollen is dry. All expanded female flowers should be done at the same time, in order to secure a regular set, so that the fruit left, which should be regularly distributed over the principal shoots of each individual plant, may swell together, and thus produce a batch of fruit of uniform size. Get some plants ready for planting in pits and frames in which Potatos have been grown as they become vacant. *H. W. Ward, Longford Castle.*

Cucumbers.

These will now be plentiful in most gardens in which they grow, that being so our chief object will be to maintain a good supply of fruit throughout the season. This can be easily done by attending to the usual stopping, thinning, and judicious cropping of the plants during the season, with an occasional top-dressing of light loam, to which a third of short well-decomposed dung has been added, and copious supplies of manure-water given to the roots when necessary, which in some cases will be daily, and in others weekly, or less frequently, according to special circumstances existing in each individual case—such, for instance, as plants growing in pots, boxes, and narrow borders with plenty of drainage, and having the bottom-heat supplied by hot-water pipes, to which, with the plants in the full vigour of health and growth, there is little fear of too much water being given; whilst with plants growing upon a bed of fermenting material, and having more scope for root-action, the case is quite the reverse, and in such a case the plants require comparatively little water at the roots. The syringe must be brought into use twice a day during bright sunny weather, and air given freely on all favourable opportunities, avoiding cutting winds, which will cause the plants to make a short-jointed and consolidated growth. The plants must, as a matter of course, be kept free from the attacks of red-spider and green and black fly, which by the free use of the syringe ought to be kept off the plants. Shift ridge Cucumbers into pots a size or two larger than those in which they are growing, to prevent their becoming pot-bound, before being finally planted on the ridge. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

Ferns.—The rapidity with which these are now sending up their young fronds renders an increase of moisture necessary, especially as regards all such as have not been shifted or are in any way pot-bound or cramped at the roots through having only a limited space to grow in. With free and efficient drainage it is almost impossible to over-water plants of this class that are so circumstanced, but with others having fresh soil more judgment and discrimination must be used in attending to them till they get well hold of the new material and become further advanced, when they too will take water *ad libitum*—the point with most Ferns, to keep them in health, being never to allow them to flag or suffer through dryness from the time they start till they rest again in the autumn. This applies with even more force to the tree kinds, many of which often become crippled and ruined through an insufficient supply. It is essential that their stems be thoroughly wetted at least once a day, which may be readily and quickly done by pouring the water directly on them at the top, or, in the case of any that are tall, by means of a garden engine or syringe, giving them at the same time a thorough sprinkling overhead, which treatment these and other Ferns specially delight in. The Gymnogrammas, however, although liking it, get disfigured by having the farinose grains, with which they are so beautifully ornamented, washed off, and deposited on the upper sides of the fronds; the wetting of these at all heavily should therefore be avoided, and it need hardly be remarked that what syringing is done ought to be carried out before the sun gets on in the morning, or when it is declining in the afternoon on closing the house. As a rule, Ferns are too much shaded, whereby they become weak and drawn, but it is often more the absence of light that causes this unsatisfactory condition from having the blinds long down, or using too thick a material, the thinnest canvas being all that is really wanted, and this only when the solar rays are full on the glass. Here, from having a lofty house, difficult to get at, we are compelled to moderate the sun's influence by the use of fresh-slaked lime, made quite like whitewash, which we run through a very fine sieve to take out any lumps, and then with a brush a man smears it on the outside of the roof, and another follows him immediately dabbing it with another brush or hair-broom so as to leave it like frosted glass, and in this way it lasts on the whole of the summer, getting gradually thinner as the days shorten and rain increases.

Greenhouses.—To prolong the beauty of flowers in these shade is essential, but flowers like Ferns may be spoiled by too much of it, as without a proper amount of light the petals lack substance and colour, and the blooms, should they be desired for cutting are not lasting. As regards the plants required for the winter embellishment of these structures, attention must now be directed to such things as the Solanums, which should be pruned back, started into growth, and planted out somewhere, without disturbing the old ball much, in a sunny situation, where, kept watered and duly stopped as the shoots require that attention, they set their berries far freer and better than they do in pots, where, cramped as the roots necessarily are, the foliage seldom keeps healthy, but becomes infested with red spider, a pest to which Solanums of the Capsicastrum class are particularly subject. Of even more importance than these for winter decoration are the Cyclamens, seedlings of which should be pushed on in heat to expedite their growth, and get them as large and strong as possible at this part of the year, that they may have a little rest later on, when they will flower with vigour. The system of drying off old plants in the way at one time practised is a mistake, as it tends to weaken their capacity for blooming, which they only do freely by treating them well now, so as to induce fully developed crowns, for which purpose the old leaves are necessary as long as they can be preserved, the blossoms that are to come being formed at the base of their foot-stalks. It will, therefore, be seen how important the foliage is, and to encourage it the plants should be stood away in a frame where they can be syringed and shut up early for a time, or planted out in a half shady sheltered spot in a bed of refuse peat or loam and leaf-mould to make their summer growth.

For making a display at this latter season nothing is more serviceable than the different varieties of Zonal Pelargoniums, which, thanks to hybridists, now comprise some very fine things, both single and double, the last-named being particularly attractive in the form and rich colouring of their stout petals; and the double, though less showy, are perhaps even more desirable, as they come in so useful for cutting. To get either to flower freely they must have full exposure to all the light and sun they can have, together with plenty of air and a moderately dry atmosphere, which conditions induce a short-jointed stocky habit, with firm shoots and stout massive foliage right down to the pots. The soil best adapted to their culture is a rather adhesive fibry loam, in which they should be potted firmly, and watered sparingly till they become well rooted, when liquid manure will be found a great help in producing a fine head of bloom. The same assistance is likewise desirable just now for the show and fancy kinds, which on no account should be allowed to become dry, or the under-leaves suffer immediately and turn yellow, which greatly disfigures the plants. These will require close watching for green-fly; and to ward them off, and keep the foliage clear till the flowering is over, it is a good plan to subject the whole stock to a fumigating just before the buds expand, when, if placed in a house free from the insects, their beauty will not be marred, as often happens without such precautionary measures being taken. *J. Sheppard, Woolverstone Park.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	April 19	Sale of Established and Imported Orchids, &c., at the Auction Mart, by Protheroe & Morris.
Tuesday,	April 20	National Auricula Society's (Southern Section) Show, at South Kensington
Wednesday,	April 21	Royal Botanic Society's Spring Show, at Regent's Park Sale of Specimen Orchids, Hard-wooded Plants, Bulbs, &c., at Stevens' Rooms
Thursday,	April 22	Sale of an Importation of various Orchids, at Stevens' Rooms

THOSE who like to look on the bright side of things tried to console themselves during the desolating weather of 1879 and the beginning of the present year by the reflection that weather so unpropitious to plants must needs be so also to the enemies of plants. It was supposed by some that slugs and insects and other pests of the garden would be destroyed by the winter's cold. This was to credit the creatures with less intelligence—well, instinct—than they really possess. This fact is well brought out in the useful NOTES OF OBSERVATIONS ON INJURIOUS INSECTS FOR 1879,* compiled by Miss E. ORMEROD.

"The unusual cold of the winter," says this lady in her report, "and the depth to which the frost penetrated the ground, do not appear to have acted prejudicially on larvæ subjected to them either at the time or in subsequent development; and the only cases in which the weather appears notably to have had effect in ridding us of insect attack, is where the persistent rainfall or the tremendous downpour of summer storms have fairly swept the insects from the plants." . . . "An idea being prevalent that 'cold kills the grubs,' I took the opportunity while the great cold lasted of examining the state of all larvæ and pupæ I could find fully exposed to its influence, whether unsheltered, under bark, or in frozen ground, and found that in all cases, even where the earth was frozen so hard that the mass had to be broken up with a hammer, and the larvæ or pupæ were perfectly rigid, that on thawing they did not appear to be in any way injured."

On the contrary, in some cases the winter was beneficial to insects by bringing about the destruction of their natural enemies, the birds—thrushes and starlings having experienced an almost unprecedented mortality. In the spring of 1879 the cold and wet spring retarded the nesting season, and further diminished the ordinary amount by the great number of eggs that were addled.

"The general returns do not show that any kind of injurious insect has been lessened in amount of appearance by the winter cold, excepting (possibly) the Turnip-fly. This has been little prevalent, but (conjecturally) this is rather owing to failure of the Turnip crops than direct weather influence, as noted in the return: 'No Turnips, therefore no fly.'

"Amongst the Lepidoptera some of the injurious kinds have been excessively plentiful in various localities, as also the surface caterpillars. Amongst Coleoptera the weevils of various species have not failed us, neither have the injurious diptera. The crane-fly larvæ have fairly ravaged various localities, and the Carrot-fly and Celery-fly have played their part, whilst the Onion-fly has been particularly hurtful in the Isle of Mull. Great injury in many places from the Gooseberry-sawfly, and locally from other species, as also the appearance of Cynips Kollari, 'like a scourge,' at the Glen, Tipperary, and (though wasps and honey-bees appear to have been respectively less present or less productive than usual) the great abundance of some species of humble bees in the spring show that the Hymenoptera survived; and on the whole it certainly cannot be said that the cold of last winter has diminished the amount of insect presence in the summer."

We are glad to see that Miss ORMEROD has managed to beat up several recruits among the leading foresters and gardeners of Scotland, who have undertaken to furnish the results of their observations upon the appearance of noxious insects, and the readiest means of coping with them. Some thirty or more insects injurious to field and garden crops, to Cabbage and Turnips, to cereals, to timber trees, fruit trees and Conifers, are picked out for special observation; and those of our readers who have the opportunity will be rendering good service by communicating to Miss ORMEROD such facts as the exact time of appearance, the nature and extent of the injury done by them, the best means of preventing or alleviating the disastrous consequences of their visitations. To the utility of such memoranda the following extract, relating to the common weevil, may bear testimony:—

"In the present year, 1879, Mr. THOMAS, on examination of his Raspberry bushes at night, found the brown weevils gnawing through the succulent stems of the blossom-shoots, some consequently withering, some being cut right off. At the approach of daylight the weevils went down to the ground and hid themselves just below the surface or underneath stones. Hand-picking, strewing the ground with lime, and daubing the feet of the canes with coal-tar, were tried as remedies, but found to be either insufficient or useless. Mr. THOMAS had then a number of wooden trays constructed, the inside of which was smeared all over with tar. The Raspberries are planted in clumps and bent into arches; after dark one man held a tray beneath an arch, another carrying a lantern gave the bush a smart tap, and the weevils fell into the tray; the tar held them prisoners for a time, and after the tray had been placed under a bush or two the weevils collected were killed by pouring boiling water over them. It was found necessary that the water should be quite boiling to effect this thoroughly. Mr. THOMAS had thirty or forty persons at this work on his grounds, and each bush was treated three times in this way. An immense number of weevils were caught, estimated at hundreds of thousands; and it was hoped by continuing this plan to avoid much future loss. Raspberry grounds at Pleming, Polgoon, and Ponjou were mentioned as similarly attacked; and in 1878 Raspberry plots in the large fruit gardens in Gulval and in part of Madron (also in Cornwall) were almost totally destroyed, at a loss of many hundred pounds. Mr. D'URBAN mentions the presence of a considerable number of the Otiorhynchus picipes on his Raspberries at Exeter; but by the use of a sweeping-net after dark, during the month of June, he prevented any but slight injury from the attack."

Before quitting this subject we may allude to a suggestion that has been made, that a handy-book should be prepared setting forth the remedies that have been found efficacious in checking the destructiveness of insects. In the columns of the gardening journals there is an immense fund of information, but it is necessarily buried in back volumes. Miss ORMEROD would be doing a real service by collecting this information, and we learn that she is willing to undertake the task, provided she have the help of gardeners and cultivators generally. It is proposed that technical terms and hard unfamiliar words be as far as possible ignored, and their place supplied by equivalent English words, wherever conciseness and accuracy are not impaired, as they often are, by the change. The main points upon which information is wanted are the following:—

1. General description of insect attack upon any special crop or plant (that is, what part is attacked, at what season of the year, whether by grub, beetle, &c.), and the means used for prevention or cure. These are the chief points, but others would help, as—

2. Methods by which insect presence is introduced or increased (as being found after any particular crop, breaking up of grass-land, &c.)

3. Spread of insects from weeds which may be food-plants for the grubs, from infested timber or neglect generally.

4. The amount of insect presence or absence on particular soils, or in connection with the state of the soil from drainage, from the application of natural or artificial manures, or the use of mechanical applications, as rolling, &c.

Notes of weather influences, especially of wet and cold in summer, which often hinder development, are important; as also any notes showing the amount of pecuniary loss from insect damage, which would be eminently useful as a means of attracting notice generally to the importance of the subject.

We trust Miss ORMEROD may receive such a measure of assistance as will enable her to produce so useful a book. Those who are willing to assist in the good work should communicate with Miss E. ORMEROD, Spring Grove, Isleworth.

—— THE SEASON AND VEGETATION.—Evidently awed by the great political contest that has been going on between the respective political parties in this country, Nature has for the past few weeks almost stood still, and taken a rest. It is very curious to observe how early in the year for a short time there were evidences of an early season. A few warm days and all Nature is agog, pushing here and bursting into bloom there, and spring seems to have come in earnest; ere, however, any great change has been effected the wind veers round to the east, and then comes a check. There may be no frost, there is certainly little sunshine, what rain comes is cold and the skies are dull. A month passes and Nature remains as stagnant as the weather is, so that the spring is no nearer now than it was a month since. We do not take kindly to this chilling weather and low temperature, this lack of sunshine and occasional rains. These latter are far from being the April showers, soft, warm, and gentle, with which the childhood rhyme has associated them in our minds, indeed we rather shiver than feel refreshed and glad. Yet the weather may be all for the best, and our hopes of a fruit season may be elevated by what now looks so depressing; we shall not have any great expanding bloom till the end of April unless a very speedy change comes, but when the bloom does come may it be when biting east winds and white frosts have for this season departed. In one important respect the season so far has been most favourable—it has put the soil into the best possible condition for cropping, indeed it was never better for that important purpose; and there has been for the past two months little or no hindrance to the work of sowing and planting in all parts of the kingdom.

—— ELECTRO-HORTICULTURE. — Mr. HUGH CAMERON, of Edinburgh, writing to the *Scotsman* on April 12 says:—"The article in to-day's *Scotsman* on Dr. C. W. SIEMENS' recent experiments in the above connection, reminds me of a question put, and an assertion made, by a certain royal preacher about 2800 years ago, to wit—'Is there anything whereof it may be said, "See, this is new? it hath been already of old time, which was before us;" for I find in the *Border Almanac* for 1873 the following quotation, headed 'A Lost Art,' from the *British* (Kelso) *Chronicle* of January 12, 1787:—'Last Christmas Day, and frequently since, there was presented at table in Nenthorn House, Kelso, a large Asparagus, Peas, Kidney Beans, and Cauliflower, equally as good as in summer, all produced without the help of a hot-house, flue, or anything of the like nature. The gardener there lately produced a grown salad from the seed, in a close room, in the space of twenty-two minutes and a-half, before a numerous company, by the power of electricity.'" The *Scotsman* seems hardly pervious to a joke.

—— A NEW HERBACEOUS BIGNONIACEA.—A recent number of the *Gartenflora* contains a figure of Incarvillea Olga, REGEL, a new herbaceous Bignoniaceous plant, a native of Kokand, where it was discovered by FEDTSCHENKO at an altitude of 4000 feet. Dr. REGEL states that it is one of the most ornamental plants of that country. It is apparently a biennial, growing 3 to 5 feet high, and having simply pinnate leaves and terminal panicles of erect, salver-shaped, rosy-purple flowers about an inch long. It has not yet flowered under cultivation, but Mr. MAX LEICHTLIN and some other persons have living plants, and we may expect they will flower during the present season. Dr. REGEL thinks it may prove hardy.

—— APHELANDRA ROEZLII FROM SEED.—At a recent meeting of the Horticultural Society of Berlin flowering plants of this handsome Aphelandra were exhibited, which had been raised from seed in six to eight months. This species, it is stated, produces seed freely if kept in a dry place. The seed soon loses its vitality, and should be sown in April. Good flowering plants may thus be had by late autumn and winter,

* Swan, Sonnenschein & Allen, Paternoster Square.

Fig. 88.—ANTHURIUM ANDRÆANUM: LEAF AND FLOWER REAL SIZE; SPATHE BRILLIANT SHINING SCARLET; SPADIX IVORY-WHITE. (SEE P. 490.)

—— New Mexican Plants.—The third part of Mr. W. B. Hemsley's *Diagnoses Plantarum Novarum*, &c., has just appeared. It contains upwards of fifty Leguminosæ, chiefly belonging to the genera Desmodium, Brongniartia, and Bauhinia; and there is also a new Trifolium, several Astragali, and a new species of the singular genus Minkelersia, an ally of Phaseolus. There are three additional species of Sedum, making altogether twenty-one that Mr. Hemsley has described from this region. Ten species of Cuphea are followed by an Abelia (A. coriacea), the second found in Mexico, several species of Galium, a Juglans, a Bravoa, two Agaves, and Leptorhœa, a new genus of Commelinaceæ.

—— Mr. Leeds' Narcissi.—The fine collection of hybridised seedling Narcissi, raised by the late Mr. Leeds, of Manchester, is now blooming in Mr. Barr's nursery at Tooting, and shows a very interesting gradation of forms, the most remarkable of which are those which range from poeticus up to incomparabilis by almost insensible gradations, and yet diverge so as to afford considerable variety. Mr. Barr has commenced the task—by no means an easy one—of selecting the forms and ranging them under different types, named Leedsii, Burbidgei, and others, of each of which the most distinct of the sub-varieties will be propagated for sale. The variations consist in the size, breadth, and colour of the spreading perianth segments, and in the size, form, and colour of the corona, and then again in the combinations of these variations in individual forms. The whole series, as well as the many striking forms of the Ajax group, are available for the spring flower-garden, and some of the many forms of each are indispensable.

—— Acer circinatum.—In the Arboretum at Kew one of the most striking of low trees or shrubs at the present moment is the subject of this note—the Vine Maple of Oregon and Washington Territory. Its umbels of deep red flowers and the large bracts, deeply suffused with red, beyond which the roundish-cordate, seven to nine-lobed serrulated leaves are just beginning to unfold, contrast wonderfully with the soft light green of the young foliage. In the shrubbery, particularly where the species has a background of dark green, it is in the early spring a very effective plant. In its native habitats, according to Dr. Geo. Vasey's *Catalogue of the Forest Trees of the United States*, it "has a low and frequently reclining or prostrate trunk, which sends forth branches, at first upright, then bending down to the ground, and forming almost impenetrable thickets."

—— Davenham Early Melon.—This Melon was raised by Mr. Jaque, who received a First-class Certificate for it from the Fruit Committee of the Royal Horticultural Society the second week in May last year. The flesh is deep green, and it is not only an early Melon possessing fine flavour, but is evidently a very free bearer. On the 2d of the present month (April) we saw two small houses filled with it; the plants had set fruit in far greater numbers than they could mature, which is a property not by any means always possessed by good varieties of Melons, yet nevertheless very desirable. The fruit runs to about 2 lb. or 3 lb. in weight. The crop on the earliest plants, when we saw them, had reached about half their size, and were altogether as promising as any early crop of this fruit we have ever met with; and in these times, when the varieties of Melons are almost innumerable, with so many of the white-fleshed kinds, which even on account of colour many do not like, a really good green-fleshed early sort will be acceptable to most people.

—— The Bulb Fields of Haarlem.—Writing from Haarlem on the 14th inst. a valued correspondent says:—"The Hyacinths are now in full flower, and make a splendid show, much better indeed than last year's, as this season they have not suffered at all from bad weather by day or frost by night. The winter has done them no harm, and in general the plants look very strong and healthy, so that the prospects for the next harvest are very good; but a fine warm summer is wanted to ripen the bulbs well. Those who intend visiting Haarlem to see the Hyacinths in bloom should go at once. Besides the Hyacinths in the open field they will have an opportunity to see choice collections of Hyacinths planted in show beds under tents—real exhibitions. Two such beds, each containing 350 Hyacinths, arranged in pairs of the same variety, have been planted at Overveen by some of the leading florists and growers there. They contain a good number of fine blooms, and especially several novelties, or not generally known sorts. At Haarlem, in the well-known nursery grounds of Messrs. Krelage & Son, two other such beds have been planted, each containing 600 plants: in the one arranged in lines, six plants of the same sort, viz., 100 sorts, which makes a most splendid display of colours; the other is arranged in single specimens, and contains perhaps 300 varieties. As Messrs. Krelage's collection is one of the most complete, containing every sort known in the Dutch trade, as well as many novelties belonging to the establishment, a very fine selection may be made, and which would prove of high interest to every lover of Hyacinths. Such show beds are an old fashion of showing Hyacinths. About a century and a half ago they were to be found in the garden of every first-rate Hyacinth grower, as well at Haarlem as abroad. In the well-known *Traité des Jacinthes* of the Marquis of Saint Simon they are described and figured as Courtes de Parade. In the first part of the present century they were still found in some of the principal gardens in Haarlem. Messrs. Krelage were the last who planted them, but stopped doing so in consequence of the great importance which was given to Hyacinth showing at Dutch and Belgian exhibitions. Since 1878 this firm has not shown for competition, and it has now again taken up the old fashion of planting show or parade beds. This year their planting was a success. They intend to continue in this manner, and make their show yet more perfect another year."

—— Kerria japonica variegata.—In the Winter Garden at Kew there are several plants of this charming shrub in full bloom. Planted out at the outer edges of the beds they are very conspicuous, their prettily blotched foliage and profusion of solitary, terminal, orange-yellow blossoms forming a graceful and effective contrast with the deep green foliage of the shrubs surrounding them. This form is not nearly so strong a grower as the double-flowered green-leaved plant so frequently met with in old-fashioned gardens, but is a dwarf, neat-habited bush with smaller foliage. For cool conservatory decoration—and it is worth a place in any cool-house—there are few more desirable shrubs.

—— Dr. Engler, Professor of Botany at Kiel, is now at Kew studying the Burseraceæ, a monograph of which he is preparing for De Candolle's *Suites au Prodromus*, &c.

—— Caltha leptosepala.—This pretty aquatic, which is somewhat rare in cultivation, is now flowering in the herbaceous department at Kew. It is not of such luxuriant or robust habit as the common Marsh Marigold of our river-banks and marshes, yet bears a general resemblance to that species. The cordate-crenate leaves are somewhat smaller than those of C. palustris; the flower-stems are erect, and for the most part bear but a single blossom, which is white, relieved by a mass of golden-yellow anthers. It was found by Menzies on the north-west coast of America, and by Drummond in alpine swamps in the Rocky Mountains, between the latitudes 52° and 55°.

—— New Hellebores.—In the fine and extensive series of Hellebores which has been got together by Mr. Barr in his bulb-ground at Tooting—probably the finest collection in existence—are two or three novelties of great merit, which deserve record. They all belong to the group of which H. orientalis is the type, and which is the most important in the genus when regarded from the decorative point of view; and we believe they are all from a batch of unbloomed seedlings purchased from M. Leichtlin. One, named Peter Rudolph Barr, has the large imbricated bell-shaped flowers of the orientalis type well-developed, but the colour is a deep reddish plum-purple, with darker lines on the exterior, and with a thick glaucous bloom; the inner surface being closely marked with small darker purple dots, which are more or less distinctly arranged in lines after the style of the markings of some varieties of Tydæa. It is in the way of a variety called F. C. Heinemann, but is a much better thing, and is without exception the finest Hellebore of which we have any knowledge. Another variety of the same batch, named punctatissimus, is the freest-blooming variety we have met with, and belongs to the same vigorous-habited, large-flowered, broadly imbricated orientalis type as the foregoing, but is much lighter in colour, the ground colour being of a pale pinkish-purple, or lilac-purple, with the usual greenish patches seen on some of the sepals in most of the forms, the whole of the inner surface being, however, thickly dotted with purple. A third, named Arthur Collins, is of a dark reddish-purple outside, the three inner sepals being of a deep blush inside, and marked near the base with a few dark red lines and near the centre with sundry spots of the same colour, while the two outer sepals are greenish on the inner face and not spotted. This also is a distinct and showy form. Another form of the same group, of which specimens have been received from the Hale Farm Nursery, Tottenham, and to which we have given the distinctive appellation, Thomas S. Ware, is a large and showy form, producing large and much-imbricated flowers of good form, the sepals being deeply stained of a rosy-purplish tint, but without any conspicuous spotting. These four varieties, with that named Dr. Moore, noticed last year, are very important advances on the the Hellebores previously known. *T. M.*

—— Thread from Wood.—We quote the following remarkable paragraph from the *Timber Trades Journal*:—"A New Wood Industry: The manufacture of thread for crochet and sewing purposes has recently been started at the Aby Cotton Mill, near the town of Norkoping, in the middle of Sweden. The manufacture has arrived at such a state of perfection that it can produce at a much lower price thread of as fine quality as "Clark's," and has from this circumstance been called thread "*à la* Clark." It is wound in balls by machinery, either by hand or steam, which, with the labelling, takes one minute twelve seconds, and the balls are packed up in cardboard boxes, generally ten in a box. Plenty of orders from all parts of Sweden have already come in, but as the works are not yet in proper order there has hardly been time to complete them all. The production gives fair promise of success, and it is expected to be very important for home consumption."

—— Seed-growing in Quedlinburg.—Quedlinburg is second only in importance to Erfurt as the centre of a seed-growing district in Germany. The cultivation of Sugar-Beet in Europe gave a great impulse to the industry, though the raising of vegetable seeds commenced towards the end of the last century. In the *Monatsschrift des Vereines zur Beförderung des Gartenbaues*, &c., Dr. Wittmack gives some interesting particulars respecting the rise and progress of the industry in this centre. The principal business is still in the seed of Sugar-Beet, the average annual production for Aschersleben and Quedlinburg together is 40,000 to 50,000 cwt., besides from 8000 to 10,000 cwt. of Mangel Wurzel seed. Independently of seed for home consumption, Quedlinburg exports large quantities of Sugar-Beet seed to Russia and Austria. The following figures will give some idea of the immense quantities of vegetable seeds annually produced:—

	Cwt.		Cwt.
Carrots ..	3000 to 4000	Beans	5000 to 6000
Onions ..	1000 to 1200	Kohl Rabi ..	400 to 500
Lettuce ..	to 800	Cucumbers ..	150 to 200
Cabbage ..	200 to 300	Chichory ..	500 to 600
Peas (garden) ..	6000 to 8000	Parsley ..	600 to 800

—— The Horse Chestnut in Greece.—In Sibthorp's *Flora Græca* it is stated, on the authority of Dr. Hawkins, that the Horse Chestnut grew on Mounts Pindus and Pelion, but until quite recently it was doubted whether this tree was really wild, or, rather, indigenous in South-eastern Europe. At the Botanical Congress of Florence Professor Orphanides expressed his belief that it was a native of some parts of Greece, but he was unable to give exact localities. According to a letter from Dr. Heldreich, the director of the Botanic Garden at Athens, to Dr. Bolle, which appears in the *Monatsschrift des Vereines zur Beförderung des Gartenbaues*, &c., the Horse Chestnut is undoubtedly wild in the mountains of Northern Greece, Thessaly and Epirus. He himself has seen groups of trees in various localities in the mountains of Eurytania. In the course of his travels last summer he discovered the Horse Chestnut in five different localities, all of them in the lower Pine region, at altitudes of 3000 to 4000 feet above the sea. It occurs in shady forest ravines, associated

with Alder, Walnut, Plane, Ash, various Oaks, Holly, Hop Hornbeam, Acer platanoides, and Abies Apollinis.

—— Sydney International Exhibition.—We learn from the *Colonies and India* that Messrs. James Carter & Co., of High Holborn, have been recommended by the jurors for the award of the 1st prize for seeds at the exhibition now being held in Sydney.

—— The Stapleford Roses.—We have received from Mr. H. Bennett, of Stapleford, a flower of his beautiful new Rose, Her Majesty, one of the "pedigree" flowers which have made such a sensation amongst rosarians. It is a most beautiful novelty, of full size, perfectly double, and of a soft clear pink colour, the plant being, moreover, as we learn, of a vigorous habit of growth. It will undoubtedly take a place in the first rank amongst light-coloured Roses. The variety will be shortly figured in the *Florist and Pomologist and Suburban Gardener*. With it came a charming little white Rose, "from the same parents," which, though not a show Rose, is likely, we are told, to be a good bedder, and, as we can vouch from personal observation, is a beautiful subject for bouquets, the buds being simply charming—so pure and fresh in colour, so pleasing and perfect in form. The blossoms of this, however, Mr. Bennett states, come of a pale yellow in the second flowering.

—— International Horticultural Exhibition.—We understand that the question of holding an International Horticultural Exhibition in Edinburgh in 1882 is being discussed in that city, if it has not already been decided upon.

—— The Meteorological Society.—At the ordinary meeting of this Society, to be held at 25, Great George Street, Westminster, on the 21st inst., at 7 p.m., the discussion on Mr. W. Ellis' paper "On the Greenwich Sunshine Records, 1876-80," will be resumed, after which the following papers will be read:—"On the Rate at which Barometric Changes Traverse the British Isles," by G. M. Whipple, B.Sc., F.R.A.S., F.M.S.; and "A New Form of Six's Self-registering Thermometer," by I. W. Zambra, F.M.S.

—— Rhododendron caucasicum luteum.—There is a nice bushy plant, about 9 inches high, of this Rhododendron on the rockwork in the York Nurseries, which is bearing a fine truss of large pale yellow blossoms, which is very pleasing.

—— The Weather.—General remarks on the weather during the week ending April 12, issued by the Meteorological Office, London:—The weather during this period was generally cloudy with frequent, though slight, showers. Thunderstorms were experienced over central and eastern England on the 6th and 7th, and both there and in many other parts of the country showers of hail occurred on those dates. The temperature was about equal to the mean in Scotland, but below it in all other places, the deficit being as much as 4° in the "Midland Counties" and "England, E." The highest of the maxima (60° in London and Cambridge) occurred on the 7th, and very slight frosts have been registered in most districts during the week. The rainfall was a little less than the mean in all districts. Bright sunshine was experienced much more constantly over Ireland and "England, S.W." than in other parts of the kingdom. Over nearly the whole of Great Britain the sun could only be seen clearly for about a quarter of the time during which it was above the horizon, and in Ireland the greatest duration recorded for the whole week was only 44 hours. The wind at the commencement of the period was south-westerly over the whole country, but on the 7th it had shifted to north in the west, and to west in the south, and during the remainder of the period northerly, north-easterly or easterly breezes prevailed on all our coasts. In force it was generally moderate or light, but occasionally blew freshly or strongly at some of our western and south-western stations.

—— Gardening Appointment.—Mr. Andrew Armstrong, who for many years had control of the extensive garden establishment at Red-Rice, Andover, Hants, shortly takes charge of the gardens at Eagle Cliff, Greenhithe, Kent.

A NEW USE FOR THE STEMS OF ARUNDO DONAX.

We have before referred to the enormous trade carried on in London in the manufacture of walking-sticks and umbrella and parasol handles.

Notwithstanding the large number of these useful and ornamental articles that are constantly being produced, and the consequent demand for certain kinds of sticks, there is every now and then a utilisation of something quite new, and different from anything that has hitherto preceded it. Such, for instance, was the discovery and adaptation of the fasciated Fuller's Teazle stems which we noticed some two years since, and which some of our readers will remember were imported in vast numbers from France for the sole purpose of converting into parasol-handles.

As in other things, fashion rules the kind of handles that our umbrellas and parasols should assume; and of late years the greatest demand by far has been for what are termed natural sticks, which, as the term implies, are those produced by natural growth rather than mechanical manipulation—such, for instance, as Cork Oak and the rooting portion of Ash saplings, both of which have been extremely popular amongst connoisseurs in these things.

At the last meeting of the Linnean Society specimens of a newly-introduced cane, supplied by Mr. Henry Howell, the importer, were exhibited both in

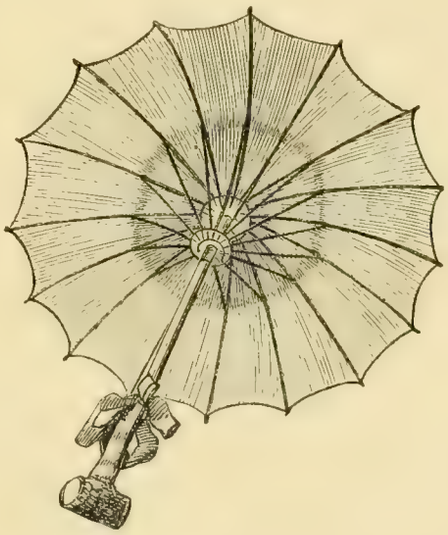


Fig. 89.—Japanese parasol, with handle of Arundo donax.

the rough and finished states. These canes are those of Arundo Donax, and the peculiarity which has caused them to be taken up for the purpose to which they are now applied lies in the irregular and fantastic forms of the rhizomes, and especially in the ring-like ridges which encircle these rhizomes at regular intervals. Owing to the combined form, surface markings, and natural yellow tint, which harmonises so well with the coverings used, a more unique handle could hardly be produced. This was fully exemplified by the exhibition of a finished parasol lent for the purpose by the wholesale manufacturers, Messrs. Long & Co., of Paddington Street, who, we are told, are using many thousands of these canes entirely for parasols, which are a novelty in themselves, irrespective of the handles, being covered with brocaded silk, and having numerous gilded ribs, resembling the Japanese umbrella (fig. 89). From a sketch of one of these stems, with the rhizome attached, which was submitted to us before we had seen the actual articles, and before we were acquainted with the country from whence they were procured, the plant producing them was supposed to be a species of Bamboo, probably very near Bambusa nana. Upon an acquaintance being made, however, with the actual stems and rhizomes, there was no difficulty in pronouncing them to be those of Arundo Donax. Unfortunately the first impression as to its botanical origin was seized upon, and as it was necessary to give the cane a name at once by which it should be known in commerce, and as Bamboo and Bambusa were already applied, the specific name of Nana was taken; so that, though a misnomer, this cane is now commercially known as the "Nana Cane." A very large number of these Arundo stems, attached to parasols, are now to be seen in the windows of fashionable West-end houses. *John R. Jackson.*

Home Correspondence.

Trug.—Your correspondent "O." is, I think, mistaken in supposing that our Sussex word, "trug," is borrowed from Germany. I may premise that a Sussex man will generally call the article simply a "trug;" trug-basket is, I believe, a modernism. The word has, I have no doubt, been in use in Sussex from the time of Cissa and the first Saxon incomers. It no doubt derives from the Anglo-Saxon equivalent to the German verb, "tragen," to carry; we retain the compound word, betray, to draw aside or out of the way; and the primary word is perhaps represented by the verbs "draw" and "drag." Tray, no doubt, is another derivative. Any one who has an Anglo-Saxon dictionary at hand will probably easily find the word. Many words are still in use in Sussex, cognate with German words, but not derived from the latter, as reeky, murky (G., *rauchig*), gifty, poisonous (G., *giftig*), &c. The Rev. W. H. Parish has published a dictionary of the Sussex dialect, where those who may wish to pursue the subject will find much of interest and amusement. Another cognate word is in much use in Sussex, viz., "truck," not in the sense of a low vehicle, but in a very wide sense, for matter in a portable form. I have heard it applied to garden stuff, timber, cloth, &c. This is good truck, that bad truck, the other but poor truck, and so on. *Sussexiensis.*

Masdevallia bella, Backhousiana, and Chimæra.—These curious and beautiful plants are now in flower here, and are worthy the notice of all lovers of plants, on account of their combination of beauty with singularity. The curious triangular flowers, chocolate and cream in colour, blending with a free admixture of villose glands, gives the idea that they have tried to mimic the Stapelias, and the slipper-like lip shows a tendency towards Cypripediums. I find that the only safe plan of cultivating this set is in baskets, as the flower-stems are so modest that they try to keep the flowers out of sight by hiding them in the moss. *J. Croucher, Gr. to J. T. Peacock, Esq., Sudbury House, Hammersmith.*

Gardenias.—I send you a shoot of Gardenia cut from one of ten plants turned out of 3 and 5-inch pots thirteen months back. The plants individually are not nearly so large as they would have been had a more vigorous course of treatment been adopted, but I have no doubt in a little time we shall be able to cut between 2000 and 3000 blooms. We grow them in a small span-roof house in soil composed principally of lumpy peat, and built to form a cone, on good drainage, which admits of an enormous quantity of water being used without the soil becoming at all sodden or sour. Some gardeners experience much difficulty in keeping these plants clean and free from insect pests, but this is an easy matter, as by syringing daily in a vigorous and energetic manner the plants can be kept thoroughly clean and free from bug. *H. L. H.*

Eupatorium riparium.—To florists and, indeed, to floriculturists in general, there can be few more useful spring-flowering plants than this. It is easily grown from cuttings taken annually, and gives little inducement to visits of troublesome pests. The white flowers, of which there is the greatest profusion, are highly suitable for cutting, opening in succession and lasting long. Care must, however, be taken not to allow the roots to get dry, as it is particularly apt to lose its lower leaves. Cuttings, as soon as they can be got, may readily be struck in heat. *John Wilson, St. Andrew's, April* 13.

Old and New Leaves on Maréchal Niel Roses.—In a cool orchard-house here we have several Maréchal Niel Roses which have never shed last year's leaves. The old and new leaves are now entwined amongst each other, and the young wood is bearing flowers profusely. This is an unusual occurrence in my experience, and may no doubt be ascribed to the want of sunshine last year. The flowers are coming green, instead of a deep yellow. *W. Hinds.*

Asparagus Kale.—Will you please say what the true Asparagus Kale really is? The information would oblige many of your readers besides myself, as Couve Tronchuda, Buda Kale, Jerusalem Kale, and other Kales, are often given for it. *W. H., St. Mary Cray.* [We shall perhaps best assist our correspondent by reproducing from our volume for 1873, p. 108, the paragraph on the Asparagus Kale in Dr. Hogg's "Report on the Kales Grown in the Garden at Chiswick in 1871-72":—

Asparagus Kale.—The original Asparagus Kale of a century and a-half ago was a sprouting Broccoli, which was introduced from Italy. It received its name from the young shoots, terminated by a "button," bearing somewhat of a resemblance to the young shoots of Asparagus. In course of time the name gradually ceased to be identified with the Broccoli, and was applied to

another variety of Kale, also introduced from Italy, called Milan Kale, or Chou de Milan, which has the property of throwing up in the spring a profusion of long succulent shoots, which, when fully grown, resemble the shoots of Asparagus. But there are several other varieties of Kale to which the name is applied; and as there seems no uniformity on the subject, I shall quote the varieties which different seedsmen regard as Asparagus Kale. Messrs. Minier, Nash & Nash are correct in supplying Milan Kale. Messrs. Fraser and Mr. B. S. Williams supply Buda Kale. Messrs. Beck & Co., Messrs. James Carter & Co., Messrs. Henry Clarke & Sons, and Mr. George Gibbs, supply Couve Tronchuda. Messrs. Wrench & Sons, Messrs. Sutton & Sons, Messrs. J. & C. Lee, Messrs. Nutting & Sons, and Mr. William Paul, supply Siberian Kale. And it is to be remarked that, as all these varieties produce an abundance of succulent shoots in spring, the name is not misapplied; still it would be as well if it were confined to one particular variety, and this should be the Milan Kale.

Clay's Fertiliser.—Though "A. D., Bedfont," speaks very favourably of this manure, at p. 470, he evidently has not in this instance found it a success as a Potato manure, which we wish to account for—by stating that "A. D." had received instructions to use about 10 cwt. per acre of two other manures, and wishing, as he thought, to try them all fairly, used the same quantity of Clay's Fertiliser. Now we find 4 cwt. to 6 cwt. per acre to be a heavy dressing, and we believe that it was entirely owing to this large quantity being used that a better result was not obtained. This manure being very highly concentrated, if more of it is used than the plant requires, it has a tendency rather to check than to encourage growth—a result which practical men will at once understand. *Clay & Levesley.*

Cattleya citrina.—We have now, and for some weeks past have had, a fine lot of Cattleya citrina in flower. They are really beautiful things, and the fragrance gives so delicate an odour to the house that I think they exceed all Orchids in that respect. *J. Croucher.*

Grassy Beds.—At a time like the present, after two such winters and a cold summer, when many alterations must necessarily be made in bed and border, it may not be inappropriate to suggest to some of your readers who may not have thought of it, the idea of a "grassy bed," or, more properly speaking, a bed of grasses of various kinds and colours intermixed with Lilies and Gladioli, and with various other plants, to vary the light foliage of the former and give effective relief to the glow of the Gladiolus and the pallor of the Lily. Those who can devote a large circle, or, better still, a capacious oval in a corner of their lawns, where it may be seen from their windows, will not regret this arrangement. Half a breath of air on a serene summer day will stir the light, feathery grasses, and give that movement to the group that adds life to its beauty—and this makes it cheerful to look upon. Should any of the grasses disappear, as they sometimes do, a few plants of the variegated Zea japonica from the conservatory will fill up the gaps, and do more than restore the grace and beauty. About two years ago such a bed was made in the lady's garden, and not one has proved more popular. It always attracts observant visitors, and is interesting from the earliest spring to the latest autumn. The bed was trenched quite a yard deep—two good layers of stable-manure with one of loam between were given, and plenty of silver sand on all the bulbs to be planted, as the rich soil would be generally moist even in summer. Partial shade is afforded by Pine trees, but it is open to the south. The highest part of the bed is formed of Arundo Donax, A. conspicua, Bambusa Metake, Tritoma grandis, and T. glaucescens: the latter is the most hardy and free to flower after severe frost. T. uvaria cannot stand such cold as we have lately had. There are plants of Eryngium amethystinum and rigidum; their indigo stems and oval heads contrast charmingly with the flaming spikes of Tritomas, and so do the blue globes of Echinops Ritro, for they all come together, with choice Lilies and the fretted spires of the Gladiolus between. L. longiflorum Takesima, a spotless oval of dazzling white, recalls Shakespeare's line on "painting the Lily," but here are not only painted Lilies, but some encrusted with gems, as L. speciosum rubrum, some that look like a fading sky—L. testaceum, and others that seem to have caught and imprisoned each sunset since their birth; L. tigrinum Fortunei major fl.-pl., perhaps the most showy and the most trustworthy of the sisterhood. There are bluish plants of Euphorbia myrsinotes, very telling too, in their cool half tints; there are tall spikes of Hyacinthus candicans, fringed with their nodding waxen bells, which last so long; and little stout, praiseworthy Kniphofias, nearer the edge, untouched by time, but carefully guarded from slugs in their perforated collars—for did we not lose the finest bloom, cut off in one night, like "Jonah's Gourd"? The edge of the bed next the turf is planted with Colchicum byzantinum; their metallic leaves show up in early spring, and look very attractive when the first crowding begins. The second or raised edge is formed of dwarf grasses, four in number, planted alternately, and when the Crocus leaves die down and disappear they spread their tinted cushions to the light—blue, silver, green, and gold; they are, respectively, blue Fescue-grass, Dactylis elegantissima; green Fescue, and the gold with a very prosy name, Alopecurus pratensis aureus variegatus. The first flowers that gladden our eyes on the grassy bed are Lilies—Perdita's Lilies, Crown upon Crown, Imperial Fritillary. There is one coming now, that promises ruddy bells, and its broad foliage is margined with gold; then there are others that are simply perfect in their burnished leaves and green metallic shafts. Next, we expect a host of Tulips. Does not Southey call them "the wine cups of the sun"? They peep through here and there among the growing grasses. Proserpine, Couleur Cardinal, Prince, La Precieuse, Thos. Moore, and an exquisite flower that lost its label, were the favourites last year, and now they are coming again. We have tried the Primula japonica in this damp rich bed, and hope they will answer, for they do not like the warm dry soil here in other parts of the garden. The blue Lime-grass, Elymus glauca, is most effective, and a new sort of ribbon-grass is more variegated than the old kind, and is coming up in silvery grass not far from the edge. Hoping others will try a bed of grasses, &c., and derive the same pleasure from it, we conclude, though the subject is too fascinating to be soon exhausted. *H. M. E., April* 13.

The Druids and their Religion.—As you have included in your last number a portion of a paper which I read before the Victoria Institute, you would further oblige me if you would present your readers with a slight correction. In the completed and now published copy (price 6*d.*) of *The Druids and their Religion*, for what is called the people's edition, you will find the quotation marks omitted. This is important, because this portion is simply a condensation of a part of an article, occupying forty-one pages, of the *Mémoires de l'Academie des Sciences*, and does not pretend to do justice to the very elaborate treatment of the subject by the author. It also includes some thought from myself and others. The question whether the Mistleto still exists on the Oak is fully discussed. M. Magdelaine has searched for it in France without success, and experiments to procure its artificial growth ended in failure. It seems, however, that it has been of recent occurrence, as in January, 1878, a branch of Oak bearing a magnificent plant of Mistleto was presented to the Museum at Semur. It has also been reported near Vitteaux, in the Côte d'Or. I should be glad to learn what is known about the matter in England. *John Eliot Howard, Lord's Meade, Tottenham.* [The subject has been pretty well exhausted by Dr. Bull, in the *Journal of Botany* and in our columns. We gave a figure of a Mistleto Oak, in Eastnor Park, in 1878, vol. x., p. 121. Eds.]

Mackaya bella.—The plant which has been flowering so abundantly here was raised from a cutting in May, 1877, and was potted in peat chiefly but made no progress. It was then shaken out and repotted into loam with a mixture of charcoal and sand, and grown freely in moist stove-heat. Last summer it was fully exposed to what sunshine we had, being kept in a cool house near to the glass when it formed its flower-spikes, and in November it was removed to a warmer temperature. The plant in question from which the flowers sent to you last week were taken is now in a 12-inch pot, and is about 5 feet high and proportionately bushy, and has had fully four dozen sprays of flower upon it which began opening early in March. *William Jinks, Gr. to J. E. Wilson, Esq., Edgbaston, Birmingham.*

Primula pubescens.—The Primula under this name, alluded to at p. 465 of the *Gardeners' Chronicle*, is probably P. villosa, of which what used to be called P. nivalis is merely a white variety, the true P. nivalis being a totally distinct species. P. villosa is plentiful in some parts of the North of Scotland. *R. L.*

Pedigree Roses.—A few days since I was very fortunate, through the kindness of Mr. Bennett, in seeing two of his seedling Roses in bloom, and which, for beauty and quality, will, I venture to think, eclipse any of those already sent out by him. Her Majesty is a Rose which requires and deserves the combined efforts of a Hole, a Radcliffe, and a Hibberd to do her merits full justice. For strong, sturdy, spiny growth—for massive and magnificent foliage—for size and splendour of bloom and superlative colour, Her Majesty is unrivalled. I may convey a faint idea of her beauty by stating that she is a very deep coloured, intensely bright, extremely large and double Madame Rothschild—so double and full that an overaged blossom showed not the least symptom of looseness or openness in the centre, and the outer petals were as stiff and erect as those of an opening bud. Her Majesty is the result of a cross between Rose Mabel Morrison and Canary (Tea). Countess of Pembroke is a seedling from Adam crossed with Charles Lefebvre. It is of an intense deep rose colour, without any shading, very double and perfect in form, and deeper in petal, perhaps, than any Rose in this section; it possesses a delicious scent. It is strong and vigorous in habit, and its depth of petal and intense colour makes one almost imagine at first sight that the Maréchal has donned a rose-coloured coat. Mr. Bennett speaks of these two varieties as the best he has raised. The manufactory of new Roses at Stapleford now presents an appearance which to lovers of Roses is simply enchanting, not for quantity of bloom, nor size of plants, but from the myriads of tiny gems which seem to spring into existence as if by magic, and which are destined shortly to astonish lovers of flowers by their beauties. The vigour and perfect health of all, whether in embryo or in an enlarged state, is remarkable, and plainly prove that Mr. Bennett and Mr. Woods, his manager, fully and perfectly understand the special work they have in hand. *T. C.*

Potato Manures.—I am this year continuing the trials of artificial Potato manures, and have already employed five kinds upon fifteen sorts of Potatos, of each sort five rows of about 40 feet long, in ground that was trenched during the past winter, and which has not been dressed with any animal manure. The rows are 3 feet apart, and were thrown out as shallow furrows; the tubers planted, the manures sown in after, and then the soil on either side forked in. As the relative prices of the various manures should have the same proportion to nutritive value, I have employed the manures in quantities that are regulated by value only. One of the manures is simply malt dust, purchased at 6*d.* per bushel, and strongly recommended. Of this I used about half a bushel, as that seemed to be a heavy dressing. Of Hill's ordinary Potato manure, at 10*s.* per cwt., I used 4 lb.; of Hill's special manure, at 15*s.* per cwt., and Amies Anti-fungoid Potato manure, I employed each 3 lb.; and of Clay's Fertiliser, at 20*s.* per cwt., 2 lb. only was applied. It is worthy of remark, as showing the relative gravity of diverse sorts, that 2 lb. of Clay's manure was exactly of the same bulk as 3 lb. of Amies' manure, which is very heavy. I have taken every possible care to conduct this trial with fairness and impartiality, and should any one interested desire to see the effects upon the rows in the summer, I shall be most happy to show them. *A. D., Bedfont.*

Aaron's Rod.—Mr. Roberts seems to have settled the question, that Aaron's Rod is a Mullein and not a Solidago. This was my earliest impression, conveyed by the old gardener at "The Castle" (a servant of fifty years' standing), and one is glad it should be left undisturbed in these days of changes, when even old plants have new names, and botanical ideas are apt to be upset or superseded. He was generally right, though he occasionally dropt half the name, and thus the rough scented Dictamnus became only the sweet-syllabled Fraxinella in his garden, and others shared the same fate. But the antique Mullein's flannel leaves will still represent Aaron's Rod in many an old place in "the North Countrie," and it is pleasant to think it should be so. *H. M. E.*

Florists' Flowers.

The Southern National Auricula Show.—Last year you permitted me to draw attention in your columns to the exhibition of the National Auricula Society, with the result of bringing to these lovely spring flowers a large gathering of spectators.

The exhibition for this year will be held in the conservatory of the Royal Horticultural Society at South Kensington on Tuesday, the 20th inst., when, from the character of the exhibits promised, the committee anticipate a display interesting alike to those whose sympathies cleave most to normal forms in Nature, and to those who delight in the developments of culture. *E. S. Dodwell,* 11, *Chatham Terrace, Larkhall Rise, Clapham, S.W.*

Seedling Gold-laced Polyanthuses.—Mr. Samuel Barlow, of Stakehill House, has forwarded for inspection a half-dozen blooms of seedling Polyanthuses of a very promising character; two or three of which will, if they maintain their present character, take high rank as exhibition flowers. With that care and judgment which characterise all Mr. Barlow's work of this character he has fertilised with a view of obtaining certain results, using the pollen of Lord Lincoln, Lancer, Cheshire Favourite, Exile, &c. Some of the black-ground flowers have very pure and bright golden centres, with rich black

grounds in fine contrast. One flower, named by Mr. Barlow John Bright, after his political leader, is of the highest quality. Probably some of these seedlings will come southwards on the 20th inst.

New Auriculas.—One of these, a golden-yellow self, named Hetty Dean, is a seedling raised by the Rev. F. D. Horner, and sent to Mr. S. Barlow directly after it had bloomed. It was very promising in 1879, but this spring it has developed into a fine and striking variety, with a strong tube, good white paste, and broad golden edging. The pip sent by Mr. Barlow for inspection was twenty-five days old, and said to be the worst on a truss of eleven blossoms. It seems to furnish what is badly wanted—a fine golden self Auricula; the best in cultivation being Gorton's Stadtholder, which Mr. Horner thinks has been in cultivation some 200 years. Another is a grand green-edge, also raised by the Rev. F. D. Horner, and named Ben Simonite. It has a good tube, dense white paste, a rich black—the blackest body colour, and a distinct edge of deep yet lively green. The green-edged section of Auriculas, though including some good flowers, is not a strong one, and any additions of high-class character are to be welcomed with great satisfaction.

Planting Dahlias. — To thoroughly prepare ground for Dahlias, a good dressing of fresh stable manure should be given in winter and the soil thrown up into ridges. In early spring these should be thrown down with a fork, and left rough for some days. Then it should be well dug, and left rough as turned over. A week or so before planting a good dressing of decomposed stable-manure should be applied, digging it well into the soil and leaving the surface pretty smooth. In planting out some good sandy soil and leaf-mould should be placed about the roots, to give them a start. When the plants grow the side shoots should be tied out to stakes, and all flower-buds kept picked off till the plants get into size and are vigorous enough to carry good blooms. It is a mistake to plant Dahlias in poor soil, the plants get starved and the flowers are small and imperfect. To have good blooms liberal treatment is indispensable.

Reports of Societies.

Royal Horticultural: *April* 13.—Dr. Denny in the chair. At the invitation of the Council, Mr. Shirley Hibberd delivered a short lecture on Daffodils, of which a considerable number of species and varieties were shown by Messrs. Barr & Sugden. The flowers, said Mr. Hibberd, are well known for their hardiness, and for the great variety, both in form and colour, which is to be found amongst them. They had been the favourites of old poets, whose allusions to them had always been of the most favourable kind. The collective term Daffodil, which in rural districts easily expanded itself into Daffadowndilly, was a corruption of Asphodel, the flower the ancient Greeks devoted to the dead. The old French form of the word was Affrodille, and the initial D attached itself as a proper remainder of the preposition in the French *fleur d'affrodille*. A Daffodil being originally an Asphodel, which is a member of the tribe of Lilies, the term came to have a somewhat collective usage, and hence we find at page 44 of Parkinson's *Paradisus* the Spanish Fritillary referred to as a Daffodil. But the King's apothecary notices the misnomer as an "erroure growne strong by custom of continuance;" and in his ninth chapter on Daffodils he does his best to render the term representative of the species and varieties of Narcissi, which are members of the Amaryllis family, and in some points removed from the whole of the Lilies. The Narcissus takes its name from a blooming youth, son of Cephissus, who, being beloved by Echo and a crowd of nymphs, turned aside to make love to his own shadow in the fountain, and achieved immortality by falling a victim to his own vanity. From his delicate corse sprang the beautiful flower which forever wears around its heart a blood-stained girdle of remembrance. It is the fair white flower with ruddy annulus, known by distinction as the Poet's Narciss, or Narcissus poeticus, that represents the story, although Ovid, who gives it in detail in the third book of his *Metamorphoses*, certainly does suggest that it might be a yellow flower, and a veritable Asphodel. But we must not be too particular about the flowers that figure in ancient fables, or we shall be soon lost in a maze of speculations. The best summary of the story, however, that the lecturer has met with is in the delightful *History of Plants* by Rembertus Dodonæus.

The Daffodils may be said to comprise the whole of the Narciss family, but John Parkinson warns us that there be true and false Daffodils, and at p. 67 he gives the rule to distinguish them. "Now to cause you to understand," he says, "the difference between a true Daffodil and a false is this: it consisteth only in the flower (when, as in all other parts, they cannot bee distinguished), and chiefly in the middle cup or chalice; for that we doe in a manner onely account those to bee Pseudonarcissos, bastard Daffodils, whose middle cup is altogether as long, and sometimes a little longer, than the outter leaves that doe encompasse it, so that it seemeth rather like a trunke or long nose, than a cup or chalice, such as almost all the Narcissi or true Daffodils have." Thus the Narcissi are brought before us as Daffodils of two sorts, the true and the false, the classification so far resting on the relative length of the trumpet, cup, or crown to the sepals and petals, or, as we say, to look learned, the perianth segments that encompass it.

There are in cultivation at least 150 named species and varieties of Narcissus, and Mr. Barr, one of the most active of the Narcissomaniacs, has an immense collection of seedlings for the enrichment of our collections, so that it may be safely said the next generation will have command of over 200 varieties of these delightful, useful, seasonable, glorious flowers. And shall I tell you what will appear to many as a flight of fancy, but is in truth a sober but most interesting fact? Every one of these has a history? Yes, in every good garden of Daffodils there are 200 histories represented by beautiful flowers, and the great garland, if we may call it such, is dotted and spangled and bound together with the experiences and speculations of curious students, experienced travellers, and enthusiasts of such irrepressible vitality that death alone is able to subdue them.

But these flowers, if we speak by comparison, are not so simple as they may appear. I will briefly direct your attention to one amongst a thousand problems they compel us to consider. You will observe that the centre of every true Narciss is occupied with a trumpet, a chalice, a cup, a saucer, a discus, call it what you will: the botanist calls it a crown or corona. Now, what is a corona? To this question no one living is competent to make reply; it seems as if Nature had crowned these flowers with the double purpose of exalting them and humbling the botanist. There are six divisions in the perianth, and these we may regard as consisting of three sepals embracing three petals. Then how comes the corona here? In some of the old books it is called the nectary, which is certainly not a bad guess, but it does not satisfy the severe morphologists. In the *Journal of Botany* for April, 1865, will be found a learned paper on the subject by Dr. Maxwell T. Masters, who is inclined to regard the corona as the result of a combination of two rows of modified anthers. In the issue of the same work for May, 1866, is a paper on the subject by Mr. Worthington G. Smith, who regards the corona as the result of confluent petal-stipules. But the Narciss is by no means alone in its possession of a mysterious corona. Of the 110 genera of Amaryllids there are forty-two genera equally privileged, and we have peculiarly interesting examples in Pancratium, Ismene, Hymenocallis, and that exquisite Daffodil of the fertile fields watered by the mighty Amazon, the Eucharis amazonica, in which the faithful may behold the flowery emblem of the silvery chalice of the Lord's house, and Parkinson himself would have described it as he described the chalice of the Incomparable Daffodil, saying "the cup doth very well resemble the chalice, that in former days with us, and beyond the Seas is still used to hold the Sacramentall Wine." Nature has balanced the two hemispheres fairly with flowers of this kind, and if we suppose her object to be to prevent the disturbance of its equilibrium, we shall perhaps be as near the truth as at the seeming end of the speculations of our ambitious but superficial philosophy.

Another and a very great problem the Daffodils propose to us is, how shall we classify them? The student may make choice of many systems or may frame one of his own; but a perfect system is not to be hoped for, Nature herself having sternly set her face against it. And the reason of this is that throughout the family the gradations of structure and proportion are so minute that from time to time our labours fail because we cannot discover dividing lines. It is the difficulty of defining distinctive characteristics that stands sheer in the way of scientific classification. Let us, for example, take the system founded on the relative length of the corona; a system contemplated by Parkinson in 1629, and adopted by Mr. Baker in 1869. Here we find two forms of the self-same species, Calathinus and Triandrus, put into separate classes—an error which admits of correction certainly, but for the present purpose serves to illustrate the problem before us. I have myself classified these flowers according to the number of flowers produced on a stem, and the system is absolutely perfect, until—yes, until it breaks down in the presence of a plant that converts all my wisdom into foolishness by producing one or two flowers more than it ought. We know just enough to be kept in fear that Nature will some day shatter all our plans by putting the angles where the curves ought to be, and causing two and two to count as five. If we attempt to classify by colour, in order to evade the difficulties arising out of form, we are no better off. Take, for example, the Poet's Narciss, which should be single-flowered and white, with a sanguineous centre. What shall we say of bicolor, which has two flowers and a yellow centre? And again, what shall we say of gracilis, which has two or even three flowers, and is wholly yellow? These two unmanageable beauties are so nearly allied to poeticus that separation, which at the first blush appears easy, proves at last to be impossible. If the varieties in their delicate gradations bring the species near together, and thus perplex us, we are not the less perplexed by the variations of the varieties themselves. Take the double Telamonius for example. It is sometimes destitute of a corona, forming a closely packed rosette; at other times it is double within the tube only, and occasionally it shows a perfectly single flower. In its best state, when newly imported, it demonstrates the capabilities of its native Italian clime. In its worst state, as an old-established garden flower, it gives striking indications of the deficiencies of the sub-arctic clime to which it has been transported. There is a diminutive variety of the Poet's Narciss called Verbanensis. It was known to Parkinson, and is by him described at p. 87 of the *Paradisus*. He had not the least suspicion of its relation to poeticus, which was discovered 200 years afterwards, and you will find it properly placed at p. 318 of the noble essay on Amaryllids of the Hon. and Rev. Dean Herbert. But this example is full of encouragement because if at the end of every two centuries a difficulty is disposed of, the whole catalogue of difficulties, which for the sake of argument we will estimate as numbering 500, will be all cleared off in a thousand years, and therefore the student of Daffodils is by no means tied up to a forlorn hope. There is a Daffodil described and figured by Parkinson as Pseudonarcissus Anglicus flore-pleno, or Gerard's double Daffodil. For twenty years I sought and sighed to possess this plant, and in the season of Daffodils haunted gardens everywhere in search of it, but all in vain. But in the spring of 1875, while pottering about the garden making notes on Narcissi, I cast my eyes in a casual way upon the adjoining meadow, and at a considerable distance descried a tuft of yellow flowers. Calling the gardener, Tippets, I said, "William, go across the meadow and see what is that yellow flower yonder." "Oh," he said with perfect confidence, "no need to go; that's only a Dandelion." But my florist's eye, in a fine frenzy rolling, was not so easily satisfied; so I went myself, and discovered in my own meadow, where I thought I knew every weed as a member of my family, a fine clump of the veritable Gerard's double Daffodil, and I dug it up and brought it into the garden, and it lives and thrives to this day. Thus we may travel round the world in search of the very flowers that we left blooming on our own doorstep; for knowledge, like charity, begins at home.

Scientific Committee.—A. Grote, Esq., in the chair.

Insects found upon Cypress.—The Hon. and Rev. J. T. Boscawen sent further specimens of Cypress with the insects upon them, and which it is alleged eat into the young shoots and cause their destruction. Mr. MacLachlan stated that he had now examined several specimens sent by Mr. Boscawen, and was of opinion that the declining condition of the tree was not caused by the attacks of the insects in question but by the frost, injury to the root, or some other cause. The insects were of two kinds, one belonging to the Psocidæ, called Stenopsocus cruciatus, the other an Aphis. The species of Psocus are not known to feed on living tissues, but only dry dead bark. There were no signs of the twigs having been gnawed by any insect.

Plants and Specimens Exhibited.—M. Linden sent Anthurium Andréanum, a highly remarkable species from Colombia, with thick scarlet corrugated spathe, and an ivory-white spadix tipped with yellow, which is described upon another page.

Mr. B. S. Williams sent Eria extinctoria, noticed in our last issue, and to which a Botanical Certificate was awarded.

Messrs. Backhouse sent a potful of a handsome yellow-flowered Fritillary from the Riviera, under the name of F. Moggridgei (Boiss., in *Moggr. Cont. Ment.*, t. 25), and which is considered by Mr. Baker (*Journ. Linn. Soc. Botany*, xiv., p. 255) to be a variety of F. delphinensis of Grenier. Mr. B. S. Williams sent, under the name of Nephrodium, Lastrea membranifolia, a Fern distributed throughout the hotter parts of India and Australia. Messrs. Veitch sent a Masdevallia M. Chelsoni×, a hybrid raised in their establishment between M. amabilis and M. Veitchiana. As an ornamental plant it presented no advantage over its parents. M. Wageneriana, a new species, was also shown. The yellow-flowered variety of Chrysanthemum frutescens, called Etoile d'Or, was shown, and its history com-

mented on. The Cranston Company sent cut flowers of a very pretty Hoya, with flowers in globose umbels; the leaves are oblong-acuminate and downy on the under-surface. The species is believed to be new, and will be named at Kew. Flowers of Abutilon Sellowianum were shown from Mr. George.

Catalogus Plantarum.—Dr. Masters showed a copy of a folio work under this title, drawn up by a society of gardeners in 1730, including Philip Miller, Thomas Fairchild, and other notable garden botanists of the day. The work is illustrated by twenty-one coloured plates, from the pencil of the famous flower-painter, Van Huysum. The purport of the book was to furnish an illustrated and descriptive "catalogue of trees and shrubs, both exotic and domestic, which are hardy enough to bear the cold of our climate in the open air." Only one part was issued, apparently under the editorship of Philip Miller. The book is mentioned in Johnson's *History of Gardening*, but is not catalogued in Pritzel, though the beauty and fidelity of the illustrations are such as to warrant it being noted in any catalogue of botanical literature.

Effects of the Frost of the last Winter upon Plants.—A communication was read from Mr. Elwes on this subject, with suggestions as to the best means of obtaining and tabulating the requisite information.

Plant supposed to be Poisonous to Sheep.—Rev. George Henslow showed a specimen of a Carex, supposed to have proved poisonous to sheep. In the opinion of the committee the plant had nothing to do with the disease.

Fungus on Glass.—Rev. George Henslow showed a specimen of an abnormal Polyporus found growing on the glass of a greenhouse, to which it had probably extended from the rafter.

Fritillaria sp.?—Rev. H. H. Crewe showed a Fritillaria, received from Dr. Regel, and which was referred to Mr. Baker for identification.

The meeting then adjourned.

Floral Committee.—Dr. Denny in the chair. There were not quite so many new plants as usual brought under the notice of the committees, but the proportion of good ones was somewhat larger. Next to the new plants which were certificated, and which are enumerated below, we must give the palm to two boxes of superb cut Roses, one consisting entirely of Maréchal Niel, large in size and lovely in colour; and the other of a mixed assortment of Teas, including such charming flowers as Niphetos, Lamarque, Madame Falcot, Madame Favart, and Gloire de Ducher, one of the finest of the scarlets for house work. The exhibitor was Mr. J. Walker of Thame, Oxon, and a Cultural Commendation was deservedly awarded him. From H. J. Buchan, Esq., Wilton House, Southampton, a flowering specimen of the scarce Bifrenaria Harrisonæ Buchaniana, a beautiful variety described by Professor Reichenbach in our columns last year, vol. xi., p. 430. Messrs. James Veitch & Sons showed Croton Hawkeri, a showy species with clear golden-yellow leaves margined with green. Mr. William Pratt, The Gardens, Hawkstone, near Shrewsbury, sent a couple of plants of Cineraria Lady Hill, a double-flowered variety, white tipped with violet; and from Mr. Chapman, gr. to R. S. Holford, Esq., Westonbirt, Gloucester, came half-a-dozen new varieties of Amaryllis, of various shades of scarlet, but not of first-class form. J. C. Bowring, Esq., Forest Farm, Windsor Forest, showed a hybrid Cypripedium, between C. Roezlii and C. Pearcei, but of no value. Mr. B. S. Williams again staged a nice group of Amaryllis, and also some small, freely flowered plants of the fine white Acocanthera (Toxicophlæa) spectabile. Cut blooms of a very fine dark red hybrid Tea Rose, named Duke of Connaught, were shown by Mr. Bennett, of Stapleford; and Mr. Sims, gr. to Edward Dann, Esq., staged a fine plant of Abutilon Edward Dann, which is not sufficiently distinct from others already in cultivation. Mr. Cannell again contributed some grand cut blooms of Zonal Pelargoniums.

New Plants Certificated.

First-class Certificates were awarded to Mr. J. Linden, of Ghent, for the splendid Anthurium Andréaum, described on p. 490, and illustrated on p. 497 of the present number. To Messrs. James Veitch & Sons for Huntleya meleagris, an old but somewhat rare South American Orchid, which is also known under Reichenbach's name of Batemannia meleagris. The specimen shown had five of its large and strikingly singular flowers, the somewhat reflexed and pointed sepals and petals of which were yellow at the base, and brown towards the apex, and the lip nearly white. To the same firm for Amaryllis Prince George, one of the last batch of seedlings, as also one of the finest in point of size and effectiveness, the colour being a dark shade of crimson, with darker shaded venation; and for Calanthe tricarinata, a hardy species, with an erect spike of small flowers, of the same pale grass-green colour as the foliage, except as regards the lip, which is of a dark shade of brown. To Mr. B. S. Williams for a handsome and well-flowered specimen of Choisya ternata, a Mexican shrub, with numerous panicles of white, sweet-scented flowers; a valuable plant for greenhouse cultivation, and which in many places has proved itself to be hardy. To Mr. B. S. Williams also for Coleus Mrs. George Simpson, a large-leaved variety, of a rich dark maroon colour shaded with crimson. To Mr. Howard, florist, Southgate, for Chrysanthemum frutescens, Etoile d'Or, the new golden Paris Daisy, or Marguerite, about which there has lately been some discussion in our columns. It has a continuous and free-blooming habit, and yellow flowers of large size, and must become a popular favourite in every garden for greenhouse decoration as well as for cutting, for which latter purpose it can be strongly recommended, inasmuch as we have ourselves kept the blooms in water for a fortnight. To W. Cobb, Esq., Silverdale Lodge, Sydenham, for Odontoglossum polyxanthum, a distinct species with a stout spike of flowers, the sepals and petals of which are lemon-coloured and blotched with chocolate, the lip broad and pale brown in colour, with a marginal white fringe, and the column white. To G. F. Wilson, Esq., for Primrose Herman Wilson, a large and very showy pin-eyed flower, of two distinct shades of crimson; and to Messrs. James Backhouse & Son, York, for Fritillaria delphinensis, a dwarf-growing species with large clear yellow flowers, which was exhibited under the name of F. Moggridgei.

Spring Flower Show.—Though not so large a show as on the last occasion there was much to admire in the display made in the large conservatory to-day. Messrs. James Veitch & Sons received a Large Gold Banksian Medal for one of the finest groups of Orchids that has been exhibited for a long time, and which consisted of one Ada aurantiaca, one Aerides Fieldingii, three Cattleyas, one Chysis Liminghii, one Cœlogyne occellata, one Cymbidium Lowii, eight Cypripediums, twenty-four Dendrobiums, one Epidendrum, one Lælia elegans, fourteen Lycastes, seven Masdevallias, including M. Chelsoni ×, the first garden hybrid in this genus that has been exhibited; one Maxillaria, fifty-seven Odontoglossums, nine Oncidiums, two Phalænopsis, one Sarcochilus, one Sobralia macrantha, twenty-four Sophronites, and two Vandas—or a total number of 160 plants. Along with the Orchids were also shown some good specimens of several new white and deliciously scented Rhododendrons, most conspicuous amongst which were R. Veitchii, with flowers resembling in all but their colour a small flower of Lilium auratum; R. Princess Alice, and R. Sesterianum, which is even finer in shape than the former, though about of equal merit as regards floriferousness. The General Horticultural Company (John Wills) (Limited), again exhibited a very attractive group of plants, most conspicuous in which was a brilliant cluster of flowering plants of Odontoglossum vexillarium. A Gold Medal was awarded. A Silver Banksian Medal was the reward of Messrs. Osborn & Sons for a group of mixed stove and greenhouse flowering and fine-foliaged plants. Medals of similar value were also awarded to Mr. Aldous for a group of plants; and to Messrs. J. & J. Hayes, of Edmonton, for a group of the fine new white-flowered market Pelargonium, Maid of Kent. Messrs. Barr & Sugden exhibited cut flowers of a large number of species and varieties of Narcissus, probably the most complete collection that could be shown by one firm.

Botanical and Horticultural of Durham, Northumberland, and Newcastle-on-Tyne: *April 7 and* 8.—The exhibition of this Society was held in the Town Hall and Corn Exchange, Newcastle-on-Tyne. There may be societies in Britain older than this one, but probably no other has continued to hold exhibitions every year since the date of their establishment for so long a period. In 1824 this was established, and from one to three exhibitions have been held every year since. The committee work very earnestly together for the promotion of horticulture, and their efforts have so far been crowned with success. The exhibits this year were quite up to the average quality upon the whole.

Hyacinths were a conspicuous feature, but it could scarcely be expected that these would be up to their usual quality, nor were they, though the principal collections were scarcely behind the best exhibited in London. There was a good competition in the groups of twenty-four Hyacinths, and the judges had some difficulty in deciding on the relative merits of each, but ultimately gave the first prize to a well finished group from Mr. J. Thompson, nurseryman, Fenham. Messrs. H. Dewar & Co., 97, Grey Street, Newcastle, were a good 2d; and Mr. W. J. Watson, Fenham, 3d. Mr. W. J. Watson had the best Tulips, and they were very good indeed. In the Polyanthus Narcissus class Mr. J. Thompson beat Mr. Watson with a good group. In the gardeners' classes the Hyacinths and Tulips were very good. Mr. A. J. Brown, gr., Whitburn, showed a group of Hyacinths worthy of high commendation. Very fine, too, was a group of six Hyacinths from Mr. H. Sanderson, an amateur.

The stove and greenhouse plants would have been creditable to any exhibition in the kingdom. The best were sent from the gardens of H. Pease, Esq., Pierremont, Darlington (Mr. W. Yule, gr.), Theo. Fry, Esq., Woodburn (Mr. J. Noble, gr.), and from Mr. J. Thompson. Dendrobium nobile was splendidly flowered, Clerodendron Balfourianum in fine flower; Eucharis amazonica had about forty trusses of its charming snowy flowers, and Cymbidium eburneum was very beautiful and well-flowered. Mr. Yule also exhibited three most beautiful and well-flowered specimens of Rhododendron Veitchianum, Nuttallii, and Countess of Haddington, and well they deserved the recognition of the 1st prize they obtained. Deutzia gracilis was represented by numerous collections. Mr. W. Brown, of Carrs Hall, gained a 1st prize for two beautiful plants; and Mr. Yule gained 1st prize also for six very fine specimens. The same exhibitor gained the highest position for six very fine examples of Dielytra spectabilis, a class of plants highly deserving of recognition at flower shows in spring, and of which there were numerous collections shown on this occasion. Scillas, Hepaticas, hardy Primulas, and such-like subjects were well represented, and amongst greenhouse plants there were good Cinerarias, Cyclamens, Primula sinensis, Genistas, Acacias, &c., but nothing of special merit. Auriculas and Polyanthuses call for special mention, owing to the fact that they have seldom been shown better in this district, that they were more numerous than usual, and because the growers subscribed £10 towards increasing the prizes. Many of the best varieties of Auriculas were shown, but there were no new seedlings worthy of notice. Mr. Woodhead, of Halifax, entered his plants, but did not exhibit. Mr. E. Adams, of Smalwell, had the best plants, next to him being Mr. H. Sanderson. In gold-laced Polyanthuses Mr. H. Sanderson was the most prominent exhibitor, his six plants were very fine indeed—George the Fourth (Buck) being very fine. Mr. Sanderson had some very fair seedlings, and gained the 1st prize in the class for one.

Cut flowers, exhibited in the form of bouquets and epergnes for drawing-rooms, or as button-hole flowers, were one of the most prominent features of the show. Mr. V. Wright, gr. to Grosvenor Talbot, Esq., Leeds, showed the best bridal bouquet: it was formed of white Camellias, Roses, Spiræas, and Lily of the Valley. Miss Edwards, of Seaham, gained the 2d prize with a good one, its most telling flowers being Phalænopsis and white Azaleas. Mr. H. Wright had by far the best hand-bouquet; the centre was a blush Rose, and there were a few deep blue Cinerarias and a number of flowers of Dendrobium nobile in it. Mrs. Thompson, of Sunderland, exhibited a good bouquet, and gained a 1st prize in another class. In vases, of which there were sixteen, all good, Mr. M. D. Thompson, gr. to Lindsay Wood, Esq., South Hill, gained the 1st prize. Lycopodiums, drooping Orchid spikes, a few trusses of Medinilla magnifica, a pale blue Clematis and Euphorbias were the flowers. Mr. E. Oliver, Forest Lodge, Benton, had made an excellent arrangement, and gained the 2d prize. Mr. G. Rymer, a market gardener from Sunderland, gained the 1st prize in another class for a vase for the drawing-room. The same exhibitor gained the highest position in a class for button-hole bouquets, showing many good specimens. There were many other good examples of culture, and very fine boxes of cut flowers, but space cannot be spared for them. There ought to be more exhibitors amongst the hardy plants, as cottagers might cultivate such things as easily as the squire's gardener. For instance, only one competitor came forward to claim the prizes for Hepaticas where there ought to have been a dozen. It is no fault of the committee that growers of small means do not exhibit such flowers.

Obituary.

The *Gardeners' Record* announces the death of Mr. Thomas Felton, principal of the firm of T. Felton & Son, 4, North King Street, Dublin. Mr. Felton held the responsible position of manager to the late firm of Fergus Farrell & Sons, 119 and 120, Capel Street, Dublin, for thirty-three years, and about seven years ago commenced business on his own account, taking his only son into partnership with him. For some time past, however, his health had been in such a precarious condition that he was quite unable to look after the concern, the management of which devolved almost exclusively on his son, who will continue to carry it on as heretofore. Mr. Felton was sixty-six years of age at the time of his death, which took place on the 6th inst., at his residence, 23, Bath Avenue, Sandymount.

—— We regret to have to record the death of Mr. John Powell, of the Royal Gardens, Frogmore, which took place on the morning of the 9th inst., after an attack of paralysis. Mr. Powell had been

connected with the Royal Gardens for thirty-seven years, under the late Mr. Thomas Ingram, and his successors, Mr. Rose and Mr. Jones. The department of hardy fruits was, from the first establishment of the Royal Gardens, placed under his special care, and many of the valuable novelties raised there in years gone by are to be attributed to his manipulations. Mr. Powell was not only an excellent and intelligent practical cultivator, but he was likewise a discriminating judge of fruits, and as a consequence his services have been in constant request at the Metropolitan fruit shows, where his presence will be greatly missed by those who have been for many years his coadjutors. Estimable in his private character, and kind and gentle to those who were placed under him, he made many friends, and his loss will be sincerely regretted by a large circle of professional friends, amongst whom he was well known and very highly respected. He was in his 62d year.

—— Gladiolus lovers will regret to hear of the death of that eminent cultivator of their favourite flower—M. SOUCHET, and those who were privileged to enjoy his friendship will mourn the loss of "an amiable, tender-hearted man." Souchet was for many years the head gardener at the Palace of Fontainbleau, but retired from that position some ten or twelve years ago, taking up his residence in a house that he had built for himself. In the disastrous war of 1870 Souchet found that his house was not his castle, and that he had to exercise hospitality to German officers, but as all parties made the best of things no great harm was done. It is stated that when the Queen visited the late Emperor at Fontainbleau, Souchet margined the borders of the drive to the château with cut spikes of Gladiolus sunk in bottles of water, so as to appear as if they were growing there. Much struck by the beauty of the sight, Her Majesty is reported to have sent to Paris on her return to England for a supply of the flower, with which she was previously unacquainted. The corms so introduced are believed to have been among the earliest of the fine race of Gladioli we now possess. Souchet, we believe, had the privilege of disposing of the Gladoli he raised in the Imperial garden, but it is asserted that he would have no direct dealings with other than French firms. Whether this was a restriction imposed upon him, or whether it was a piece of exclusive patriotism, we do not know. We merely tell the tale as 'twas told to us. M. Souchet of late suffered severely, so that his death was not unexpected by those who knew him.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, APRIL 14, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat = 100.	Wind: Average Direction.	Rainfall.
April	In.	In.	°	°	°	°	°	°	°		In.
8	29.82	+0.08	58.1	34.5	23.6	43.7	— 1.7	41.3	90	N.E.: E.N.E.	0.03
9	30.06	+0.32	49.9	39.3	10.6	43.6	— 2.0	36.6	76	ENE: E.S.E.	0.00
10	29.97	+0.23	47.0	36.7	10.3	41.0	— 4.7	36.0	83	E	0.00
11	29.79	+0.05	51.5	36.3	15.2	42.0	— 3.8	37.5	85	E.: E.N.E.	0.05
12	29.71	—0.03	52.0	34.0	18.0	42.0	— 3.9	38.8	89	E.: E.N.E.	0.01
13	29.70	—0.05	57.8	37.4	20.4	46.9	+ 0.8	41.4	82	E.S.E.	0.01
14	29.50	—0.24	47.0	42.1	4.9	44.3	— 2.0	42.8	95	E.: E.N.E.	0.63
Mean	29.79	+0.05	51.9	37.2	14.7	43.4	— 2.5	39.2	86	E.: E.N.E.	sum 0.73

April 8.—Overcast till 11 A.M., generally fine and bright afterwards. Heavy shower at 1.30 P.M. Distant thunder heard between noon and 2 P.M. Lightning at night.
— 9.—Generally dull and cloudy, though fine at times. Cold and windy.
— 10.—Generally dull till evening, then fine. Cloudless at night. Cold. Windy.
— 11.—Dull and cloudy, with showers till 1 P.M.; fine at intervals. Overcast at night. Cold.
— 12.—Fine, but cloudy day. A little rain fell between 1 and 2 P.M., and at 9 P.M. Overcast at night. Cold.
April 13.—Fine, though cloudy till 8 P.M.; overcast, with slight rain afterwards. Mi'der.
— 14.—Overcast, dull, and wet throughout. A miserable day. Lightning seen at 8.30 P.M.

LONDON: *Barometer.*—During the week ending Saturday, April 10, in the vicinity of London the reading of the barometer at the level of the sea decreased from 29.58 inches at the beginning of the week to 29.33 inches by the afternoon of the 4th; increased to 29.52 inches by the evening of the same day; decreased to 29.31 inches by the morning of the 6th; increased to 30.27 inches by the night of the 9th; and decreased to 30.13 inches by the end of the week. The mean reading for the week at sea level was 29.74 inches, being 0.04 inch below that of the preceding week, and 0.18 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 58° both on the 7th and 8th, to 47° on the 10th; the mean value for the week was 53½°. The lowest temperatures of the air observed by night varied from 34½° on the 8th, to 41° on the 4th; the mean value for the week was 37½°. The mean daily range of temperature in the week was 16°; the greatest range in the day being 23½° on the 8th, and the least 10¼°, on the 10th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—April 4, 47°.7, + 2°.9; 5th, 45°.4, +0°.5; 6th, 42°.6, — 2°.4; 7th, 44°.6, — 0°.6; 8th, 43°.7, —1°.7; 9th, 43°.6, — 2°; 10th, 41°, — 4°.7. The mean temperature of the air for the week was 44°.1, being 1°.1 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 123° on the 7th, and 121½° on the 8th; on the 6th, 9th, and 10th, the readings did not rise above 70°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 30¾° on the 8th, 32½° on the 7th, and 33° on the 10th; the mean of the seven lowest readings was 34°.

Wind.—The direction of the wind was W. and E.N.E., and its strength strong at times.

The weather during the week was generally fine, though frequently dull and showery.

Thunder was heard both on the 6th and 8th, and *lightning* was seen on the 8th.

Rain fell on four days; the amount collected was 0.41 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, April 10, the highest temperatures of the air observed by day were above 60° at Cambridge, Nottingham, Leeds, and Sunderland, and below 54° at Bristol and Liverpool; the mean value from all stations was 58°. The lowest temperatures of the air observed by night were below 34½° at Blackheath (London), Leicester, Cambridge, Wolverhampton, Nottingham, and Hull, and above 39° at Plymouth and Sunderland; the general mean from all places was 36°. The extreme range of temperature in the week was above 28½° at both Cambridge and Nottingham, and below 18° at Plymouth, Bristol, and Liverpool; the mean range of temperature from all stations was 22°.

The mean of the seven high day temperatures was above 54½° at Plymouth, Cambridge, Nottingham, and Sunderland, and below 51½° at both Bristol and Liverpool; the mean value from all places was 53½°. The mean of the seven low night temperatures was below 38° at Blackheath, Wolverhampton, Nottingham, and Hull, and above 42° at both Truro and Plymouth; the mean from all stations was 39½°. The mean daily range of temperature in the week was above 17½° at both Cambridge and Nottingham, and below 12° at Truro, Plymouth, Bristol, Sheffield, and Liverpool; the mean daily range of temperature from all places was 14°.

The mean temperature of the air for the week from all stations was 45°, being 3¼° higher than the value for the corresponding week in 1879. The mean temperature was above 46½° at Truro, Plymouth, and Sunderland, and below 44° at both Wolverhampton and Hull.

Rain.—The heaviest falls of rain during the week were at Plymouth 1.15 inch, Truro 0.95 inch, Bristol 0.90 inch, and Leeds 0.88 inch, and the least falls were at Liverpool, 0.03 inch, and Sheffield 0.01 inch; the average fall over the country was half an inch.

The weather during the week was generally fine, though dull, cloudy, and showery. *Thunder* was heard at several places during the week.

SCOTLAND: *Temperature.* — During the week ending Saturday, April 10, the highest temperatures of the air observed by day varied from 57° at Dundee, to 51¼° at Aberdeen; the mean from all places was 53¼°. The lowest temperatures of the air observed by night varied from 28° at Paisley and 29¾° at Perth, to 36° at Greenock; the mean value from all stations was 33°. The mean range of temperature in the week from all places was 20¼°.

The mean temperature of the air for the week from all stations was 44½°, being 2½° higher than the value for the corresponding week in 1879. The mean temperature was the highest at Dundee, 45°, and the lowest at Perth, 43¾°.

Rain.—The amounts of rain varied from 1.08 inch, at Paisley, and 0.90 inch, at Greenock, to 0.22 inch at Aberdeen; the average fall over the country was half an inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

TOBACCO PAPER: *Nicotine* is desirous of obtaining a good recipe for making tobacco-paper, which some of our readers may perhaps be able to give; though we should doubt its advantage to him unless he is a tobacco manufacturer.

Answers to Correspondents.

AILANTUS GLANDULOSA: *E. W. Davis.* The tree is a native of Japan and Mongolia, where it bears the vernacular name of "Ailanto," literally "Tree of Heaven." We cannot reply definitely to your other question.

BACHELORS' BUTTONS: *A. D. S.* This popular name is given in different places to different plants; but perhaps most generally to the double-flowered forms of Ranunculus acris. The other plants sometimes so called are Lychnis diurna and L. sylvestris, Scabiosa succisa, Centaurea nigra, and double white Daisies.

CYCAS: *G. A. B.* Cycas revoluta is not classed as a Palm, neither is Zamia nor Encephalartos. They belong to the group of Cycadaceæ, and are popularly called Cycads.

FLOWER SHOWS: *A. W. Taylor.* No. The *Horticultural Directory* contains a list of societies, but does not give the dates on which their shows are held. It would be impossible to do so, because in very many cases the dates are not fixed until late in the season.

NAMES OF PLANTS: *J. C. E.* 7, Asplenium lucidum; 8, Davallia pyxidata; 9, Asplenium flaccidum; 10, Onoclea sensibilis.—*R. T.* A small, somewhat erose (*i.e.*, slightly depauperated) form of Pteris serrulata, which, as far as the present specimen testifies, is not worth a distinctive name.—*J. McD.* Epimedium pinnatum.—*S. S.* Primula verticillata var. sinensis.—*C. Rye.* The large flower is Doronicum caucasicum, and the small one Ranunculus ficaria.—*G. Cawston.* Gardenia intermedia, we should think.—*J. O. E.* 1, Primula verticillata; 2, Ruscus aculeatus; 3, Ribes sanguinea; 4, Polypodium vulgare; 5, Polystichum angulare; 6, Lastrea Filix-mas; 7, Lastrea dilatata.—*J. T.* 1, Cheilanthes elegans; 2, Acalypha tricolor; 3, Alocasia Jenningsii; 4, Eranthemum rubronervium.—*W. J.* 1 and 2, Odontoglossum gloriosum; 3 and 4, Odontoglossum præstans, two varieties.—*An Amateur, Eltham.* 1 and 3, Ophrys tenthredinifera; 2, Orchis papilionacea; 4, Orchis longicruris; others not fresh enough.—*M. M.* Pittosporum tenuifolium.—*W. Fisher.* Helleborus fœtidus. We wish every one would send us as good a specimen as you.—*H. C.* 2, Lycopodium volubile; 3, Lomaria alpina; 5, a moss, which is undeterminable without fruit; 6, Asplenium flabellifolium; 1 and 4, underminable without flowers.—*H. J. Ross.* The yellow one is Dendrobium aggregatum probably; the white and yellow D. Pierardi.—*T. S., Leadenhall Street.* Sarracenia flava, a native of North America, not New Zealand.—*Geo. Tate.* Fuchsia splendens.—*Cestrian Subscriber.* 1, a garden variety of Hippeastrum which, we cannot undertake to name; 2, Doodia caudatum; 3, Adiantum teucrium.

PEACHES NOT SWELLING: *H. S.* The cause is probably to be attributed to immaturity of the wood—the result of the last sunless and dripping summer.

PRIMROSES: *Common & Reid.* A batch of large, showy, varied, and in many cases high-coloured varieties, admirably adapted for border decoration, but the majority of them are pin-eyed, and of no value from a florist's point of view. The few gold-laced flowers are very imperfect, being either too small, pin-eyed, not uniform in the colour of centre and lacing, or not having the lacing cutting clean through the centre of the lobes. The whites, and some of the narrow crimsons, are especially fine as border flowers.

ROSE BOXES: *Rosarian.* We do not know where you can buy these ready made. A box to hold twenty-four blooms should be 3 feet 9 inches long and 18 inches wide; 6 inches high at the back and 4 inches in front. Half this length will make a stand for twelve, and one-fourth for six; but the width and height must be the same.

SEED DRILL: *B. Coombe.* We have never seen such a drill as you enquire about, but if there is such an one for sale you should be able to get it at S. & E. Ransome & Co.'s, 10, Essex Street, Strand, W.C.

VINES: *J. T.* It would seem, from three of the Vines only having suffered, that it must be the result of some local injury to the roots. We can, therefore, only advise you to examine them carefully, and probably the best course to adopt will be suggested to you.

ZONAL PELARGONIUMS: *M. J. T.* Strictly speaking, a Zonal Pelargonium is one of those which have the leaves marked with a zone or band, usually of a dark brown colour, but sometimes dark green or greyish-

green, forming what is called the horse-shoe mark on the leaf. In olden times these Zonal Pelargoniums were known as Horse-shoe Geraniums; these, however, have now become so completely mixed up with the race represented by the old Tom Thumb, which has no zone, that for grouping purposes all the Pelargoniums of the types zonale and inquinans are indiscriminately called Zonals.

Communications Received.—S. M. & A. (thanks).—T. C.—G. F. M.—C. M. (thanks)—W. D.—J. C.—J. B.—W. F.—H. L. & Co.—T. B—W. B. H.—J. R. J—J. M. C.—R. L.—H. J. B—B. S. W.—J. Mc. B.—A. T.—J. Page.—J. S.—C. C.—E. C.—C. W. V.—J. J.—S.W.

DIED, on the 13th inst., at 1, Gilston Road, London, Robert Fortune, Oriental Traveller, Botanist, and Author, aged 67.

—— On April 4, at The Nurseries, Chepstow, William Morris Pillinger, aged 43 years, deeply regretted.

Markets.

COVENT GARDEN, April 15.

We are now having a good supply of new Grapes, both home-grown and from the Channel Islands, quality generally being good; also Strawberries and all kinds of indoor vegetables, quite equal to the demand. Trade somewhat better. *James Webber, Wholesale Apple Market.*

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Oranges, per 100	6 0–12 0
— American, barrl.	18 0–30 0	Pears, per dozen	4 0– 8 0
Cob Nuts, per lb.	1 0– 1 6	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb.	8 0–12 0	Strawberries, per oz.	0 4– 0 9
Lemons, per 100	6 0–10 0		

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	10 0–14 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— English, p. 100	12 0– ..	Mint, green, bunch	1 6– ..
— French, per bun.	7 0–25 0	Mushrooms, p. baskt.	1 6– 2 0
— French natural, per bundle	3 6– ..	Onions, per bushel	8 0– ..
Beet, per doz.	1 0– 2 0	— Spring, per bun.	0 6– ..
Brussels Sprouts, lb.	0 6– ..	Parsley, per lb.	1 6– ..
Cabbages, per doz.	1 0– 2 0	Peas, per lb.	1 0– ..
Carrots, per bunch	0 8– ..	Potatos (new), per lb.	0 3– 0 9
— French, per lb.	0 6– ..	Rhubarb (Leeds), per bundle	0 9– ..
Cauliflowers, per doz.	2 0– 5 0	Seakale, per punnet	3 0– ..
Celery, per bundle	1 6– 4 0	Shallots, per lb	0 6– ..
Chilis, per 100	3 0– ..	Spinach, per bushel	5 0– 6 0
Endive, per score	4 6– ..	Tomatos, per dozen	3 0– ..
Garlic, per lb.	1 0– ..	Turnips, new, bunch.	0 6– ..
Herbs, per bunch	0 2– 0 4		

Potatos:—Regents, 100s. to 140s.; Flukes, 120s. to 160s.; and Champions, 160s. to 200s. per ton. German, 6s. to 7s. 6d. per bag; new English, 2s. per lb.

Plants in Pots—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ferns, in var., doz.	4 0–18 0
Azaleas, per dozen	18 0–60 0	Ficus elastica, each	1 6– 7 6
Begonias, per doz.	6 0–18 0	Foliage Plants, various, each	2 0–10 6
Bouvardias, per doz.	12 0–24 0	Fuchsias, per dozen	9 0–15 0
Cinerarias, per doz.	6 0–12 0	Genista, per dozen	9 0–18 0
Cyclamen, per dozen	9 0–24 0	Hyacinths, per doz.	4 0– 9 0
Cyperus, per dozen	4 0– 9 0	Myrtles, per doz.	6 0–12 0
Dielytra, per doz	9 0–15 0	Palms in variety, each	2 6–21 0
Dracæna terminalis	30 0–60 0	Pelargoniums, scarlet zonal, per doz.	4 0– 9 0
— viridis, per doz.	12 0–24 0	Spiræa, per dozen	6 0–18 0
Erica various, per dozen	12 0–30 0		
Euonymus, various, per dozen	6 0–18 0		

Cut Flowers.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Pelargoniums, 12 spr.	0 9– 1 0
Arum Lilies, per dozen	4 0– 9 0	— zonal, 12 sprays	0 3– 0 9
Azalea, 12 sprays	0 6– 1 0	Primroses, 12 bunch.	1 0– 1 6
Bouvardias, per bun.	1 0– 4 0	— double, white, 12 bunches	1 6– 3 0
Camellias, per doz.	1 0– 6 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	Roses (indoor), doz.	1 6– 9 0
Cyclamen, 12 blms.	0 4– 0 6	— Roses, Fr., doz.	2 0– 6 0
Epiphyllum, 12 blms.	0 6– 1 0	Spiræa, 12 sprays	1 0– 2 0
Eucharis, per doz.	4 0– 6 0	Tropæolum, 12 bun.	1 0– 3 0
Euphorbia, 12 sprays	3 0– 6 0	Tuberoses, per dozen	4 0– 6 0
Gardenias, 12 blms.	2 0– 8 0	Tulips, 12 bunches	6 0– 9 0
Heliotropes, 12 sp.	0 6– 1 0	Violets, French, per bunch	1 6– 2 6
Hyacinths, 12 bun.	6 0–12 0	— English, p. bun.	1 0– 2 0
Lily of Val., 12 spr.	0 9– 2 0	White Lilac, Fr., per bundle	4 0– 8 0
Mignonette, 12 bun.	6 0– 9 0		
Narcissus, Paper-white, 12 spikes	0 6– 1 0		

SEEDS.

London: *April* 14.—There is now an active seasonable business doing. Prices all round keep very moderate, Canadian Clover seed, in particular, being unprecedentedly cheap; the supply still exceeds the demand. Alsike is also this season most reasonable. Considerable steadiness characterises white Clover seed. Trefoil and Italian are both somewhat easier. Perennials steady. Lucerne, Timothy, and Sainfoin are scarce and firm. For spring Tares there is a good sale at full rates. A few Scotch Gore Vetches, of extraordinarily large size, are now offering. Mangel seed is in increasing request. No change in bird seeds. The trade for blue Peas is improving. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

Lawn Mowers — Lawn Mowers.

THE GREAT SUPERIORITY OF

GREEN'S PATENT "SILENS MESSOR"

AND

"MONARCH" LAWN MOWERS

Over those of all other Markers is universally acknowledged.

They will Cut

Either Short or Long Grass, Bents, &c., Wet or Dry.

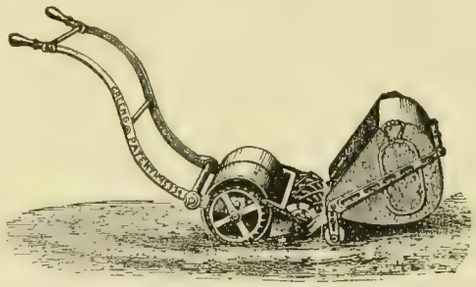
These advantages no other Lawn Mowers possess.

They have been in constant use for upwards of twenty years in

The Royal Gardens, Windsor,

Buckingham Palace Gardens
Marlborough House Gardens
Royal Horticultural Society's Gardens, South Kensington
The Royal Botanic Gardens, Regent's Park
The Crystal Palace Company's Gardens, Sydenham
The Winter Palace Gardens, Dublin
The Hyde Park Gardens
Hampton Court Gardens
The Zoological Gardens, Regent's Park
The Dublin Botanic Gardens
The Liverpool Botanic Gardens
The Botanic Gardens, Brussels
The Hull Botanic Gardens
The Leeds Horticultural Gardens

And in most of the Principal Parks and Squares in the United Kingdom.



They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

The above machines have proved to be the best, and have carried off Every Prize in all cases of Competition.

Every Lawn Mower is guaranteed to give entire satisfaction, otherwise it may be returned at once, free of cost to the purchaser.

The largest stock of Mowers kept in London, and including all sizes from 6 inches to 48 inches, is to be seen at our London establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, and have their orders executed the same day they are received.

			£ s. d.
To cut	6 inches.	Can be worked by a lady	1 15 0
,,	8 ,,	,, ,,	2 10 0
,,	10 ,,	,, ,,	3 10 0
,,	12 ,,	Can be worked by one person	4 10 0
,,	14 ,,	,, ,,	5 10 0
,,	16 ,,	This can be worked by one man on an even lawn	6 10 0
,,	18 ,,	By man and boy	7 10 0
,,	20 ,,	,, ,,	8 0 0
,,	22 ,,	,, ,,	8 10 0
,,	24 ,,	,, ,,	9 0 0

Prices of Horse, Pony, and Donkey Machines, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.

Carriage paid to all the Principal Railway Stations in the United Kingdom.

Illustrated Price LISTS free on application.

N.B.—Those who have Lawn Mowers to Repair will do well to send them either to our Leeds or London Establishments, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

GREEN'S PATENT ROLLERS

For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.

SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks left by other Rollers are avoided.

Diam.	Length	£ s. d.	Diam.	Length	£ s. d.
16 in.	by 17 in.	2 15 0	24 in.	by 26 in.	5 0 0
20 in.	by 22 in.	4 0 0	30 in.	by 32 in.	9 0 0

Prices of Rollers fitted with Shafts, suitable for Horse and Pony, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

THOMAS GREEN AND SON (Limited),

SMITHFIELD IRONWORKS, LEEDS.

And 54 and 55, BLACKFRIARS ROAD, LONDON, S.E.

Carriage of Rollers Paid to all the Principal Railway Stations in Great Britain.

By Permission of the Hon. Board of Customs.

(Free of Duty.)

CORRY & SOPER'S NICOTINE SOAP

(PATENT).

An effectual and speedy Eradicator of Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight, and all Parasites affecting Plants, without injury to Foliage.

It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.

Especially adapted for the Destruction of Blight on the Coffee Plant.

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general Insecticide.

It has now undergone a thorough test by some of the most practical men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with **Perfect Safety to Foliage.**

It may be used as a Dip or Wash for any description of out or indoor Plants, and as a Dressing for the Bark of Fruit Trees, Vines, &c., it has no equal.

The following is a fair sample of Testimonials, selected from some hundreds lately received from men of considerable experience:—

Messrs. J. & J. Hayes, *Nurserymen, Edmonton, London, N., on Feb.* 9, 1880, *write*:—

"We consider your Nicotine Soap a great boon to all who have anything to do with plants or fruit growing, as it is so very useful for dipping and syringing when it is not convenient to fumigate. You are quite at liberty to make what use you please of this."

Messrs. Osborn & Son, *The Fulham Nurseries, London, write*:—

"We have given your Nicotine Soap a fair trial, and our experience confirms the character you give it, that it is an unrivalled preparation for killing insect life, without injury to plants."

Mr. B. Maller, *Burnt Ash Nursery, Lee, London, S.E., on Feb.* 21, 1880, *writes*:—

"I have given your Nicotine Soap a fair trial, and I must now say it is very satisfactory. I am now having it used freely for syringing, ½ pint to 4 gallons of water, without the least injury to the foliage."

Mr. J. C. Severs, *Orchid Grower to Sir Trevor Lawrence, Bt., Burford Lodge, Dorking, on Nov.* 24, 1879, *writes*:—

"I have now tried in many ways your Nicotine Soap as an insecticide for Orchids, and it has given me great satisfaction," &c.

Messrs. Barnwell & Tilbury, *Nurserymen, Worthing, on March* 19, 1880, *write*:—

"Having used Corry & Soper's Nicotine Soap this year, we can with pleasure say it is the most useful insecticide that has ever come under our notice. We have tried it on Strawberry plants when in bloom, and find it most effectual in destroying the fly, whilst it does not in the least injure the plants or flowers, but gives a better and healthier growth to the plants."

Mr. George Abbey, *Gardener to C. M. Palmer, Esq., M.P., Grenk'e Park Garden, Saltburn-by-the-Sea, on February* 20, 1880, *writes*:—

"The Nicotine Soap I had from you I find a safe and powerful insecticide, being destructive of every kind of insect infesting plants, and in no instance has any injury been done to the foliage. At a strength of 3 oz. to a gallon of water, I have used it for syringing Peaches during growth for the destruction of red-spider, without injury in any way (only to the insect!—which it instantly kills). At that strength to 4 oz. to the gallon it may, with perfect safety, be employed for syringing every description of fruit tree, whether under glass or outdoor, and a majority of plants, without the least injury, whilst at the same time it destroys aphides—green, brown, blue, and black—thrips, and red-spider. At a strength of 6 to 8 oz. to a gallon of water, I have employed it very successfully for destroying mealy-bug, brown and white scale, both by syringing the plants and applying with a brush, its effects upon the insects making its application gratifying; whilst from its grateful smell, it is pleasant than otherwise. At a strength of 8 oz. to the gallon I found it a first-rate winter dressing for fruit trees, mealy-bug on Vines, as well as a destroyer and preventive of red-spider, thrips, and aphides. It also destroys American blight."

The following Nurserymen authorise us to say they have used the Nicotine Soap with unqualified satisfaction:—

J. Laing & Co., Forest Hill, London, S.E.; Hawkins & Bennett, Twickenham, S.W.; G. Edwards, Balham, S.E.; James Walton, Lee, S.E.; D. S. Thomson, Wimbledon, Surrey; F. & A. Smith, Dulwich, S.E.; J. Peed & Son, Roupell Park, Lower Norwood, S.E.; G. Brand, Winchmore Hill, N.; Hooper & Co., Covent Garden, W.C.; Lucombe, Pince & Co., Exeter; Edwin Cooling, Derby; T. Frost & Sons, Maidstone; W. C. Drummond, Bath; G. & W. Yates, Manchester; W. Bryant, Rugby; J. Stewart & Son, Dundee; J. Cocker & Son, Aberdeen; J. Charlton, Tunbridge Wells; Edmonson Bros., Dame Street, Dublin, &c.

Sold in jars, 8 oz., price **1s. 6d**; 20 oz., price **3s.**; and in tins, 14 lb., price **15s. 6d**; and drums, 28 lb., price **25s**; 56 lb., price **50s**; 112 lb., **95s.** Full directions for use on each package.

And 2 oz. sample jars, **6d.** each.

Full directions for use on each package.

Manufacturers of Tobacco Powder, Tobacco Juice (duty free), Tobacco Paper and Cloth, and Horticultural Sundriesmen.

May be obtained from all Seedsmen and Florists.

Wholesale from the Manufacturers,

CORRY & SOPER,

BONDED TOBACCO STORES,

SHAD THAMES, LONDON, S.E.

GYDE'S IMPERIAL FERTILISER.

Established 1839. Forty Years of Increasing Success.

Perfection in Artificial Manures for all Flowers, Fruits, & Vegetables.

Numerous Testimonials from all parts of the Kingdom justify us in stating that our Manures and Plant Foods are Perfect.

GYDE'S IMPERIAL FERTILISER IS ESPECIALLY ADAPTED FOR VINES.

Some Manures give beauty of bloom at the expense of the plant's vitality, causing a consumption of the strength of the plant's stamina and roots, producing, as it were, a hectic flush of short duration; but in every case the bloom on a plant nourished on GYDE'S IMPERIAL FERTILISER is a proof of sound health.

EXTRACT FROM "CHRISTIAN ANNUAL," 1880.

PLANT AND FLOWER CULTURE.—A special manure for plants and flowers and garden produce is produced by the Stroud Chemical Manure Company, which has already established much repute, and should be in great demand on its own merits at this season. The failure which fell last year to a large extent on fruits and vegetables, as well as corn, must have the effect of giving a keener feeling to past experience of the efficacy of "Gyde's Fertiliser," leaving no doubt of the great value of this manure. At least one hundred of the most extensive and qualified plant growers have given their names as references in corroboration, from their own experience, of the remarkable and satisfactory results of this powerful and convenient agent. Though of a special character, the manure has a wide and varied applicability. It has been found of prime excellence for Vines, Fruit Trees, Flowers, Vegetables, Strawberries, Horticultural Plants of every kind, and for all Kitchen Garden Crops. Nothing can be better also for dressing lawns. The "Imperial Fertiliser" produces health and beauty wherever it is applied round the walls, windows, greens, and conservatories, of our dwelling-places, whether on a large or small scale; and it has certainly the merit of having added a substantial charm to horticulture in all its branches. The "Fertiliser" is sold in ¼, ½, and 1 cwt. bags, or in tins as small as 1s. each; and we cordially commend its use, confident of the satisfactory effects of the experiments to all who, like ourselves, have been not a little puzzled of late years by the stiffness of their Vines and Fruit Trees, the blight of their flowers, and the general decadence of their garden produce.

1 cwt., **16s.**; ½ cwt., **9s. 6d.**; ¼ cwt., **7s.**; 14 lb., **5s.**; 7 lb., **3s. 6d.**; Tin, **1s.**

To be obtained of the principal Florists and Seedsmen throughout the kingdom.

London Office:—27, Crosby Hall Chambers, Bishopsgate, E.C.; or direct from the Works, Stroud, Gloucestershire.

MANUFACTURED BY THE STROUD CHEMICAL MANURE COMPANY,

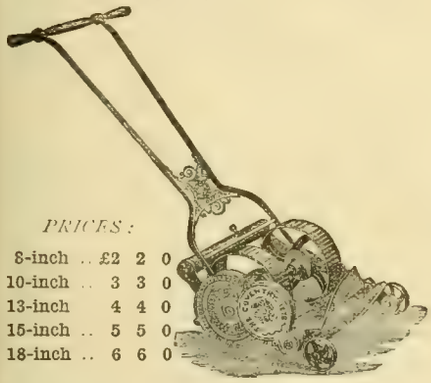
W. TRINDER, Manager.

"THE COVENTRY" LAWN MOWER

(REGISTERED). MANUFACTURED BY

NETTLEFOLD & SONS,

54, HIGH HOLBORN, LONDON, W.C.



PRICES:

8-inch ..	£2 2 0
10-inch ..	3 3 0
13-inch	4 4 0
15-inch ..	5 5 0
18-inch ..	6 6 0

The attention of the Public is invited to "THE COVENTRY" LAWN MOWER, which can be confidently recommended as the best and cheapest in the market; for lightness and ease in working it cannot be surpassed.

It has all the improvements which have of late been introduced into this class of Machine, either in England or America.

It will cut wet or dry grass of any length, will turn in its own width, and is so light that a lady can use a 15-inch Machine of this make with greater ease than a 10-inch of the ordinary kind.

It is cheaper than any other Machine of its class before the public.

It is made, as it name implies, at Coventry, by skilled English workmen, and of best English Steel and Iron.

These Machines can also be supplied with rollers at same price, and with Grass Boxes at a small extra cost.

TWO GOLD MEDALS Awarded to us by Royal Horticultural Society,

At the Grand Show at Preston, July, 1878, Out of Fourteen Competitors.

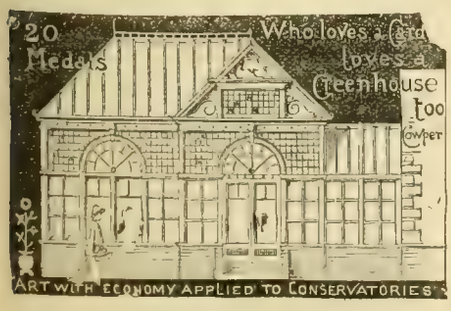
Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very *best class of buildings* at an extremely *low price*. As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions.

Our buildings are constructed so as to combine great strength, simplicity, and durability, with extreme lightness, and being made of the very best materials, will, with ordinary care, *last a lifetime*. The ventilators at top and bottom open the whole length with one handle to each series. The glass used is 21-oz. British sheet, and the paint the best *genuine* white lead and oil.

HEATING APPARATUS, with thoroughly *reliable Boilers* supplied and fixed in the most practical and efficient manner, and guaranteed to work economically and answer its purpose in all seasons. We devote special personal attention to this branch of our business, and have *never* had a *failure*.

Plans, Estimates, and Catalogues free. Customers waited on in any part of the Kingdom.

R. HALLIDAY & CO., Royal Horticultural Works, MIDDLETON, MANCHESTER.



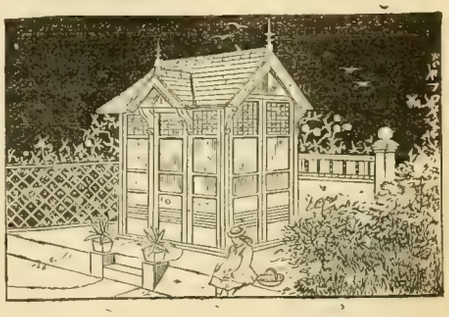
"ART WITH ECONOMY,"

Applied to Conservatories and Greenhouses.
With Illustrations, Prices, &c.
Part I., now ready. Post-free, twelve stamps.

CHEAP ART-SUMMERHOUSES.
Illustrations and Prices Gratis.

T. H. P. DENNIS & CO.,

MANSION HOUSE BUILDINGS, LONDON, E.C.
WORKS: CHELMSFORD.



PEAT.—Superior Black or Brown Fibrous Peat, for Rhododendrons, Azaleas, Orchids, &c., as used by all the noted Growers. Trucks containing 6 tons loaded at Bagshot or Camberley Stations, S. W. R., £4 4s. Address, W. TARRY, Bailiff, Golden Farmer, Farnborough Station.

PEAT (Brown Fibrous).—Noted throughout Kent for Growing Orchids, Ferns, &c., and dug under Oak stub. Delivered at Bexley Station, 9s. per cubic yard. Sample box, 1s.—Mr. BOXALL, North Cray, Kent.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4s.; 5 bags, 20s.; 10 bags, 36s. Bags, 4d. each.

Fresh SPHAGNUM, 10s. 6d. per bag.

WALKER AND CO., Farnborough Station, Hants.

An Important Discovery.

SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1s. 6d., 2s. 6d. and 12s. 6d. each. Special quotations for large quantities.

London Agents: HOOPER AND SONS, Covent Garden, and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it. Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both destroys Daisies, Plantains, Rib-grass, &c., and invigorates the grass. Testimonials and instructions on application. 36s. per cwt.; 56 lb. kegs, 19s.; 28 lb. tins, 10s.

Proprietor, W. D. BARBOUR, 3, Park Row, Leeds.

GARDEN BROOMS, handles included, 3s., 4s., and 5s. per dozen; STABLE BROOMS, 4s. and 6s. per dozen; and all kinds of BROOMS and BRUSHES at low prices. Special terms to the Trade and large cash buyers. MANLEY AND CO., Long Lane, London, S.E.

ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.

ALFRED GRANT AND CO., Steam Works, 39½, Leather Lane, London, E.C.

REARING of BEES in ROVEREDO (Canton of Grisons, Switzerland).

The undersigned are in a position to supply whole SWARMS of BEES, or QUEEN BEES only, at the following prices:—

A.—Queen Bees.

From April 15 to May 15	9 francs each.
From May 15 to June 15	8 francs each.
From June 15 to July 15	7 francs each.
From July 15 to August 15 ..	6 francs each.
From August 15 to September 15..	5 francs each.
From Sept. 15 to end of October ..	4 francs each.

B.—Swarms.

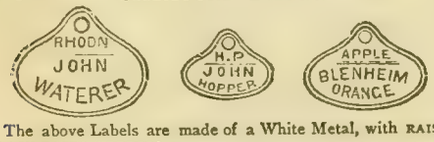
A Swarm weighing 1½ kilo, in May, 20 francs; in June, 18 fr.
A Swarm weighing 1 kilo, in May, 15 fr.; in June, 12 fr. 50 cts.

Orders respectfully solicited.

GIBONI AND BELLATTI, Breeders of Bees, Roveredo.

Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with RAISED BLACK-FACED LETTERS.

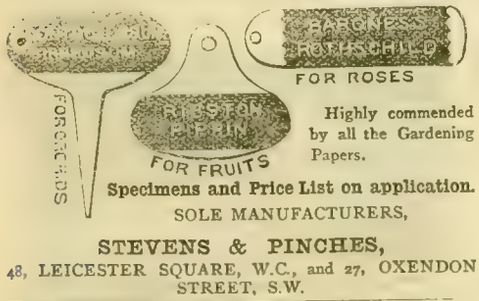
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

WATERPROOF TREE and PLANT LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times. For sample and price apply to the Manufacturers, FISHER, CLARK AND CO., Boston.

THE "ACMÉ" LABELS (*REGISTERED*).



Highly commended by all the Gardening Papers.

Specimens and Price List on application.

SOLE MANUFACTURERS,

STEVENS & PINCHES,

48, LEICESTER SQUARE, W.C., and 27, OXENDON STREET, S.W.

GARDEN STAKES, LABELS, VIRGIN CORK, MATS, RAFFIA, &c. None cheaper. Prices of WATSON AND SCULL, 90, Lower Thames St., London, E.C.

To Nurserymen, Market Gardeners, and Others.

PEA, FRENCH BEAN, and STANDARD FLOWER STICKS.—Any quantity (large or small) of the above will be forwarded, or a sample sent *free*, or carriage paid if put on rail at a reasonable price, on application to Mr. J. W. AYLWARD, The Holt Farm, Fair Oak, near Southampton.

ANDERSON'S RUSSIA MATS, For COVERING, TYING, and PACKING, are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

MATS, RAFFIA for TYING, TRAINING STICKS and LABELS,
Bamboo Canes, Virgin Cork, &c.

C. J. BLACKITH AND CO.,
COX'S QUAY, LOWER THAMES STREET, LONDON.

WM. PETERS has still some good colour Soft ARCHANGEL MATS, very suitable for tying purposes, also ARCHANGEL and ST. PETERSBURG MATS, for covering.

JUST TO HAND, *ex Duart Castle*, a parcel of RAFFIA, fine quality, good colour, and extra strong.

SEED BAGS and SACKS. Specially prepared Sewing or Tying, White or Tarred TWINE, ROPES, LINES, &c. NETTING and SHADING CANVAS. RICK CLOTHS and WATERPROOF COVERS of all descriptions.

Prices on application to
44, Tenter Street South, Goodman's Fields, E., and Well Street Warehouses, London Docks, E.

WHOLESALE RUSSIA MAT WAREHOUSE. Importers of RAFFIA FIBRE, TANNED NETTING, 1, 2, and 4 yards wide.—MARENDAZ AND FISHER, James Street, Covent Garden, W.C.

Hurry's Daisy and Weed Extractor,

FOR LAWNS.

No one possessing a Lawn should be without this wonderfully useful little Invention.

The following particulars, from the *Gardeners' Chronicle* of August 2, 1879, will at once show the value of this useful, and comparatively costless, little invention, which can be used by ladies or children:—

"How to Extract Weeds from Lawns.—A short time since, when at Pampesford, we had an opportunity of seeing used and of using a gouge, which was very effectual in removing Plantains and similar weeds from lawns. By a slight twisting movement the gouge was inserted over the crown of the plant, which was quickly extracted. The soil, removed as cheese would be by a cheese-taster, is readily re-inserted in the hole, a little fresh soil being added, if need be, to keep up the level. By the use of this instrument a lad was enabled to clear a lawn very rapidly. It is the invention of Mr. ALFRED F. O'C. HURRY, of Pampesford, who has registered it."

Another great advantage of this tool is that the plugs of earth extracted can be re-inserted upside down, which not only fills up the hole, but destroys the weed effectually; the plugs discharge themselves, the second pushing out the first, and so on.

To be obtained of all Ironmongers and Florists. Price 3s. 9d. only. In Polished Wood, fancy handle, 4s. 6d.

Wholesale Agent: THOMAS TILLEY, 12, Walbrook, London, E.C. Cambridge Agents: G. BEALES & CO.;

Or Carriage Free of the Inventor on receipt of P.O.O. for 4s. 3d. and 5s. 3d., payable at Cambridge or Sawston.

ALFRED F. O'C. HURRY,
PATENTEE, PAMPESFORD, CAMBRIDGESHIRE.

Established 150 years.

WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON AND CO., Importers and Manufacturers, have a large quantity of GLASS in various sizes and thicknesses:—

Inches.	Inches.		
15-oz., 6 × 4 to 8 × 6,	11s., 12s., 13s., 14s.		Per 100 ft. Box.
9 × 7 to 12 × 9,	12s., 14s.9d., 15s.3d., 16s.3d.		
13 × 9 to 18 × 12,	12s.6d., 15s., 16s., 17s.		
20 × 12 to 24 × 16,	12s.9d., 15s., 16s 6d., 17s.9d.		
20 × 17 to 24 × 18,	12s.9d., 15s., 16s.6d., 17s.9d.		
Inches.	Inches.		
21-oz., Orchard House, 20 × 12,	20 × 13,	16s. 6d.,	19s. 3d.,
20 × 14,	20 × 15,	20s.,	21s.
20 × 16,	20 × 17,		

15-oz., for Cutting up, 35s., 39s., 46s., 50s. per 300 feet case.
21-oz., for Cutting up, 35s., 39s., 46s., 55s. 6d. per 200 feet case.

LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.

Lists on application.

REMOVED to 43, Commercial Street, London, E.

BOOTE AND MILLSON, LEAD and GLASS MERCHANTS, 64, City Road, E.C., have always ON THE PREMISES a large Stock of all kinds of Horticultural Glass, at lowest market rates.

HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 200 feet,

Carriage Paid to any Railway Station in England.

Price Lists on application.

ALFRED SYER, Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities of

BETHAM & SON,

9, LOWER THAMES STREET, LONDON, E.C.

B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

Geometrical Mosaic and Encaustic

TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.

MAW AND CO., Benthall Works, Broseley, Shropshire.

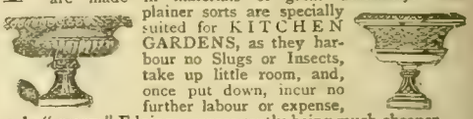
Gentlemen's Gardeners, Amateurs, and Others

REQUIRING

GARDEN POTS of best quality, are requested to send their orders to J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List on application.

Rosher's Garden Edging Tiles.

THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.



GARDEN VASES, FOUNTAINS, &c., in Artificial Stone, very durable and of superior finish, and in great variety of design.

F. ROSHER AND CO., Manufacturers, Upper Ground Street, Blackfriars, S.E.; King's Road, Chelsea, S.W.; Kingsland Road, E.

Agents for LOOKER'S PATENT "ACME FRAMES," PLANT COVERS, and PROPAGATING BOXES; also for FOXLEY'S PATENT BEADED GARDEN WALL BRICKS.

Illustrated Price Lists free by Post. The Trade supplied.

ORNAMENTAL PAVING TILES, for Conservatories, Halls, Corridors, Balconies, &c., from 3s. per square yard upwards. Pattern Sheet of Plain or more elaborate Designs, with Prices, sent for selection.

WHITE GLAZED TILES, for Lining Walls of Dairies, Larders, Kitchen Ranges, Baths, &c. Grooved and other Stable Paving of great durability, Wall Copings, Drain Pipes and Tiles of all kinds. Roofing Tiles in great variety, Slates, Cement, &c.

F. ROSHER AND CO., Brick and Tile Merchants.
See Addresses above.

SILVER SAND, fine or coarse grain as desired. Price by post per Ton or Truckload, on Wharf in London, or delivered direct from Pits to any Railway Station. Samples of Sand free by post.

FLINTS and BRICK BURRS for Rockeries or Ferneries.

KENT PEATS or LOAM supplied at lowest rates in any quantities.

F. ROSHER AND CO.—Addresses see above.

N.B.—Orders promptly executed by Rail or to Wharves.
A liberal Discount to the Trade.

DOULTON & CO.,

LAMBETH POTTERY, LONDON, S.E.

VASES, PEDESTALS, FOUNTAINS, GARDEN EDGINGS, &c.,

IN

IMPERISHABLE TERRA COTTA

PLAIN AND ORNAMENTAL PAVINGS; TILES FOR LINING WALLS OF Conservatories.

NEW and EXTENSIVE SHOW ROOMS,

ALBERT EMBANKMENT, LONDON, S.E.

A LARGE STOCK OF GOODS ALWAYS ON HAND.

PRICE LISTS FORWARDED on APPLICATION.

DOULTON & CO., LONDON, S.E.

"THE GARDEN" POTTERY.—"Your pots are the best."—Mr. PAYNE, *Gr. to the* Rt. Hon. and Rt. Rev. the Lord Bishop of Bath and Wells.

Works:—Chilcompton and Evercreech Junction Stations.
Address:—T. J. HICKES, Shepton Malet.

To Gardeners and Others.

TO BE SOLD, a bargain, on account of expiration of tenancy, a LEAN-TO GREENHOUSE, in good repair. Size, 26½ feet long by 8 feet wide, with Hot-water Pipes. To be seen at

Bonnington House, Westcombe Park Road, Blackheath, S.E.

CARSON'S PAINT.

PATRONISED BY

HER MAJESTY the QUEEN. H.R.H. the PRINCE of WALES. H.R.H. the DUKE of EDINBURGH.

The British Government. The Indian Government. The Colonial Governments. 15,000 of the Nobility, Gentry, and Clergy.

IS EXTENSIVELY USED FOR ALL KINDS OF

1 Cwt. and Oil Mixture Carriage Free.

OUTDOOR WORK.

Discount—Five per Cent. for Cash.

IT IS SPECIALLY APPLICABLE TO

WOOD, IRON, BRICK, STONE and COMPO, CONSERVATORIES, GREENHOUSES, FRAMES, &c.

SOLD IN ALL COLOURS. PRICES, PATTERNS, and TESTIMONIALS FREE.

WALTER CARSON & SONS,

LA BELLE SAUVAGE YARD, LUDGATE HILL, LONDON, E.C.; 21, BACHELORS' WALK, DUBLIN.

RANSOMES' LAWN MOWERS ARE THE BEST.

ARE SUITABLE FOR ALL GARDENS.

WILL CUT LONG GRASS, WET OR DRY.

All Sizes from 27s.

A MONTH'S FREE TRIAL ALLOWED.

Sent Carriage Paid.

THE "AUTOMATON."
The best general purpose machine.

THE "REVERSIBLE,"
For Small Gardens and Borders.

THE "AUTOMATON,"
For General Purposes.

THE "GLOBE,"
An Anglo-American Machine.

THE "HORSE-POWER,"
For Large Lawns, Cricket Grounds, Parks, &c.

Illustrated Price Lists free by post on application to

RANSOMES, SIMS & HEAD, ORWELL WORKS, IPSWICH.

W. G. SMITH & CO., VICTORIA WORKS,

BURY ST. EDMUNDS,

SOLE MANUFACTURERS OF

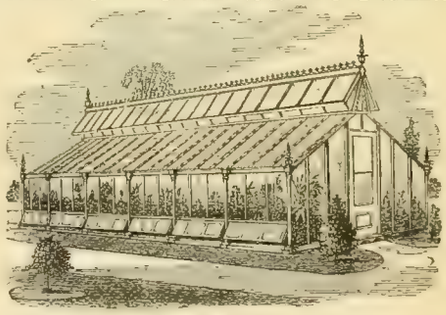
BEARD'S PATENT METALLIC NON-CONDUCTING GLASSHOUSES.

Iron Houses possess many valuable advantages over Wood. They are much more Durable, Lighter and Stronger. The Glass is screwed in between two layers of Elastic Material, whereby a perfect joint is secured without risk of breakage.

Catalogues and Price Lists Free.

HEATING APPARATUS IN ALL ITS BRANCHES.

Plant Protectors, Cucumber and Melon Frames always in Stock.



HORTICULTURAL BUILDINGS OF EVERY DESCRIPTION IN IRON OR WOOD.

"ARCHIMEDEAN" AMERICAN LAWN MOWERS,

Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

AWARDED,
Highest Prize—Paris, 1878.
Grand Diploma of Honourable Mention, Vienna, 1873.
Silver Medal, Vienna, 1870.
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PATRONIZED BY
HER GRACIOUS MAJESTY THE QUEEN,
H.R.H. THE PRINCE OF WALES,
H.I.M. THE EMPRESS OF GERMANY,
H.I.M. THE EMPEROR OF AUSTRIA,
The late EMPEROR OF THE FRENCH,
THE VICEROY OF EGYPT,
And many of the Nobility and Gentry of Great Britain.

OPINIONS of the PRESS.

"Far superior to any of ours."—*Vide* the *Field.*

"Remarkably easy to work."—*Vide* the *Gardeners' Magazine.*

"The quickest, most simple, and most efficient mower ever used."—*Vide* the *Gardeners' Chronicle.*

"We feel bound to recommend it to our readers as one of the best mowers we have as yet made acquaintance with."—*Vide* the *Floral World.*

PRICES from TWENTY-FIVE SHILLINGS.

Warranted to give satisfaction.

Delivered Carriage Free to all Stations.

Illustrated Catalogue post-free on application.

CAN BE USED EITHER WITH OR WITHOUT GRASS BOX.

WILLIAMS & CO. (Limited), Manufacturers and Patentees.

Selling Agents: **JOHN G. ROLLINS & CO.,** Old Swan Wharf, Upper Thames Street, London, E.C.; **WALTER CARSON & SONS,** La Belle Sauvage Yard, Ludgate Hill, London, E.C.; and 21, Bachelors' Walk, Dublin. *Selling Agents.*

HUNT'S PATENT "AUTOMATIC TEMPERATURE REGULATOR."—Hothouses, Vineries, &c., Built and Fitted up with the above, by A. KRAUSS, Horticultural Builder, &c., Bristol.

LAWN MOWERS — LAWN MOWERS.

New and Improved Machines for 1880.

SAMUELSON & CO.'S

NEW

"VILLA" AND "FAVORITE"

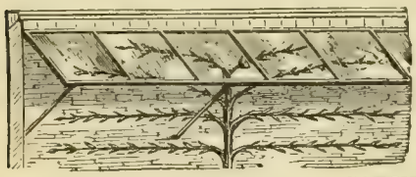
PATTERNS ARE THE BEST.

London Agents: HILL & SMITH, Queen Victoria Street.
T. BRADFORD AND CO., Holborn
(and all respectable Ironmongers in Town or Country).
MANUFACTORY: BANBURY, OXON.

To Gardeners and Others.

FOR SALE, a ZINC TOOL-HOUSE, size 12 feet by 6 feet, with Window; nearly new and in thorough repair. Also fifty 6-feet IRON HURDLES, with Gates; 50 yards continuous IRON FENCING, with Gates; and one Edgington's RICK-CLOTH, 8 by 6 yards, almost new. To be seen at
Bonnington House, Westcombe Park Road, Blackheath, S.E.

A Crop of Fruit in Spite of Frost.



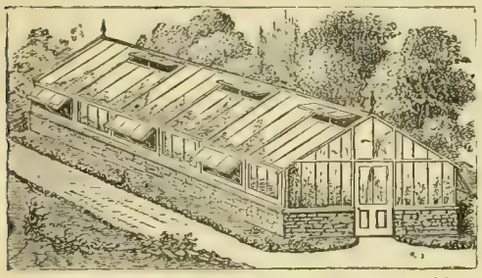
PARHAM'S PATENT GLASS COPING.

More successful than ever last year. Testimonials and Prospectus free. Price, with 21 oz. glass and painted iron framing, 2 feet wide, 2*s.* 6*d.*; 3 feet wide, 3*s.* 9*d.* per foot run. Orders amounting to £3 carriage paid.
WM. PARHAM, Northgate Works, Bath; London Showrooms, 280, Oxford Street. Specimens on view at either address.

W. H. LASCELLES,

HORTICULTURAL BUILDER

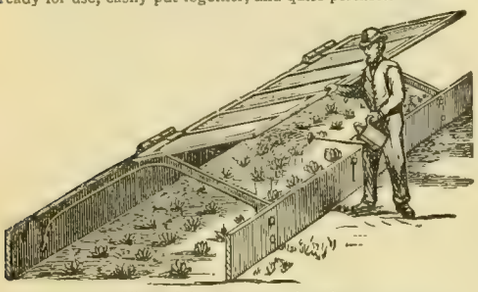
121, BUNHILL ROW, LONDON, E.C.



W. H. LASCELLES will give ESTIMATES, without charge, for all kinds of Horticultural Work, and send Illustrations post-free.
GARDEN BOXES and LIGHTS are kept in Stock, and prices sent on application.

PLANT PROTECTORS

Are now required for Hardening-off Bedding Plants, for Growing tender Spring Salads, for Relieving Crowded Greenhouses, &c. The most complete made, as shown on illustration, with strong wood sides, fixed together by bedding to strong cast-iron girders, which carry the lights in such a manner that they will easily turn quite over, allowing free access. Painted three coats of best paint, glazed with 21 oz. British Sheet Glass, complete, ready for use, easily put together, and quite portable.



View of the 6 feet × 4 feet size.

CASH PRICES, Carriage paid to any Railway Station in England and Wales, also to Edinburgh, Glasgow, Dublin, and Belfast, and including Packing-cases:—

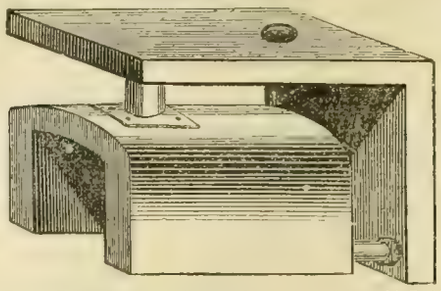
	£ s. d.	Ends per pair extra. s. d.
6 feet long, 3 feet wide	1 17 0	7 0
12 feet long, 3 feet wide	3 8 6	
6 feet long, 4 feet wide	2 9 6	8 6
12 feet long, 4 feet wide	4 8 6	
12 feet long, 5 feet wide	5 15 6	10 6
12 feet long, 6 feet wide	7 6 6	12 0

Several may be placed together, and only one pair of ends required. Descriptive LISTS post-free.
BOULTON AND PAUL, Norwich.

X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for
HOT-WATER PIPES and CONNECTIONS.
4-inch Pipes, 1*s.* 11*d.* per yard. Other sizes equally low.
F. AND J. SILVESTER, Castle Hill Foundry,
Engineering and Boiler Works, Newcastle, Staffordshire.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

Sizes. High.	Wide.	Long.	To heat of 4-in. Pipe. Feet.	Price. £	s.	d.
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1000	16	0	0
24 ,,	24 ,,	48 ,,	1400	20	0	0
28 ,,	28 ,,	60 ,,	1800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work"

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.
J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.
When ordering Boilers please refer to the above advertisement.

JONES & ATTWOOD,

ENGINEERS and IRONFOUNDERS,
STOURBRIDGE.

JONES'S IMPROVED EXPANSION JOINT.

THE BEST HOT-WATER JOINT.

Medal Awarded Horticultural Show, Aston, 1875.

SIMPLE, DURABLE, NEAT, CHEAP.

Specially adapted for CHURCHES, SCHOOLS, MANSIONS, PUBLIC BUILDINGS, &c.

Illustrated CIRCULAR and Price LIST; also Estimates for Heating with the most improved BOILERS, EXPANSION JOINT PIPES, or COILS, on application.

No Greenhouse is Perfect Without One.

TEBBS' UNIVERSAL FUMIGATOR has proved to be the best. Price, 3*s.*, 4*s.* 6*d.*, and extra large size, 7*s.* 6*d.* each (packing extra).
Wholesale and Retail of FLANAGAN AND SON, Seedsmen, 98, Cheapside, London, E.C.; and Wholesale of CORRY AND SOPER, Shad Thames, London, S.E.; and of all Seedsmen, Nurserymen, and Ironmongers.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards 20*s.*; 4 yards wide, 6*d.* per yard, or 50 yards 20*s.*
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1*s.* per yard; ¾-inch mesh, 4 yards wide, 1*s.* 6*d.* per yard.
TIFFANY, 5*s.* and 6*s.* per piece of 20 yards.
LAWN TENNIS NETS from 16*s.* to 25*s.*
EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

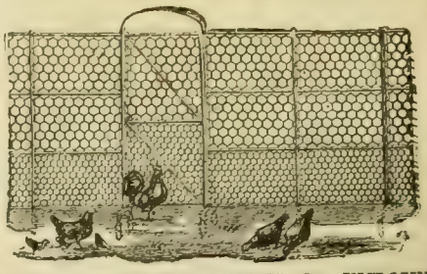
Protect your Fruit Trees, &c.

TANNED GARDEN NETTING, 1 yard wide, 1*d.*, 2 yards wide, 2*d.*, 3 yards wide, 3*d.*, 4 yards wide, 4*d.* per yard.
SCRYM, TIFFANY, PATENT SHADING, &c.: sample-book of above, post-free two stamps.
SECOND-HAND BUNTING, all wool, 6*d.* per square yard.
ARCHANGEL and DUNNAGE MATS, &c.
Illustrated Catalogues of all their manufactures on application.
JOHN EDGINGTON AND CO. (Established 1805), Marquee, Tent, Flag, and Rick Cloth Makers to the Royal Family, 48, Long Lane, West Smithfield, London, E.C.

GARDEN NETTING for Sale, in small or large quantities, for Protecting Fruit and Wall Trees, and Seed and Strawberry Beds from Birds, Blight, Frost, &c., 2 yards wide, 1*d.* per yard; 4 yards wide, 2*d.* per yard, and any quantity of Netting required will be forwarded on receipt of Post-office Order made payable to
W. A. CURTIS, 34, Jury Street, Great Yarmouth, Norfolk.

BOULTON & PAUL,

MANUFACTURERS, NORWICH.



IMPROVED MOVABLE FENCING for INCLOSING POULTRY and PHEASANTS.

Prices, 6 feet high, 5*s.* per yard; Gates, 13*s.* 6*d.* each; Angle Pillars for Corners, 3*s.* each.
Carriage paid on Orders above 40*s.* value.

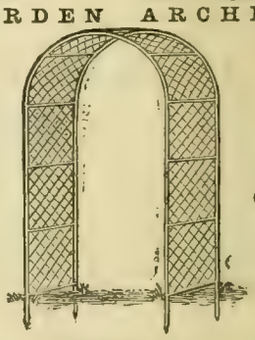
New Illustrated CATALOGUE, free by post, of POULTRY FENCING, POULTRY HOUSES, PHEASANTRIES, AVIARIES, COOPS, DOG HOUSES and YARDS, New KENNEL FENCING, &c.
Practical advice given and Gentlemen waited upon in any part of the Kingdom.

BOULTON & PAUL, NORWICH.

GOLD MEDAL
AWARDED TO
J. J. THOMAS & CO.,
Paris Exhibition, 1878,
For Wire applied to Horticultural Purposes.

GARDEN ARCHES.

Pattern, No. 51.



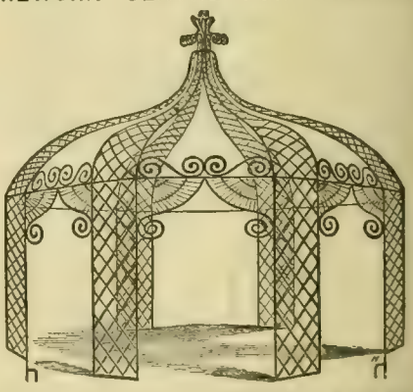
Painted or Galvanised.

Sizes and Prices.

Out of Ground. High. ft. in.	Span. ft. in.	Wide. ft. in.	Painted Green. £ s. d.	Galvanised. £ s. d.
7 0	4 0	1 0	0 10 6	0 12 6
7 6	4 6	1 6	0 17 0	0 19 6
8 0	5 0	2 0	1 6 0	1 11 6

Other sizes at proportionate prices.
Illustrated and Priced Catalogues of Horticultural Wirework Fittings for Wiring Walls, &c., on application.
*** Five per cent. discount allowed for cash with order.
J. J. THOMAS & CO.,
Paddington Iron and Wire Works,
285 and 362, EDGWARE ROAD, LONDON, W.
P.O. Orders to be made payable at 310, Edgware Road, N.

WIREWORK CENTRE FOR ROSERIES.

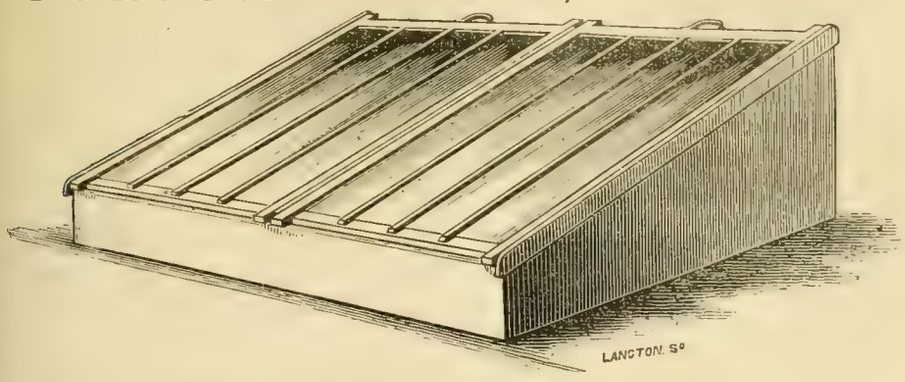


For GARDEN and CONSERVATORY WIREWORK see Illustrated CATALOGUE.

R. HOLLIDAY,
HORTICULTURAL IRON and WIRE WORKS,
"The Pheasantry," Beaufort Street, Chelsea, London, S.W.

EDGINGTON'S GARDEN NETTING, the cheapest and most durable, at 1*d.* per square yard, or in quantities of 250, 500, or 1000 yards carriage free.
EDGINGTON'S MARQUEES and GARDEN TENTS are the prettiest.
EDGINGTON'S MARQUEES for Hire are the most handsome and capacious.
EDGINGTON'S RICK-CLOTHS for seventy-two years have maintained their celebrity as the best.
HAYTHORN'S and WALLER'S NETTINGS.
A quantity of good Second-hand Government TENTS from Abyssinia for Sale, cheap.
Sample of material free on application.
Be particular—FREDK. EDGINGTON AND CO., 52 (only), Old Kent Road, London, S.E.

BOULTON & PAUL, NORWICH.



MELON and CUCUMBER FRAMES always in Stock.

1-light FRAME, 6 feet by 4 feet, .. £2 0 0 | 3-light FRAME 12 feet by 6 feet, .. £4 17 6
2-light ,, 8 feet by 6 feet, .. 3 7 6 | 4-light ,, 16 feet by 6 feet. .. 6 7 6

Made of the best seasoned red-wood deal. Glazed with English 21-oz. Sheet Glass. All painted three times in best oil colour. Iron Handle to each Light, and an Iron Cross Bar.

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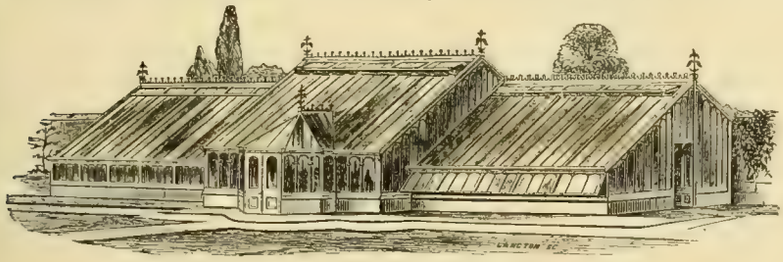

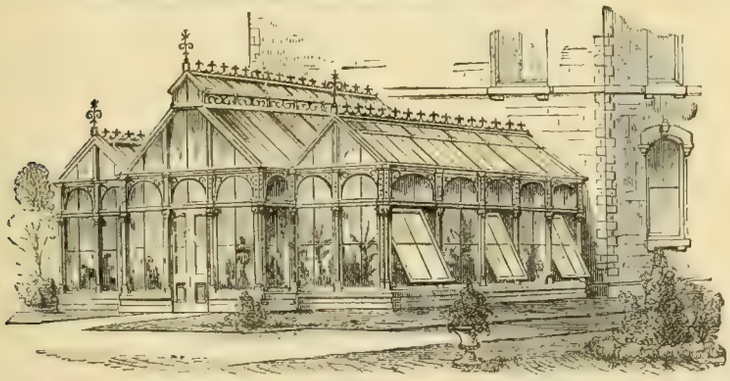

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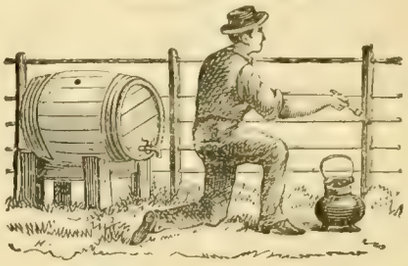

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FOREMAN, or JOURNEYMAN (First).—Age 22; has had good experience, both indoors and out. Good references.—C. G. W., 12, Eslington Street, Aigburth, Liverpool.

FOREMAN, or JOURNEYMAN (First), in the Houses, in a good establishment.—Age 23; can be highly recommended.—F. R., 35, Costa Street, Rye Lane, Peckham, S.E.

JOURNEYMAN, in a Gentleman's establishment, where an opportunity of improvement would be gained both in the Outdoor and Indoor Departments.—Age 22; total abstainer. Good character.—C. SUTTON, Mr. Maddison, Spelthorne, Ashford Common, Middlesex.

JOURNEYMAN, in a good establishment.—Age 21; four years' experience. Good Plantsman. Good character.—H. E. BENNETT, Enville, Stourbridge.

JOURNEYMAN, in the Houses, in a good establishment.—Age 22; good references.—H. W., Mr. G. Miller, Savory Building, East Reash, Taunton.

JOURNEYMAN, in the Houses, in a good establishment.—Age 21; two years' good character.—A. L., 11, Lot's Road, Chelsea, S. W.

JOURNEYMAN, under a Foreman in a good establishment.—Age 23; eight years' experience—five years inside. First-class references.—JAMES HODGSON, Hough Lane, Leyland, Preston, Lancashire.

TO NURSERYMEN and AMATEUR ROSE GROWERS.—A practical young man seeks a situation to Grow Roses Indoors or Out for Exhibition and other purposes. Good Budder and Grafter. Seven years' experience in one of the leading Nurseries.—T. T., 6, Robin Hood Terrace, Sutton, Surrey.

TO NURSERYMEN.—A young Man desires a situation in a Nursery, near London, as BUDDER and GRAFTER—Training and General Pruning. Five years' experience. Good character.—W. ADCOCK, Church Lane, Eaton, Norwich.

IMPROVER, in a Gentleman's establishment. Age 19; respectable. Good character.—JOHN NOWN, Ashby St. Ledgers, Rugby.

IMPROVERS.—E. White has two or three vacancies for young men as Improvers in his large establishment for Plant Growing and the Cut Flower Trade. Also two vacancies for APPRENTICES.—Mr. E. WHITE, Bournemouth Nurseries, Bournemouth.

MANAGER, SALESMAN, &c.—John French, Manager for the last three years for E. Green and Co., Floral Decorators, &c., Belgravia, and for over seven years previous Salesman, &c, for B. S. Williams, Holloway, is desirous of meeting with a similar appointment in either capacity.—37, Gattliff Buildings, Commercial Road, Pimlico, S.W.

MANAGING SALESMAN, in a good Florist's Business; Town preferred. Has a thorough knowledge of Bouquet, Dress Flower, Wreath Making, &c. No objection to Marketing, being well known in Covent Garden.—G. CORNISH, W. Cale, 4, Tavistock Row, Covent Garden, W.C.

COWMAN.—Age 28, married; understands Poultry; willing to Assist in the Garden. Three years' good character. Please state wages.—G. GREENWOOD, Thame Street, Weybridge.

KINAHAN'S LL WHISKY.

KINAHAN'S LL WHISKY.
Pure, Mild and Mellow, Delicious and Most Wholesome. Universally recommended by the Profession. The Cream of Old Irish Whiskies.

KINAHAN'S LL WHISKY.
Dr. Hassall says—"Soft and Mellow, Pure, well Matured, and of very excellent quality."

KINAHAN'S LL WHISKY.
Gold Medal, Paris Exhibition, 1878; Dublin Exhibition, 1865, the Gold Medal.—20, Great Titchfield Street, London, W.

EPPS'S COCOA.

GRATEFUL AND COMFORTING.

"By a thorough knowledge of the natural laws which govern the operation of digestion and nutrition, and by a careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast tables with a delicately-flavoured beverage which may save us many heavy doctor's bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly-nourished frame."—*Civil Service Gazette.*

JAMES EPPS AND CO., HOMŒOPATHIC CHEMISTS.

HOLLOWAY'S OINTMENT AND PILLS.—When the spring succeeds the winter, countless causes are at work to lower the tone of the nervous system, which will be followed by ill-health unless proper means be employed to avert that evil. Holloway's far-famed preparations supply a faultless remedy for both external and internal complaints connected with change of seasons. All affections of the skin, roughness, blotches, pimples, superficial and deeper seated inflammations, erysipelas, rheumatic pains, and gouty pangs, alike succumb to the exalted virtues of Holloway's Ointment and Pills. The maladies most prevalent in spring, to wit, chest complaints and stomachic ailments, daily bear witness to the potential influence of this treatment, which saves suffering and spares disaster.

The adornment of "ladyes faire,"—A beautiful head of hair.
The manliness of "brave man,"—Whiskers and Moustaches.

No more Disappointments Beware of Worthless Preparations.
Of what value is their guarantee?
As it should be. Quality and Quantity. Compare and see.

The COMME IL FAUT CAPILLARY GERMINATOR
(Warde's Real Hair Producer).
Remember the title, and use no other.
The fashionable journals write in its favour.

The "Court Journal" says:—"The *Comme il faut* Capillary Germinator must evidently be a severe thorn in the sides of the distributors of would-be hair 'restorers' and 'germinators,' and very properly so, for it has proved itself to be the only article that has given thorough satisfaction to numbers who have sought the use of many advertised preparations. After severe trials, the *Comme il faut* Capillary Germinator (the most honest of appellations) has satisfied its patrons that it is as speedy in its operation as it has been satisfactory in its ultimate results, in regard to the production of a capillaceous growth (a beautiful head of hair, whiskers, moustaches, and eyebrows). A sure preventive of baldness."

The "Court Circular" says that it is "The most genuine and most reliable of the Capillary Germinators or Hair Restorers before the public."

AS IT WAS, AS IT IS,

BEFORE USE. AFTER USE.

This desirable effect, a BEAUTIFUL HEAD of HAIR, WHISKERS, MOUSTACHES, and EYEBROWS, Invariably brought about by the use of

The COMME IL FAUT CAPILLARY GERMINATOR
(Warde's Real Hair Producer).

Sent free, to any address, upon receipt of remittance, value 2s. 6d.; three bottles, 6s. Directions for use with each bottle. Sole Proprietors, C. WARDE & CO., 16, Great Marlborough St., London, W.

The COMME IL FAUT CAPILLARY GERMINATOR
(Warde's Real Hair Producer)

is not a new discovery. The secret of its composition has been acquired by purchase from a retired physician of eminence, who for many years used it so successfully in his practice as to cause no small amount of astonishment from the witnesses of the remarkable metamorphosis invariably brought about by its use. *As the result of its alimentary properties, it stimulates apparently decayed hair-bulbs, is a renovator of the natural colour of the hair, prevents baldness, keeps the hair from falling out or turning grey; is a cleanser of the scalp, is a radical cure for scurf and dandriff, is perfectly harmless, and is the most refreshing and invigorating of hair washes (for which purpose one tea-spoonful to half-a-pint of water will be found sufficient). It acts as an emollient, thereby removing all harshness from the hair, to which it gives a luxuriant growth and beautifully soft texture. It contains no oleaginous matter whatever.*

Persons visiting warm climates should take a supply with them, as it counteracts the injurious effects of the sun upon the capillature.

THE COMME IL FAUT CAPILLARY GERMINATOR (WARDE'S REAL HAIR PRODUCER) can be procured for you by any Chemist from the Wholesale Houses, viz., SANGER'S, NEWBERY'S, EDWARDS'S, BARCLAY'S, HOVENDEN'S, SUTTON'S, MAW'S, &c.

The Words COMME IL FAUT and WARDE'S in connection with CAPILLARY RESTORERS, &c., are protected to the Proprietors by Registration according to law. None genuine without our signature, thus

Warde & Co.

To Imitate which is Forgery.

"OLD DR. JACOB TOWNSEND'S" SARSAPARILLA.
THE BLOOD PURIFIER.

This extraordinary Medicine has a singular influence upon the blood, which it enriches and purifies. It removes all pimples and blotches, purifies the system, and acts like a charm. As a sustaining and purifying tonic it is invaluable, and highly recommended in long-standing cases of indigestion, nervousness, coughs, colds, scrofula, gout, dropsy, and wasting of flesh. Sold by all druggists. Caution.—Get the red and blue wrapper, with the Doctor's head in the centre. No other genuine. In bottles, 2s. 6d., 4s. 6d., and 11s.—130, Fleet Street, E.C.

14,917 Cures of Asthma, Consumption, Bronchitis, and all Disorders of the Throat and Lungs, Rheumatic, Hysterical, Nervous and Heart Complaints, by

DR. LOCOCK'S PULMONIC WAFERS, have been published in the last twelve months. The benefit to society which has resulted from the discovery of this medicine is, however, far greater than these figures show, as many thousands of cures are effected and not made public. Dr. Locock's Wafers taste pleasantly. Prices from 1s. 1½d. to 11s. Sold by all Druggists.

DINNEFORD'S MAGNESIA.

The Medical Profession for over Forty Years have approved of this pure solution as the Best Remedy for

ACIDITY OF THE STOMACH, HEARTBURN, HEADACHE, GOUT, AND INDIGESTION,

and as the safest Aperient for Delicate Constitutions, Ladies Children, and Infants.

DINNEFORD'S MAGNESIA.

SEND FOR A PRICE LIST OF

JOHN BLAKE'S
PATENT SELF-ACTING HYDRAULIC RAMS,

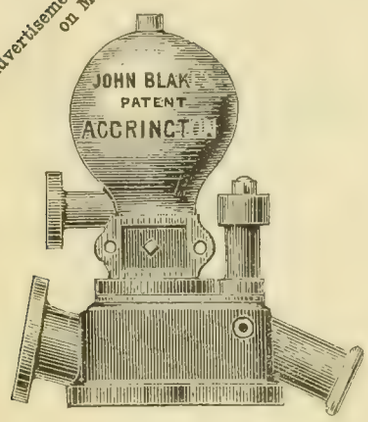
For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions, Fountains, Farms.

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

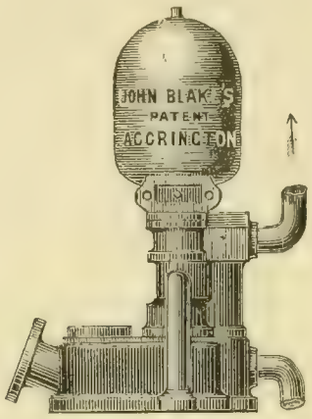
No Oiling or Packing Required.

Made in sizes to raise from 300 to 500,000 Gallons per day.

This Advertisement will appear again on May 8.

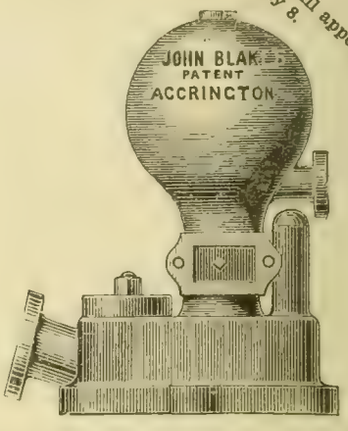


This Ram for small working falls.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 feet.

This Advertisement will appear again on May 8.



This Ram, for deep working falls, will force up one-third of the water passing through it.

Parties requiring a Water Supply should not too readily conclude that the quantity and fall of water, if any is available, is too small to work a Ram before consulting J. B.

TESTIMONIALS.

From the Right Honourable the Earl of Granard, *Castle Forbes, March* 1, 1880. "The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of a tower 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

From Col. Tremayne, *Perran-a-Worthel, Cornwall, March* 7, 1880.—The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

From W. Scarth, Esq., *Agent to* His Grace the Duke of Cleveland.—"Raby Castle, Darlington, July 16, 1878.—The Hydraulic Ram you supplied to his Grace the Duke of Cleveland in 1875 is a complete success. It worked for more than two years without once stopping, and throws more water than promised."

From John Taylor, Esq., *The Rocks, Bath, August* 22, 1878.—"The Self-acting Hydraulic Ram you fixed here in March of last year continues to work well. It has only the same quantity of water and fall to work it as the water-wheel and pump which I used previously to force a height of 204 feet, and yet the Ram sends up more than double the quantity of water that the wheel did to the same height."

From Major Starkie, *Lovely Hall, Blackburn, May* 13, 1878.—"Sir, I have great pleasure in testifying to the good qualities possessed by the Ram you erected here last year. It has done its work well, and not failed as the other Ram did, which was of a different construction, and supplied by a different firm. I consider that there are great difficulties to contend with here, but your practical mechanical knowledge, both as to the construction of the Ram and its situation here, overcame most of the difficulties that we had to contend against."

From John Pennington, Esq., *Emmott Hall, near Colne, December* 21, 1868.—"Sir.—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force-pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

This view represents one Ram worked by water from a spring, and forcing it up to a Farm, Cattle Troughs, Kitchen Garden, and Mansion, all at different elevations, the highest being 444 feet, and to a distance of 2008 yards.

From the Right Hon. T. Sotheron-Estcourt, *Estcourt Park, Gloucestershire, September* 6, 1875.—"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful." (The delivery pipe in the above case is 4200 feet long, with 120 feet rise.)

Deanewater, Wilmslow, November 22, 1873.—"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house about 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required—namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—Yours, &c., L. Hanmer."

From Mr. Thomas Mason, *Alkincoates Hall, Colne, September* 30, 1871.—"Sir,—Your Self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours, to a height of 194 feet.

TESTIMONIALS.

From Capt. Gandy, *Castle Bank, Appleby, February* 11, 1880.—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 73 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

From John Walker, Esq., *Mount St. John, Thirsk, February* 13, 1880.—"In reply to your enquiry I am glad to inform you that the Hydraulic Ram you fixed here in May last has fully answered my expectations, and your promises as to the quantity of water it would force to a height of 185 feet. I consider it a very good machine, and superior to one I had in use previously."

From Captain Townshend, *Wineham, February* 10, 1877.—"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe, 900 yards long, at the rate of 80,000 gallons per day, although you only promised 50,000."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 330.—Vol. XIII. {New Series.} SATURDAY, APRIL 24, 1880. {Registered at the General Post-office as a Newspaper.} Price 5d. Post Free, 5½d.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 *to the end of* 1878," *to secure them at once.*

The following is a List of those already published:—

1879.—October	11.	1880.—January	10.
,,	25.	,,	24.
November	8.	February	7.
,,	15.	,,	21.
,,	29.	March	20, 27.
December	13.	April	3.

Price 5d. each, post free 5½d.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral at 11 A.M., Scientific at 1 o'Clock—Ordinary Meeting for Election of Fellows at 3 P.M., and Band, on TUESDAY NEXT, April 27. Admission, 1s.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.

HORTICULTURAL MEETING in the Town Hall, Manchester, on TUESDAY and WEDNESDAY, the 27th and 28th inst.

The GRAND NATIONAL HORTICULTURAL EXHIBITION of 1880 will open on May 14. ONE THOUSAND POUNDS in PRIZES. For Schedules, &c., apply to the undersigned,

BRUCE FINDLAY, Curator and Secretary.

Royal Botanic Gardens, Manchester.

THE FARNINGHAM ROSE and HORTICULTURAL SOCIETY.

The ANNUAL EXHIBITION of the above Society will be held at Farningham, on WEDNESDAY, June 30. Schedules are now ready, and can be obtained on application to

FRANK BURNSIDE, Esq., Hon. Sec.

Farningham, Kent.

THE BEVERLEY and EAST RIDING FLORAL, HORTICULTURAL, and POULTRY SOCIETY.

The GREAT ANNUAL EXHIBITION will be held on JULY 7, of PLANTS, FLOWERS, FRUITS, POULTRY, PIGEONS, CAGE BIRDS, and RABBITS (under cover), in the large Assembly Rooms and the Norwood House Grounds adjoining, when £200, together with CUPS, in Prizes, will be given. Schedules on application after May 1.

Walkergate, Beverley. J. S. VICKERS, Hon. Sec.

PUTNEY and DISTRICT CHRYSANTHEMUM SOCIETY.

The THIRD ANNUAL EXHIBITION of the above Society will be held at the Assembly Rooms, High Street, Putney, S.W., on TUESDAY, November 16, when, in addition to Money Prizes, a Silver Cup of the value of Five Guineas will be awarded. Schedule can be had on application to

Richmond Nursery, Putney, S.W. J. MOORE, Sec.

THE GENERAL HORTICULTURAL CO. (JOHN WILLS), Limited.

The CENTRAL DEPOT of the Company, Warwick House, Regent Street, S.W., will be open for Private View to Shareholders and their Friends on SATURDAY NEXT, May 1. Special Tickets, giving admission at 3 P.M., can be obtained of the Directors, or of the Secretary at the above address.

The Managing Director, Mr. J. WILLS, desires TENDERS for the SUPPLY of CHOICE FRUITS, CUT FLOWERS, &c., from Shareholders and others having the same to dispose of.

RICHARD DEAN, Secretary.

ROYAL AQUARIUM, WESTMINSTER.—The THIRTY-FIFTH ANNUAL EXHIBITION (open to all England) of the BOROUGH of HACKNEY CHRYSANTHEMUM SOCIETY will be held, as above, on WEDNESDAY and THURSDAY, November 17 and 18, when valuable Silver Cups, &c., will be awarded as usual. The Schedules for this Exhibition also includes a liberal scale of Prizes to be awarded to FRUIT and VEGETABLES, and may be had on application to

WILLIAM HOLMES, Hon. Sec.,

Frampton Park Nursery, Hackney, N.E.

New Lilies.

TWELVE LILIUM SPECIES, good bulbs, 12s. This is a fine, new, and as yet unnamed species from the Rocky Mountains. The flowers are large, brilliant red, with yellow stamens; a grand addition to its class. Only a few have been imported by J. H. L. Carriage free on receipt of Post-office Order. LIST of other choice Lilies free.

J. H. LEY, Royal Nursery, Croydon.

Now is the Best Time to Transplant Hollies.

HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d. to 31s. 6d. each. Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Pyrethrums, Double-flowered.

ROBERT PARKER begs to announce that he can supply the above-named, by the dozen, hundred, or thousand, in nearly 100 named varieties, from 9s. per dozen upwards. Descriptive LISTS, with New General CATALOGUE of Hardy Greenhouse and Stove Plants, forwarded to applicants.

Exotic Nursery, Tooting, Surrey, S.W.

POT ROSES.—The Largest and Finest Stock in the country of hardy well-established Plants for present Planting or Greenhouse Culture.

Priced LISTS free by post.

WM. PAUL AND SON, Paul's Nurseries, Waltham Cross, Herts.

Floral Commission Agency.

NOTICE OF REMOVAL.—W. CALE begs to state he has taken larger and more convenient Premises. All Letters and Consignments to be addressed

4, Tavistock Row, Covent Garden, W.C.

TO NURSERYMEN, FLORISTS, and others Cultivating MARKET PRODUCE.—The undermentioned are prepared to undertake the SALE of the same on reasonable terms.

WISE AND RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

WANTED, PLANTS for THICKENING COVERTS—RHODODENDRONS, GORSE from Commons, Rough HEATH, or any fast-growing Low and Hardy Shrubs. Apply, by letter, stating lowest price and quantity, to GAMEKEEPER, Redleaf, Penshurst, Kent.

CAMELLIA, Blush White, 6 feet by 4 feet, from pot, WANTED to EXCHANGE for CYATHEA DEALBATA, or DICKSONIA ANTARCTICA. State particulars to,

A., Messrs. Hogg & Robertson, 22, Mary Street, Dublin.

WANTED, to EXCHANGE, good plants of New CROTONS, DRACÆNAS, COLEUS, FUCHSIAS, ZONAL PELARGONIUMS, and a few fine SPECIMEN PLANTS, for large Plants of AZALEAS, CAMELLIAS, EUCHARIS, and SEEDLING FERNS in variety. Particulars on application to

Mr. F. WEBBER, Cliftonville Hotel, Brighton.

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WANTED, Crimson and Maréchal Niel ROSE BUDS, and other CHOICE FLOWERS.

TURNER BROTHERS, Florists, 2, Parker Street, Liverpool.

WANTED, Sound ESCHALLOTS.—Send price to

GEORGE GAINES, Covent Garden Market, London, W.C.

THE GENERAL HORTICULTURAL CO. (JOHN WILLS), Limited.

WANTED, for the Opening Ceremonial on May 1, several handsome well-ripened PINE APPLES, or Plants growing in pots. State quantity and prices to the Managing Director at Warwick House, Regent Street, S.W.

RICHARD DEAN, Secretary.

WANTED, NUT SUCKERS for Flower Sticks, at about 1s. per bundle of 500.

45, Well Street, W.

WANTED, to Purchase, SEAKALE ROOTS. Apply, stating age and price, to

E. WILSON SERPELL (late Pontey), Plymouth.

CALCEOLARIA

The best varieties only. Price 2s. 6d. and 5s. per packet, post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

Phloxes and Violas.

H. CANNELL begs to say that he has now a very fine stock of the above, consisting of all the best in cultivation. Price per dozen, 100, or 1000 on application.

The Home for Flowers, Swanley, Kent.

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JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other good bedding and Exhibition varieties, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, for cash with order.

Queen's Road Nursery, Markhouse Common, Walthamstow.

Gardenias.

MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.

Royal Nurseries, Ascot, Berks.

CYCLAMENS.—Pot now for Winter Flowering.—Strong, healthy Seedlings, in distinct and varied colours, 1s. 6d. per dozen, 10s. per 100. Choice mixed ANEMONE, 1s. per packet—all post free.

G. CORNHILL, Byfleet, Weybridge Station, Surrey.

Seeds—Seeds—Seeds.

WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

ZINNIA.

The best varieties only. Price 6d. and 1s. per packet, post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

LOBELIAS from Cuttings.—Splendid plants of Brighton and pumila magnifica, 3s. per 100, 500 for 12s. 6d., 1000 for 21s. Ebor and St. Martin's Blue, 4s. per 100. DARK WALLFLOWERS, 2s. 6d. per 100, 500 for 10s.

J. J. MARRIOTT, Littleton Street, Walsall.

ANTHURIUM ANDRÉANUM (Linden); First-class Certificate.—The grand novelty, described in the *Gardeners' Chronicle*, 1880, on p. 400, and illustrated on p. 497, will be SENT OUT the 1st of OCTOBER next, at Twenty Guineas each. The subscription list is now open at this establishment. Descriptive CATALOGUES on application.

J. LINDEN, Exotic Nurseries, Ghent, Belgium.

CUCUMBER PLANTS.—Telegraph (true). Strong, healthy plants now ready. Apply to

A. WATKINS, Hockerill Nursery, Bishops Stortford, Herts.

GLOBE ARTICHOKES.—Good healthy plants, 6s. per dozen, 45s. per 100; wholesale price on application.

HOOPER AND CO., Covent Garden, London, W.C.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.

CATALOGUES free. The Trade supplied.

Vines—Vines—Vines.

F. AND A. SMITH can supply strong Fruiting and Planting Canes in all best sorts, true to name. Prices (which are low) on application.

The Nurseries, West Dulwich, S.E.

To the Trade.

HOME-GROWN MANGEL WURZEL and TURNIP SEEDS.

H. AND F. SHARPE will be pleased to give special quotations for their fine selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS.

Seed Growing Establishment, Wisbech.

CABBAGE PLANTS.—200,000 Red Pickling, at 5s. per 1000. Good strong healthy plants. Cash or reference from unknown correspondents.—Apply to

W. VIRGO, Wonersh Nursery, near Guildford, Surrey.

For Sale, Drumhead or Cattle Cabbage.

S. BIDE has a limited stock of good DRUMHEAD CABBAGE PLANTS, at 5s. per 1000; RED or PICKLING CABBAGE, 7s. per 1000. Free on rail, and package free, but cash must accompany all orders to

S. BIDE, Alma Nursery, Farnham, Surrey.

Lettuce Plants.

LETTUCE PLANTS.—Strong autumn-sown Bath Cos, at very moderate price. Apply to

Mr. T. DAVIES, Tangley, near Guildford.

Special Trade Offer.

GIANT ASPARAGUS, 1-yr., 1s. per 100 5s. per 1000; 2-yr., 2s. per 100, 12s. 6d. per 1000. For cash with orders only.

R. LOCKE, Red Hill, Surrey.

SALES BY AUCTION.

Auction Mart, Tokenhouse Yard, London, E.C.
MONDAY NEXT.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, on MONDAY NEXT, at half-past 11 o'Clock precisely, 500 lots of ESTABLISHED ORCHIDS, mostly from private collections—for Sale without reserve—amongst which will be found many fine and rare species; an importation of DENDROBIUMS in variety from India; also of the beautiful ODONTOGLOSSUM ALEXANDRÆ, and a CASE of ORCHIDS from Jamaica, including very fine masses of Broughtonia sanguinea, Heranthis funalis, Epidendrum fragrans, Bletia Shepherdii, and others

View morning of Sale. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Southend.
In consequence of the death of the Proprietor.
The BEECH NURSERIES, about a mile and a quarter from the Southend Railway Station.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, London, E.C., on MONDAY, April 26, at 2 o'Clock precisely, the beneficial interest in the LEASE of the ABOVE GARDENS, comprising 8A. 2R. of productive land, partly cropped with luxuriant Fruit Trees in fine bearing condition; 2 large newly-erected Greenhouses, with the whole of the established fruiting Vines, Peaches, &c.; 3 Brick-built Cottages, Stabling, Barn, and other Outbuildings. Lease 21 years unexpired. Ground rent £30 a-year. The Plants in Pots, Crops, and Utensils in Trade will be included in the purchase.

May be viewed. Particulars had on the Premises, of Messrs. MONTAGUE SCOTT AND BAKER, Solicitors, 10, Gray's Inn Square, W.C.; and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Unreserved Sale.
By order of the Executrix.—Willesden, N.W.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Baker's Farm, Harlesden Green, Willesden, on TUESDAY, April 27, at 12 o'Clock precisely, the whole of the GREENHOUSE and BEDDING PLANTS, including 600 Adiantum cuneatum, 500 Tea and other Roses, 250 Azaleas, 120 specimen ditto for cut bloom, 2000 Geraniums, 4000 Stocks, 1000 Pelargoniums, and quantities of other stock, together with the ERECTIONS of seven GREENHOUSES, containing about 9000 feet super. of GLASS and WOODWORK, several PITS and BOXES, a large quantity of 3 and 4-inch Hot-water PIPING, BRICKWORK, and UTENSILS in Trade.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Orchids.

MESSRS. PROTHEROE AND MORRIS will SELL at the Mart, on MONDAY, May 3, a COLLECTION of ESTABLISHED ORCHIDS in the best possible condition, many of them showing flower; also a variety of STOVE and GREENHOUSE PLANTS.

View morning of Sale. Catalogues at the Mart, and 98, Gracechurch Street, E.C.

From Borneo.
Importation just received direct.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, April 29, at half-past 12 o'Clock precisely, without the slightest reserve, a grand importation of CYPRIPEDIUM STONEI, LOWI, HOOKERI, DAYANUM; BOLBOPHYLLUM BECCARI, DENDROBIUM MACROPHYLLUM, ANÆCTOCHILUS LOWI; ESTABLISHED ORCHIDS, among them many choice and rare species, including Masdevallia tovarensis, Chysis aurea, Masdevallia bella, Dendrobium superbiens, Masdevallia psittacina, Dendrobium Smilliæ, Lælia elegans, Oncidium Marshallianum, Cypripedium Sedeni, Epidendrum raniferum, Oncidium sessile, Aerides Warneri, Oncidium Barkeri, Odontoglossum cordatum; also a few lots of BULBS of LILIUM NEILGHERRENSE L. KRAMERI, TIGRIDIA GRANDIFLORA, &c.

On view the morning of Sale, and Catalogues had.

Vanda cœrulea, Burmah Variety.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 5, at half-past 12 o'clock precisely, a splendid Importation of VANDA CŒRULEA, collected by Mr. W. B. Freeman. The variety offered has immense flower-spikes and very broad leaves, and is of sturdy growth. Collector says flowers are much larger and darker than the Kaisa Hill variety. The plants are in a healthy state of growth and in altogether splendid condition, and among the importations will be found extra large masses. See flower-spikes on plants.

May be viewed the morning of Sale, and Catalogues had.

Highly Important Sale.

MR. J. C. STEVENS has received instructions to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY and WEDNESDAY, May 11 and 12, at half past 12 o'Clock precisely each day, the entire COLLECTION of ESTABLISHED ORCHIDS, the property of a Gentleman. Amongst other grand things will be found Lælia Warneri, Saccolabium Turneri (spikes nearly 2 feet long), Cattleya Skinneri alba, Cattleya Morganii, Cattleya Wagneri, Læliæ Williamsii, and many others.

Further particulars in next Advertisement.

To Florists, Nurserymen &c.

MR. JOHN EMBLETON, Suffolk House, New Hampton, is favoured with instructions to SELL by private treaty about 60 Acres of FREEHOLD LAND, well adapted for the above requirements.—Apply as above.

FOR IMMEDIATE DISPOSAL, in consequence of the death of Proprietor, an old-established NURSERY and SEED BUSINESS in Warwickshire, in full working order, with every facility for doing a large trade.—For particulars address M. W., 3, Dungannon Terrace, North End Road, Walham Green, London, W.

St. Helens, near Hastings.

TO LET, with immediate possession, good RESIDENCE, Coach-house, Stables, Greenhouses, and Forcing-houses, and about 3 acres of Nursery. Good neighbourhood for Sale of Shrubs.—Apply by letter to JAS. C. VIDLER, SON AND CLEMENTS, Estate Agents, &c., 21, Havelock Road, Hastings, and (postal address) Rye, Sussex.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

PANSIES. The best varieties only. Price 6d., 1s., and 2s. 6d. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

HYBRID RHODODENDRONS, all colours in mixture, fine plants 1½ to 3½ feet high, £10 per 1000.—W. JACKSON, Blakedown, near Kidderminster.

Potato Disease.

THE FAMOUS MAGNUM BONUM, acknowledged by everybody to be the best Disease-Resisting Variety Grown. A few hundredweight to dispose of at 8s. per hundredweight, sack included, free on rail at this station on receipt of Post-office Order.
H. T. BATH, 80, High Street, Lymington.

GERANIUMS, 500 for 40s., being well-rooted cuttings of Flower of Spring, Mrs. J. C. Mappin, six of Dr. Denny's varieties, Tricolors, Bronzes, &c. Half for 21s.
J. J. MARRIOTT, Littleton Street, Walsall.

Orchids.

THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.
Lion Walk, Colchester.

F. AND A. SMITH'S BALSAMS.—Seed of the above can be had from most Seedsmen throughout the world, in 1s. and 2s. packets mixed, and in 2s. 6d. collections of nine colours. Also Cineraria, Primula, and Calceolaria in 1s., 2s. 6d., and 5s. packets, or direct from
F. AND A. SMITH, West Dulwich, S.E.

PRIMULA NIVALIS TURKESTANICA, by far the handsomest Primrose of Central Asia. This will be hailed with delight as a long-desired addition to our hardy alpine plants. Flowers an inch in diameter, finely shaped, and of a bright violet colour. 1s. 7d. per packet, with directions. Cash with order.—W. J. MARSH, Woodbridge, Suffolk.

Rhododendron Ponticum.

J. J. MARRIOTT is prepared to supply the above in 3-yr. and 4-yr. seedlings; and do. 1-yr. and 2-yr. transplanted. Samples and prices on application.
Littleton Street, Walsall.

G. FISCHER, Rose Nursery, 30, High Street, Clapham, London, S.W., begs to offer BEDDING PANSIES, Cliveden Purple and Blue Bell (true), at 7s. 6d. per 100.

CHRYSANTHEMUM, Fair Maid of Guernsey, best late white, strong plants in 60-pots, at 12s. per 100; also other good varieties.

To the Trade.

HOLLIES, Green, transplanted, 6 to 12 inches, 8s. per 100, 70s. per 1000.
THOMAS PERKINS AND SONS, 34, Drapery, Northampton.

Green Barrel Turnip.

THOMAS PERKINS AND SONS, 34, Drapery, Northampton, offer 150 bushels of the above, their own growth. Price on application.

To the Trade.

PEAS.—A few bushels of Little Gem, Dr. Maclean, Prince of Wales, Laxton's Supreme, Market Favourite, very fine sample.
THOS. MILNER AND SON, 102, Goodwin Street, Bradford.

Notice.

GEO. SMITH is now sending out his three splendid Exhibition FUCHSIAS, viz., Eclipse, Grand Duchess and Orlando. For description see Circular, that will be forwarded on application. The set 21s.; the usual discount to the Trade. Post-office Orders to accompany all orders from unknown correspondents.
Tollington Nursery, Hornsey Road, London, N.

DAHLIAS, 400 vars.—Catalogue and Price on application to
KELWAY AND SON, Langport, Somerset.

VERBENAS and CALCEOLARIAS.—Strong, well-rooted Cuttings of White Verbenas, Boule de Neige, Eclipse Scarlet, and Purple King, the best purple, 6s. per 100, free for cash, safely packed. Lobelia Bluestone, intense blue.—WILLIAM FIELD, Tarvin Road Nurseries, Chester.

NICOTIANA LONGIFLORA.—A delicicusly fragrant plant with pure white flowers; one will scent a whole house; easily cultivated, almost perpetual bloomer. Healthy plants, 7d. each, carefully packed. Packet of seeds, with cultural directions, price 7d. Stamps with order.
W. J. MARSH, Woodbridge, Suffolk.

Pelargoniums in Flower.

F. AND A. SMITH offer the above in extra well-grown plants, finely flowered, and of the best sorts. Also splendid SPIRÆAS and a few CYTISUS. Prices on application.
The Nurseries, West Dulwich, S.E.

VARIEGATED GERANIUMS.—Flower of Spring and Bijou Geraniums, good strong Autumn-struck Plants, 12s. per 100, for cash, to,
S. BIDE, Alma Nursery, Farnham, Surrey.

Special Offer.
To the TRADE or LARGE BUYERS.

W. BALL AND CO., having a large stock of the undermentioned, beg to offer them at the following low prices:—
SWEDE, Champion Purple-Top, fine stock, 26s. per bushel.
TURNIP, Green Barrel, fine stock, 20s. per bushel.
MANGEL WURZEL, Champion Yellow Globe, 55s. per cwt.
" Mammoth Long Red, 50s. per cwt.
" Golden Tankard, 60s. per cwt.
BEANS, Scarlet Runner, white seeded, 25s. per bushel. This variety is very productive.
Bedford Road Nursery, Northampton.

Reduced Special Offer.

GEE'S Superior Bedfordshire-grown CABBAGE PLANTS, true PRICKLY COMFREY, and other PLANTS, for cash with orders.

CABBAGE PLANTS.—A limited quantity still to offer, as follows:—Early Enfield (very small plants now left), 5s. per 1000; Drumhead, ditto, 4s. ditto; Thousandheads, very fine, 4s. ditto; Red Pickling, fine, 7s. 6d. ditto—from GEE's noted and far-famed select stocks.

RHUBARB, splendid healthy young stuff for planting. Early Scarlet and Prince Albert, 2s. and 3s. per dozen, 10s. and 20s. per 100, according to size.

F. G. would advise his friends to give early orders to ensure a supply, as his stock of autumn-sown Cabbage is getting very short.

Special attention is invited to the following extraordinary productive and nutritious
FORAGE PLANT.

The True Caucasian PRICKLY COMFREY, or SYMPHYTUM ASPERRIMUM, the most productive and permanent forage plant known; may be cut five to six times a year. Makes three times more feed than any kind of Grass, Clover, Lucerne, or Tares. As much as 120 tons per acre have been gathered in one season. May be planted at any time, and it succeeds well on all soils. Good plants, well crowned, sure to give satisfaction, 3s. per 100, 25s. per 1000.

Cheap Flowering Roots or Plants supplied in any Quantity.

Splendid Double DAISIES, choice dark scarlet, 2s. 6d. per 100, 15s. per 1000.

New FLOWERING PYRETHRUMS, very choice mixed colours, principally double, 2s. 6d. per dozen, 15s. per 100.

WALLFLOWERS, blood-red, fine, 1s. per dozen, 5s. per 100, 40s. per 1000.

CARNATIONS and PICOTEES (fine strain, seedlings), mixed sorts, 2s. per dozen, 10s. per 100.

Good SAGE and THYME ROOTS, 2s. per dozen, 10s. per 100.

Peck Bags charged 9d.; bushel, 6d.; 1½ cwt. bags, 8d. (extra to above prices). Packages for plants 6d. per 100 extra. Other packages lowest prices.

Superior Bedfordshire-grown FARM and GARDEN SEEDS, PLANTS, ROOTS, &c.

CATALOGUES and lowest prices on application to
FREDK. GEE, Seed and Plant Grower, &c., Biggleswade, Beds.

TWELVE Beautiful and New CALADIUMS, 21s.; strong plants, about 1 foot high, in 4-inch pots, fit for 8-inch pots at once, selected from twenty finest and most distinct sorts, such as Beethoven, Belleymei, Albert Edward, &c.; carefully packed to travel any distance. Hamper and packing gratis and carriage paid to any railway station in England for cash with order. Dry roots (carriage free), 10s. 6d., 21s., and 42s. per dozen, according to size.
J. H. LEY, Royal Nursery, London Road, Croydon.

Verbenas, 50,000 Now Ready for Sale.

S. BIDE can now supply, as he has done on previous occasions, really good strong spring-struck Plants of Purple, Scarlet, White, and Pink VERBENAS, at 6s. per 100. Good Exhibition Varieties, 8s. per 100. IRESINE LINDENI, 6s. per 100. HELIOTROPE, 6s. per 100 COLEUS VERSCHAFFELTII, 8s. per 100. MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATA, 8s. per 100. Package free for cash with order.

Also strong healthy CUTTINGS of the above at half-price, free by post.
S. BIDE, Alma Nursery, Farnham, Surrey.

W. HANDSCOMB, NURSERYMAN, Aspley Guise, Woburn, Beds, has to offer:—
1,000 LAURELS, common, 2 to 6 feet.
1,000 " Portugal, 2 to 5 feet.
150 HOLLIES, Green, 18 inches to 2 feet.
50,000 " " 2-yr. and 3-yr., 3 to 6 inches.
1,000 BOX, Green and Variegated, 2 to 3 feet.

SALVIA PATENS.—Very strong pot roots, 5s. per dozen; extra strong, 3-yr. old roots, very large, 9s. per dozen, for cash with order, package free.
B. R. DAVIS, Yeovil Nurseries, Yeovil.

FERNS from DEVONSHIRE, CORNWALL and SOMERSET (Instruction Book for Making Rockery, Planting, &c., with each 5s. order). Fourteen named varieties, 7s. per 100; Small (Post), 30 for 2s. CLUB MOSS, three varieties, 1s. PRIMROSES, 2s. 6d. per 100. Catalogue, 2d.
GILL, Lodging House, Lynton, Devon.

HOLLIES and RHODODENDRONS, &c.
HOLLY, Common, 1½ to 2 feet, 28s. per 100.
RHODODENDRON, Hybrid, 1½ to 2 feet, 27s. per 100.
Also other sizes. CATALOGUES free.
HENRY DERBYSHIRE, Darley Hillside Nursery, near Matlock, Derbyshire.

Alternantheras from Stores.

WM. BALCHIN begs to offer the following varieties:—Amœna, spathulata, versicolor, amabilis latifolia, magnifica, paronychioides; also LOBELIA BRIGHTON and MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATUM, 8s. per 100, or 70s per 1000. MENTHA PULEGIUM and HELIOTROPES, 6s. per 100. Terms cash.
Hassock's Gate Nursery, Keymer, Sussex.

The Largest Rose Gardens in England.

CRANSTON'S NURSERIES, HEREFORD. (Established 1785.)
Descriptive CATALOGUES on application. Address
CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

STRAWBERRY PLANTS.—Strong and well-rooted young plants of V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other varieties, at 4s. per 100, 30s. per 1000. Terms cash.
W. LOVEL, Strawberry Farmer, Weaverthorpe, York.

Verbenas—Verbenas—Verbenas.

STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6s. per 100; 55s. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8s. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

FUCHSIAS, 100 nice young plants, in 12 splendid varieties, 8s.
HELIOTROPES, of sorts, 6s. per 100.
AGERATUM, Imperial Dwarf, strong young plants, 5s. per 100.
CALCEOLARIA, Golden Gem, 6s. per 100. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

PHLOX DRUMMONDI GRANDIFLORA.
The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers the following Plants, of which he has a very large stock :—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 5s. per 1000; 100, in 12 choice sorts, 8s. ; or in 25 sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius and New Life, 20s. per 100; Dr. Denny, nearest to blue, fine, 5s. per doz. Pelargoniums, in 12 best varieties, 5s. per doz , 30s. per 100.
" TRICOLORS—Mrs. Pollock, 2s. 6d. per doz., 18s. per 100; Sir R. Napier and Sophie Dumaresque, 3s. per doz , 20s. per 100.
" SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra and Prince Silverwings, 15s. per 100.
" GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 12s. per 100; Madame Amelia Baltet, very fine white (the best), 20s. per 100.
" BRONZE—Maréchal McMahon, the best for bedding, 18s per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

ALTERNANTHERAS and other CARPET BEDDING PLANTS.
ALTERNANTHERA, amœna, 8s. per 100, 70s. per 1000.
" amœna spectabile, 8s. per 100, 70s. per 1000.
" magnifica, 8s. per 100, 70s. per 1000.
" amabilis latifolia, 8s. per 100, 70s per 1000.
" paronychioides major, 8s. per 100, 70s. per 1000.
" versicolor, 8s. per 100, 70s. per 1000.
" spathulata, 8s. per 100, 70s. per 1000.
MESEMBRYANTHEMUM, cordifolium variegatum, 8s. per 100, 70s. per 1000.
COLEUS, Verschaffelti, 8s. per 100, 70s. per 1000.
IRESINE, Lindeni, 8s. per 100, 70s. per 1000.
LEUCOPHYTON, Brownii, 8s. per 100, 70s. per 1000.
HERNIARIA, glabra, 5s. per 100, 40s. per 1000.
LOBELIA, Brighton Gem, 5s. per 100, 40s per 1000.
MENTHA, Pulegium gibraltaricum, 5s. per 100, 40s. per 1000.
All the above are well established plants. LIST of other kinds free on application. Liberal allowance to the Trade.
WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

To the Trade.
MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.
Seed Growing Establishment, Wisbech.

FERNS.—100 Rare and Beautiful, 42s., or fifty at the same rate—pretty plants in small pots, to grow on for Winter Decoration or Cutting. Many varieties rarely to be met with except at 3s. 6d. or 5s. each, including Adiantum Farleyense, Pteris Leyii, &c. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

STOCKS.
The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

To Trade and Amateur Rosarians.

NEW ROSES in POTS. TEA and NOISETTE ROSES in Pots.—One of the most extensive, most select, and perhaps the most thriving stock of young plants in the country.
Special LIST, now being prepared, will be sent gratis and post-free to applicants.
EWING AND CO., Eaton, near Norwich.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

ADIANTUM FARLEYENSE.—Six beautiful large plants for 21s., very fine strong fronds from single crowns. Grown this way the pinnæ are double the size usually seen. All fine for immediate decoration, in 5-inch pots, £10 10s. per 100. Package gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

Vines—Vines—Vines.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, has still on hand a fine Stock of Fruiting and Planting CANES of Muscat of Alexandria, Bowood Muscat, Mrs. Pince, Gros Guillaume, Burchardt's Prince, and Madresfield Court. Also Planting Canes of several other varieties. CATALOGUE free. The Trade supplied.

JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers to the Trade, PALMS, per 100, in store pots:—Areca rubra, 30s.; Bactris Binotii, 60s.; Chamærops excelsa and humilis, 8s.; Cocos insignis, 40s.; Cocos Weddelliana, 100s.; Corypha australis, 12s.; Geonoma Schottiana, 80s.; Latania borbonica, 10s.; Pandanus utilis, 20s.; Phœnix reclinata, 10s.; Phœnix tenuis, 10s.; Seaforthia elegans, 25s.; and Aralia Sieboldii, 6s. FERNS, in small pots:—Adiantum cuneatum, 30s.; Cibotium regale, 80s.; Lomaria gibba, 30s.; Nephrodium cristatum, 40s.; Pteris serrulata and cristata, 30s. PRIMULA, acaulis alba plena, luteo plena, lilacina plena, and Arthur Dumoulin, 100 strong plants, twenty-five of each sort, at 50s. ARUNDO DONAX, arg. var., twenty-five for 15s.

NEW REGAL PELARGONIUMS.—
PRINCESS OF WALES, 1 guinea each.
MAID OF KENT, 15s each.
Mr. WILLIAM BULL is now sending out for the first time the above two beautiful Pelargoniums.
Seven for six New COLEUS, for 1 guinea, viz., Bijou, Duchess of Teck, Empress of Germany, James Barnshaw, Lovely, Royal Purple, and Sensation.
Establishment for New and Rare Plants, King's Road, Chelsea. London S.W.

Spring Edition, Hardy Florists' Flowers.

THIS CATALOGUE is now ready, and includes Carnations, Chrysanthemums, Delphiniums, Hollyhocks, Pansies, Pentstemons, Picotees, Potentillas, Pyrethrums, Bedding Pansies, Violas, &c. Post-free on application.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

Gloxinias.

TWELVE GLOXINIAS (new and beautiful), 12s., selected from sixty of the finest novelties of the last three years. Fine bulbs to produce plenty of flowers in two months if potted at once. A few extra strong, 21s. per dozen. One-year-old small bulbs, 6s. per dozen. All carriage paid.
JOHN H. LEY, Royal Nursery, Croydon.

Wandsworth Common and Garret Lane Nurseries.

R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.
All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
CATALOGUES free by post on application.

New Zonal Pelargonium.

WEST BRIGHTON GEM.
To be sent out in May, 1880.
This has been awarded a First-class Certificate as a New Plant by the Brighton and Sussex Horticultural Society, and a Cultural Commendation by the Royal Horticultural Society. Price 10s. 6d. each, two for 20s. (usual allowance to the Trade) As the stock is limited, orders will be booked and executed in strict rotation.
For further particulars see the *Times* of December 17, 1879, the *Journal of Horticulture* of December 18, the *Gardeners' Chronicle* of Dec. 20, and for full description and CATALOGUE apply to
WILLIAM MILES, West Brighton Nurseries, Cliftonville, Sussex.

To the Trade.

ROSES.—Marechal Niel, Gloire de Dijon, Madam Berard, on Seedling Brier, in 5-inch pots, good stuff, all last year's working, 75s. per 100.
GEORGE COOLING, Nurseryman, Bath.

Remarkable Clearance.

BUNDLE of FLOWER SEEDS, containing 100 Separate Packets, 2s., carriage paid; Half, 1s. 3d. If not worth six times the amount, or if unsatisfactory, money returned. Agents wanted everywhere, immediately, to fill up spare time.
W. H. HOWELL, Seed Merchant, Flackwell, High Wycombe.

Bedding Geraniums.

ALFRED FRYER offers the following, in Autumn-struck Plants, at per dozen for cash:—Golden Tricolors: Isle of Beauty, 4s. 6d.; Peter Grieve, 6s.; S. Dumaresque, 3s. 6d. Silver Tricolors: Lass o' Gowrie, 3s. 6d.; Mrs. John Clutton, 3s.; Prince Silverwings, 3s.; Queen of Hearts, 3s. 6d.; A Happy Thought, 3s. Gold and Bronze: Bronze Beauty, 3s. 6d.; Endymion, 3s. 6d.; Gilt with Gold, 3s. 6d.; Roi de Siam, 4s. 6d; Packing free for cash with order; post-free for 6d. per dozen extra. Priced LISTS on application to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Seed Potatos—Seed Potatos.

THOMAS IMRIE AND SONS can still offer Dalmahoys, Red Bogs, Fortyfolds, Flukes, and Rivers' Royal Ashleaf Kidney. Price on application.
Seed Warehouse, Ayr.

JOHN FORBES' CATALOGUE of all the BEST NEW and OLD FLORISTS' FLOWERS, up to the present date, is now ready, and will be sent post-free to all applicants. Fine named Show and Fancy PANSIES from 20s. per 100, my selection.—Buccleuch Nurseries, Hawick, N.B.

Green Hollies, &c.

C. WHITEHOUSE, Brereton Nurseries, Rugeley, has to offer fine first-class Plants, extra good rooted, having been several times transplanted, are very stout and healthy—12 to 18 inches, 18 inches to 2 feet, 2 to 2½ feet, 2½ to 3 feet, 3 to 3½ feet and upwards; also fine specimen SILVER HOLLIES, 4 to 5 feet; every one will move safely, quality unsurpassed. Also AUCUBA JAPONICA, 12 to 18 inches and upwards. Price per 100 and dozen, moderate for the quality, on application.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.
Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

Bennett's Pedigree Roses.
Should be in every Collection.

GEORGE COOLING has pleasure in offering fine plants coming into bloom of these desirable varieties, viz. :—

Beauty of Stapleford	Jean Sisley
Duke of Connaught	Michael Saunders
Duchess of Connaught	Nancy Lee
Duchess of Westminster	Pearl
Honourable George Bancroft	Vicountess Falmouth

The complete Set, 25s., basket and packing free for cash with order.
New LIST of Roses in pots, Clematis, &c., post-free.
The Nurseries, Bath.

Uninjured by Frost.

EVERGREENS.—In splendid condition for safe removal; having been regularly transplanted and growing in a very exposed situation, are very hardy and robust, thus having withstood the past excessively severe winter without injury.
With reference to the hardy nature of the Trees and Plants reared in these Nurseries, a customer in Yorkshire writes:—
"*I am very well satisfied with the Roses you sent the frost has not hurt them, whilst a lot I got from the South have suffered very much.*"
CATALOGUES on application.
JAS. DICKSON & SONS, "Newton" Nurseries, Chester.

CAMELLIA - FLOWERED BALSAM. The best varieties only. Price 6d., 1s., and 1s. 6d. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Russell's Pyramid Primula.

JOHN NEVILLE has a small quantity left of the above, the finest strain of Chinese Primroses ever sent out. It is in its original state of perfection, as sent out by Mr. Geo. Clarke, late of this place, and which gave the greatest satisfaction. In packets, 2s. 6d. each
Streatham Place Nursery, Brixton Hill, Surrey.

1880—Hardy Perennials—Illustrated.

THE ABOVE CATALOGUE, containing Lists of Hardy Orchids, Bamboos, and Ornamental Grasses, Carnivorous Plants, Bulbs, Climbing and Trailing Plants, and a fine selection of Choice New and Rare Hardy Perennials. Post-free on application.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to
Mr. JEAN NUYTENS-VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium.
London Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

To the Trade.

GARAWAY AND CO. offer:—
PELARGONIUMS, show and fancy, choice varieties, good bushy plants, to bloom in May, in 48-pots, 50s. and 60s. per 100.
CHRYSANTHEMUMS, large-flowered Japanese and Pompons, in 3-inch pots, 20s. per 100.
DAHLIAS, named varieties, in thumbs, 20s. per 100.
DELPHINIUMS, best named sorts, single and double, 5s. per dozen, 35s. per 100.
PYRETHRUMS, double, best named sorts, 20s. per 100.
PHLOX, herbaceous, best leading sorts, 4s. per dozen, 25s. per 100.
GARAWAY AND CO., Durdham Down Nurseries, Clifton, Bristol.

HYACINTHUS CANDICANS, Baker (GALTONIA CANDICANS, Decaisne).
It is now the best time to plant this well-known first-rate summer-flowering bulb. The undersigned possess the largest stock of it in Europe, and are ready to execute orders for it till the latter part of May, at the following prices:—For good flowering bulbs, first size, 8s. per dozen, £2 5s. per 100; second size, 5s. per dozen, £1 1s. per 100. Discount to the Trade. Price per 1000 by correspondence.
E. H. KRELAGE AND SON, Nurserymen, Seedsmen, and Florists, Haarlem, Holland.

GERMAN ASTERS. The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

ARECA RUBRA, last year's Seedlings, £1 per 100.
CHAMÆROPS EXCELSA, four to six leaves, £1 5s. per 100; one to two divided leaves, £1 10s. per 100.
LATANIA BORBONICA, last year's Seedlings, 6s. per 100, £2 10s. per 1000. £22 10s per 10,000.
DRACÆNA INDIVISA, LINEATA, VEITCHII, last year's Seedlings, 6s per 100, £2 10s. per 1000.
ARALIA SIEBOLDII, in single pots, last year's Seedlings, £1 per 100.
SEEMANN AND GOEPEL, The Nurseries, Marienthal, Wandsbeck, near Hamburg.

Seed Potatos.

H. AND F. SHARPE have still in stock the following varieties of SEED POTATOS, which they are now offering at low figures, viz. :—

Magnum Bonum, true	Scotch Champion
King of the Flukes	Paterson's Victoria
Snowflake	Pride of Ontario
Walker's Improved Regent	Yorkshire Regent
American Early Rose	Extra Early Vermont

Seed Growing Establishment, Wisbech.

Palms.

TWELVE, Graceful, 21s.; strong healthy plants, fit to pot on at once into 5-inch pots, of Cocos Weddelliana, Euterpe, Areca lutescens, A. rubra, Corypha, Latania, Seaforthia, Chamærops, &c., usually sold at 3s. 6d. and 5s. each. Double size, for immediate decoration, 1½ to 2 feet high, 42s. and 63s. per dozen. Package gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

GIANT ASPARAGUS PLANTS, the best that money can procure, all certain to grow, 2s. 6d. per 100. This delicious vegetable does not require half the expense usually incurred in planting it. See Richard Smith & Co.'s Seed List for 1880.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Special Cheap Offer of Good Plants.

All for Exhibition or Garden Decoration, and fine named varieties of our selection.
PANSIES, PINKS, PHLOXES and DAHLIAS, 3s per dozen, 20s. per 100, or 12 of each for 11s.
CHRYSANTHEMUMS, FUCHSIAS, COLEUS, SALVIAS, 2s. 6d. per dozen, 15s. per 100, or 12 of each for 9s.
LOBELIAS and AGERATUMS, best sorts, from store-pots, 1s. per dozen, 4s. per 100.
CATALOGUES of all Indoor and Outdoor Plants for the largest or smallest Gardens, Conservatories, &c. Very comprehensive. Prices very reasonable. Plants true to name.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

FRENCH ASTERS.
The best varieties only. Price 1s. and 2s. 6d. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

HORTICULTURAL GARDENS, South Kensington, S.W.
EXHIBITION of DAFFODILS on TUESDAY, April 27, and following days, by Messrs. BARR AND SUGDEN.

Valuable Plants, Carriage Paid.
New Mode of Packing.
PELARGONIUMS.—ZONAL, new and choice, 30s. per 100, 5s. per dozen.
GOLDEN TRICOLORS, in fine variety, 4s. per dozen.
SILVER TRICOLORS, in choice new sorts, 5s. per dozen.
Older varieties, 4s. per dozen
SILVER-EDGED Fancy-flowering varieties, 4s. 6d. per dozen.
BRONZE, choice, in fine variety, 4s. per dozen.
DAHLIAS in all the best kinds, 3s. 6d. per dozen, or 21s. per 100.
PHLOX, all the best, at 3s. 6d. per dozen.
TUBEROUS BEGONIAS, 5s. per dozen.
The above are all first-class varieties and true to name, for cash with order to
CHARLES BURLEY, Brentwood.

Important Notice.
TEA-SCENTED and other ROSES in Pots, for blooming in Conservatory, or planting-out at once; fine strong healthy plants, including A. Sisley, C. Mermet, C. Paris, J. Perola, J. Ducher, Mad. Lambard, Niphetos, S. Hibberd, S. d'Elize, S. P. Neron, C. Devoniensis, Lamarque, &c., 18s. per doz. My Selection, 15s. per dozen.
Also a very fine lot of BENNETT'S NEW HYBRID TEAS, at 24s. per dozen. One American Banner, "New Striped Rose," included when not less than three dozen ordered. Single plants, 10s. 6d. each.
LIST gratis on application.
J. HOUSE, Eastgate Nursery, Peterborough.

SURPLUS STOCK of POTATOS.
HURST & SON
Can offer the following POTATOS. Lowest price on application.
BRESEE'S PROLIFIC
BEAUTY OF HEBRON
COVENT GARDEN PERFECTION
CLIMAX
EARLY ROSE
FOX'S SEEDLING
FORTYFOLD
GRAMPIAN
HUNDREDFOLD FLUKE
QUEEN
SNOWFLAKE
SCHOOLMASTER
VICTORIAS.
6, LEADENHALL STREET, LONDON, E.C.

PEDIGREE ROSES.
The greatest success yet achieved in the production of new Roses is the Stapleford Pedigree Roses.
DESCRIPTIVE LISTS post-free, including the striped Tea Rose American Banner, and the beautiful crimson climber, James Sprunt; this last Rose can only be obtained in England from my establishment.
H. BENNETT, Manor Farm Nurseries, Stapleford, Salisbury.

A. M. C. JONGKINDT CONINCK,
TOTTENHAM NURSERIES,
Dedemsvaart, near Zwolle, Netherlands.
Begs to offer the following
HARDY PERENNIALS,
At very low prices:—
AJUGA reptans atro-purpurea.
" " fol. arg. var.
FESTUCA glauca
CYCLAMEN hederæfolium.
JUNCUS effusus fol. aureo-striatis.
" spiralis
OPUNTIA Rafinesqueana
SAXIFRAGA
SEDUM — the best sorts.
SEMPERVIVUM
SELAGINELLA helvetica.

MANGEL SEED.
JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.
Bardney Manor, Lincoln.

SPRING FLOWERS.
Choice Varieties of POLYANTHUS and Single and Double PRIMROSES and AURICULAS, &c. Fine Strain of SWEET WILLIAM. Apply to
Mr COOPER, Calcot Gardens, near Reading.

TEA SCENTED ROSES,
For Planting Out or Greenhouse Culture.
Upwards of 20,000 strong, well established plants, in pots.
List and Prices on application to
CRANSTON'S NURSERY & SEED COMPANY, Limited,
KING'S ACRE, near HEREFORD.

SELECT INDEX OF PLANTS

The Publisher of the *Gardeners' Chronicle* recommends Subscribers who wish to have extra Copies of the Numbers containing the

SELECT INDEX of PLANTS from 1841 to THE END of 1878,

TO SECURE THEM AT ONCE.

The following is a List of those already published:—

1879.—October 11	1879.—November 29	1880.—February 7
" 25	December 13	" 21
November 8	1880.—January 10	March 20, 27
" 15	" 24	April 3

Price 5d. each, post-free 5½d.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

WONDERFULLY HIGHLY COLOURED NEW COLEUS.

H. CANNELL

Begs to announce that his COLLECTION OF COLEUS is the finest; brought from all parts of the World, and now a grand sight. Their brilliancy and peculiar marking must be seen to be believed. Supplied at the very cheapest rate (by post) consistent with quality and correctness.

See H. C.'s FLORAL GUIDE, free for 12 Stamps, the best descriptive work extant.

THE HOME FOR FLOWERS SWANLEY KENT.

ROSES UNINJURED BY FROST.

WM. PAUL & SON

(Successors to the late A. PAUL and SON—Established 1806),

PAULS' NURSERIES, WALTHAM CROSS, HERTS,

Have a very large and fine Stock of Roses in Pots, at the following prices:—

ROSES IN POTS FOR PRESENT PLANTING. — All the leading varieties in *hardy, well established plants*, suitable for forming new beds or making good vacancies caused by the late frosts, 9*s.* to 18*s.* per dozen, £3 15*s.* to £7 per 100. The same, of extra size, 21*s.* per dozen and upwards.

ROSES IN POTS FOR GREENHOUSE CULTURE.—9*s.* to 18*s.* per dozen, £3 15*s.* to £7 per 100. The same, of extra, size 21*s.* per dozen and upwards.

CLIMBING ROSES IN POTS.—12*s.* to 18*s.* per dozen.

SPECIMEN AND HALF SPECIMEN ROSES IN POTS.—Superbly set with bloom, the finest collection in the country to choose from, 5*s.* to £5 5*s.* each.

They also beg to announce that Plants will be ready for Sale about the middle of May of their

NEW ENGLISH RAISED ROSES FOR 1880.

CROWN PRINCE (H.P.) MASTERPIECE (H.P.)
LITTLE GEM, or CRIMSON MOSSY DE MEAUX (Moss).

THE NEW FRENCH ROSES OF 1880, now ready, 30*s.* per dozen.

THE NEW ROSES OF 1879 (including Countess of Rosebery and Duchess of Bedford), 21*s.* to 36*s.* per dozen.

Priced Descriptive CATALOGUES post-free on application.

NEW YELLOW FRENCH MARGUERITE,

CHRYSANTHEMUM ETOILE D'OR.

Awarded a First-class Certificate by the Floral Committee of the Royal Horticultural Society on the 13th inst.

A splendid Conservatory Plant, blooming profusely all the year; flowers excellent for cutting.

Equally adapted for Bedding in the Flower Garden in Summer.

Now being sent out, 24s. and 36s. per dozen.

W. HOWARD,

FLORIST, SOUTHGATE, LONDON, N.

Orders to be accompanied by a Cheque or Post-office Order.

SPECIAL NOTICE.

APRIL and MAY the best Season for Transplanting HOLLIES.

WM. CUTBUSH & SON

POSSESS MANY THOUSANDS OF

VARIEGATED AND OTHER CHOICE HOLLIES,

Varying from 2 feet to 6 feet, bushy, all transplanted in 1878, and will move with splendid roots.

An inspection invited, or Prices, &c., sent on application.

EXTRA FINE BUSHY AUCUBA JAPONICA.

Wm. Cutbush & Son have a very fine stock of Aucubas, well rooted, and are offering very low. Prices, Sizes, &c., on application.

HIGHGATE NURSERIES, N.; or BARNET, HERTS.

To Nurserymen, Seedsmen, and Florists.

Copy from *London Gazette*, Feb 27, 1880.

NOTICE is HEREBY GIVEN that the PARTNERSHIP heretofore subsisting between Joseph Rains, Marcus Rains, and Morris Isaacs, carrying on business as Dealers in Dutch Flower Roots and Bulbs, at 62, Tenter Street South, Goodman's Fields, Whitechapel, in the County of Middlesex, under the style or firm of M. ISAACS, RAINS AND CO., was DISSOLVED, by an order of the Chancery Division of Her Majesty's High Court of Justice, on November 27, 1879, as from that date.

MR. MORRIS ISAACS, for fourteen years the Senior Partner in the above late Firm, will for the future, carry on the Business of IMPORTER of DUTCH FLOWER ROOTS, in PARTNERSHIP with his Son, Mr. LEWIS ISAACS, at their New Warehouse, 3, Victoria Warehouses, Mansell Street, Goodman's Fields, London, E.C.

CINERARIA. The best varieties only. Price 2*s.* 6*d.* and 5*s.* per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer his splendid Standard and Pyramidal SWEET BAYS, of different sizes, at from 4*s.* to 56*s.* the couple. Details in full of these magnificent Trees will be found in his letter CATALOGUE, to be had gratis on application. 100 couples of these Sweet Bays will figure throughout this summer at the International Exhibition at Brussels.

NEW CATALOGUE for 1880.—All intending purchasers of Greenhouse and Stove Plants, Herbaceous Plants, Florists' Flowers, Indoor and Outdoor Plants generally, should look through our CATALOGUE and compare our Prices before purchasing elsewhere. See also last week's large Advertisement.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

Dr. Denny's Zonal Pelargoniums.
TO THE TRADE.

JOHN BALAAM can now supply Dr. Denny's "Sixth Set" at 10*s.* 6*d.* per set, and the magnificent variety, "Commander-in-Chief," at 10*s.* 6*d.* per half dozen. Cash (without any deduction) to acompany order.

J. B. begs to announce that he will be prepared to send out Dr. Denny's "Seventh Set" early in May, and a set of "Double Varieties" in the early autumn.

Descriptive CATALOGUES forwarded, post-free, on application.
Vine Nursery, Downs Road, Lower Clapton, N.E.

NEW DWARF SILVER VARIEGATED GERANIUM, Viscountess Cranbrook.—Dwarf compact habit, broad creamy white edge, flowers cerise, distinct from Little Trot, and stronger constitution.

WM. POTTEN will send out the above beautiful variety on and after May 17, price 2*s.* 6*d.* each. The usual discount to the Trade.
Camden Nursery, Sissinghurst, Staplehurst, Kent.

YELLOW FIBROUS LOAM and TURF, as used at Crystal Palace and leading nurseries. Particulars on application to
F. W. CARD, Station Wharf, Betchworth, Surrey.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,
3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.
LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.
BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.
COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags. 4*d.* each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.
SPHAGNUM MOSS, 8*s.* 6*d.* per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
H. G. SMYTH,
10, Castle Street, Endell Street, Long Acre, London, W.C.

COCOA-NUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1*s.*; 30 bags (bags included), 20*s.*; truck free to rail, 25*s.*
T. RICH (late Finlayson & Hector), Cocoa-Nut Fibre Works, 24 and 25, Redman's Row, Mile End Road, London, E.

COCOA-NUT FIBRE REFUSE, as supplied to all the Royal Gardens of Europe, useful at all seasons, Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c., Destroys all Slugs and insects. Bags (about 4-bushel), per bag 1*s.*, 15 bags 12*s.*, 30 bags 20*s.* (all bags included); Van-load at Works, 4*s.*; ditto delivered within 5 miles, 10*s.*; Truck-load (about 250 bushels), free on rail, 25*s.* Terms cash with order.—CHUBB, ROUND AND CO., Fibre Works, Westferry Road, Milwall, London, E.

COCOA-NUT FIBRE REFUSE at Reduced Prices, as supplied to Messrs. J. Carter & Co., High Holborn, W.C.; at the International Agricultural Exhibition, Kilburn; and all the Principal Nurserymen and Seedsmen in England. In 4 bushel bags at 1*s.*, bags included; 30 bags, bags included, 20*s.*; or truckload of about 250 bushels, 25*s.* (truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE.—Useful at all seasons. Largest makers in the Kingdom. 1*s.* per bag, 30 bags £1 (bags included), truck 25*s.* free to rail; 5*s.* van-load, at Works, Janet Street, Millwall, E. P.O.O. payable at General Post Office, London. Orders to be addressed to A. FOULON, Fibre Merchant, 32, St. Mary Axe, London, E.C.

DARLINGTON BROS. ROLL TOBACCO PAPER and CLOTH are the Best Insecticides. Good Strong TOBACCO-PAPER and CLOTH, 6 lb., 3*s.* 6*d.*; 14 lb., 7*s.* 6*d.*; 28 lb., 14*s.* 6*d.*; 1 cwt. 50*s.* ROLL TOBACCO PAPER and CLOTH, extra good, 6 lb., 5*s.*; 14 lb., 11*s.*; 28 lb., 21*s*; 1 cwt., 78*s.* All parcels carriage paid to London or any Railway Station in Kent. The best Paper and Cloth made. *Vide* Testimonials, free on application to
DARLINGTON BROS., Chatham.
Cheques crossed London and Provincial Bank; Post-office Orders, Darlington Bros., Chatham.

MESSRS. JAMES VEITCH & SONS'

NEW AND GENERAL PLANT CATALOGUE FOR 1880,

Is now ready, and will be forwarded, post-free, on application.

Also their CATALOGUE of SELECT SOFT-WOODED and BEDDING PLANTS.

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

MESSRS. JAMES VEITCH & SONS

Beg to announce that they are now sending out

The UNDERMENTIONED SPLENDID NOVELTIES,

Of which full descriptions, with Woodcuts, are given in their NEW and GENERAL PLANT CATALOGUE for 1880:—

		s.	d.	
ALOCASIA THIBAUTIANA	31*s.* 6*d.* to	63	0	each.
AMARYLLIS, "Duke of Connaught"	42*s.*, 63*s.*, and	105	0	"
" "Thomas Speed"		42	0	"
" "Virgil"		63	0	"
ARISTOLOCHIA RINGENS		7	6	"
ASPARAGUS RACEMOSUS		7	6	"
BEGONIA, "Mrs. Charles Scorer"		15	0	"
" ROSEA SUPERBA		10	6	"
BURBIDGEA NITIDA	10*s.* 6*d.* and	21	0	"
CROTON, "Comte de Germany"		21	0	"
" "Fordii"		21	0	"
" "Nevilliæ"		21	0	"
CYPRIPEDIUM EURYANDRUM	63*s.* and	105	0	"
DAVALLIA MARIESII		10	6	"
DENDROBIUM ENDOCHARIS	42*s.* and	105	0	each.
DICKSONIA BERTEROANA		21	0	"
HIBISCUS SCHIZOPETALUS		10	6	"
NEPENTHES BICALCARATA	63*s.* and 105*s.* and upwards			"
PINANGA VEITCHII	21*s.* to	63	0	"
POTHOS CELATOCAULIS	10*s.* 6*d.* and	21	0	"

NEW HARDY SHRUBS.

		s.	d.	
CYDONIA JAPONICA NIVALIS		7	6	each.
EUCRYPHIA PINNATIFOLIA		15	0	"
JUNCUS ZEBRINUS		7	6	"
MAGNOLIA SOULANGEANA NIGRA		7	6	"
" STELLATA	5*s.* to	10	6	"

ROYAL EXOTIC NURSERY, KING'S ROAD, CHELSEA, S.W.

THE FINE COLLECTIONS OF

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Gardeners' Chronicle.

SATURDAY, APRIL 24, 1880.

SIR TREVOR LAWRENCE'S ORCHIDS.

(*Continued from p. 424.*)

THE house No. 4, in size and height forms a counterpart of No. 3. The first plant that catches the eye and excites the admiration of the Orchidophilist is called Dendrobium Falconeri giganteum. It is quite a gigantic Falconeri, looking at the flowers, but the pseudobulbs partake more of the character of a stout Devonianum. Unlike Falconeri the bulbs have no nodes, and they do not elect to shoot off subsidiary branches at right angles. Moreover the flowers are larger, much more telling in colour and better lasters than Falconer's beautiful Dendrobe. This is a veritable acquisition, and might very properly bear a specific name. Some extra well grown pieces of D. crassinode were situated in this temperature—very good, many of them, as varieties. Everybody now has a Barberianum, but not always of extra quality; here it was very pronounced, and D crassinode album was a noteworthy plant—in truth the members of this species were all exceedingly well under hand. The same remark applies to the beautiful although short-lived flowered Devonianum. Another extra good thing when the variety is selected is D. Findleyanum. There is a softness about the colours and a finish about the kidney-formed lip of this flower that is quite captivating taken together with the soft yellowish cast of its gouty-looking pseudobulbs. The short stumpy but withal handsome when in flower D. capillipes was well represented, and many others. Particularly fine were the plants of Zygopetalum maxillare. They had taken possession, many of them, of 3 feet lengths of dead Tree Fern boles, and were going along as cultivated plants ought to do in a proper element. The pseudobulbs were increasing in dimensions until not a few of them were distended to the size of good hen eggs, surmounted with leaves of unexceptional greenery and health. I counted on one plant some fourteen extra fine pseudobulbs, connected together at short distances with short horizontal rhizomes. Calanthe Dominianum, of the Masuca class, was in rude health, and the rather pretty white and ruddy-crested pleiochromum, along with Miltonia Clowesii and Cymbidiums of the Mastersii and eburneum class, with a very pretty plant of Cattleya dolosa, of the bulbosa type, were prominent plants.

No. 5 House.

Passing out of this house we came to a counterpart of No. 2, with low roof by comparison to No. 4, path up centre, with stage on either side, equally clean and smart. This is an intermediate-house, Cattleyas predominating; chief among the novelties was one called Cattleya Trianæ veriflora?—why so, one without seeing it in flower cannot easily determine. Notwithstanding, it was a little giant in its way, with

obese pseudobulbs, shining and lusty, like a well-grown Sion House Cucumber. Here, too, was the tinted-leaved Cattleya labiata (how scarce the old autumnal-flowered green-leaved one is !) Then what was considered a gem of the first water—Cattleya gigas Normanni. Mr. Norman has been fortunate in getting his name identified with so superb a variety, and one, too, that is much more facile or docile in the way of flowering than this species generally is. This form, called Normanni, is a small grower—slender, in fact, in comparison to the many stout bulbed varieties all over the country. Cheek-by-jowl to this is Cattleya Mossiæ Reineckiana, or alba, and a very chaste and beautiful thing it is, but exceedingly scarce. This particular form has the tepaline and petaline segments pure white, with a deep carmine blotched labellum. Nor were the plants of C. maxima one whit less interesting, nor the forms of C. crispa, which were all well represented, one called rosea being the elect of the lot. Cattleya exoniensis × was also well grown, and a most distinct and in every respect desirable hybrid this, the longer it is known, proves to be. But what pleased me more than the Cattleyas was the batch of beautiful Cœlogynes, most of them not long known to culturists. C. elata was in splendid condition, Leek-like for vigour of growth, as also were ocellata, corymbosa, and particularly barbata. These all seem good growers in comparison to the old but still beautiful and interesting white and cinnamon crested conferta. This has been long known and grown, but not always satisfactorily, and it was pleasing to see it going along well here, evidently freely served with moisture both at root and in the atmosphere. Here, too, the miffy Epidendrum dichromum was well in hand, and evidently prospering year by year ; the amabile form of this species is a most telling one. Notwithstanding the many houses, species are pretty well mixed up, for here were Masdevallia tovarensis, Odontoglossum Insleayi leopardinum, in moss in a No. 1 pot ; the really exquisite Lælia harpophylla, which, for its peculiar shade of vermilion and nankeen and orange, has not a single rival. Here too was the ivory Mormodes in its luxatum form, with twenty good pseudobulbs—a thing of beauty, with white wax-like segments, and lip with purple reticulated lines. Here also was another batch of Vanda cœrulea in fine condition, and lots of those charming Indian Crocus (Pleione), which adorn the Orchid-houses in late autumn.

No. 6 House.

Wending our way backwards, or rather retracing our steps, we pass into No. 6 house, at right angles. This is a capacious place, some 40 by 16 feet, and lofty, so as to give hanging room for Dendrobes ; in truth, properly speaking, it is a Dendrobium-house, but made use of for lots of other species, as will be noticed as we proceed. It has the usual central table or bed, and two side stages. Chief among the plants were quantities of Dendrobium lituiflorum, and the very rare white variety, which is only discoloured in having two lemon lobes in the labellum. Then a sample of D. Brymerianum, scarce and desirable to have ; the blackish-bulbed D. thyrsiflorum, of the same type as is now called Walkerianum formosum, and the short fat-bulbed formosum giganteum, which yields flowers of much larger and finer quality than most of the long linear forms of this species ; also masses of luteolum and albo-sanguineum, which cannot bear to be over-potted ; the very handsome Cambridgeanum, in several good varieties, at the time profusely flowered, and many others. Associated with these was a grand group of Cattleya Dowiana, hung up so high that Mr. Spyers had recourse to a "cleek," or hook with a handle as long as a hay-fork, to bring them down to the level of the eye. This sort of airy position seems to be the sort of climate suitable for Dowiana. In times past the difficulty has been to restrain the species from making two growths a-year. So surely as it does this, so surely does its day of decay and dissolution approach. When growers can keep it to the making and maturing of one growth a season there is some chance of their being able to cultivate it, and here we saw several well-grown plants that had flowered, or were approaching the inflorescence period. The distinct airy-looking, insect-like-flowered Oncidium phymatochilum was doing tolerably well, and so were most of the Catasetums and Mormodes that were located here. The curious Acanthophippium sylhetense was very noticeable, and so was the fine buff and yellow Thunia Marshellii. Cypripediums were in great vigour, not even excepting the handsome nævium ; Sedeni was the best example I ever saw. Argus, Lawrencianum, and the beautiful selligerum, with pale reticulated dorsal tepaline segment, and with telling pointed moustache-like petals, and a very good pouch or slipper, although not so distinguished as its other parts — two flowers to a peduncle ; the rare C. Spicerianum, Swanianum, Dayanum, and all the forms of caudatum, &c. Here, too, was Vanda cristata, doing well, and close by it Cattleya Eldorado, so strong as to be emitting two leaves from one or more of its pseudobulbs. Among the miscellaneous plants not always met with were Stenia fimbriata and Scuticaria Hadwenii, with its flowers like a giant Miltonia candida Jenischiana springing from the base of long whip-like pseudobulbs.

No. 7 House.

This may be said to form a corridor leading between the so-called Dendrobium-house and the East India-house proper. The chief plants here are Oncidium crispum and its allies Gardnerianum, Forbesii, Marshallianum. The second named is the favourite now-a-days, being sent home as curtum ; at least several Gardnerianums have come out of the curtum batch. Lælia alba is here also in considerable quantity, but nothing like what I afterwards saw at Mr. Hill's, Arnot Hill, Nottingham, and which I hope yet to touch upon. What, however, was equally interesting to me, and doubtless more to be depended upon, was a charming lot of Lælia elegans alba, for purity and elegance the chief of the clan. The limited atmosphere, like an oblong Wardian case, seemed to be administering to the wants of the subjects resting within it, the kind of food they elected to assimilate.

No. 8 House.

This is the East India-house proper, having a central stage and two side ones with the same satisfactory ground-work for the furnishings that appear every step you take. Here were some finely grown samples of Odontoglossum Roezlii, some of the type with the two great dull red eyes being in flower. It is an exceedingly handsome Orchid, even the worst forms of it, and will vie with any cognate species for detail and beauty. Angræcum citratum is a miniature beauty—fine here, but nothing to what I saw it at the Messrs. Veitch's, where an artist was pourtraying its profuse inflorescence to some purpose. The scarcely-to-be-seen Oncidium Lanceanum was doing well, although there were not large masses of it. The very rare and very curious, and withal beautiful Zygopetalum rostratum was doing excellently for its size ; but where, pray where is a specimen plant of the rhizomed species to be found ? Angræcum Ellisii was going along satisfactorily. The equally rare Aerides Ellisii was present in first-rate condition. This introduction from Cochin China has flowers not unlike Larpentæ (falcatum), but they are more gaudy, there being more of the nankeen colour about them ; its growth is not all like Larpentæ however. Along with these were virens Dayanum, still one of the very finest East Indian Orchids in cultivation, but not a bit too good for the gentleman whose name it bears, and who has so long been an admirer and cultivator of this favourite race of plants. Then Aerides purpurascens quinquevulnerum, in fine condition, and Vandas Cathcartii and Hookeriana, the former on a raft 4 feet long, doing well. Any one who sees Dendrobium macrophyllum Huttoni will long to get a piece of it ; its segments are nearly pure white, and the labellum has a great solid blotch of that roseate purple which gives so good a contrast, particularly as, in this case, there is a broad margin of white around it. The Saccolabiums are, upon the whole, doing well, particularly guttatum and the autumn-flowering Blumei, along with good pieces seen now almost everywhere of giganteum. *James Anderson.*

(*To be continued.*)

Fig. 90.—Flowers of the Easter Beurré Pear. (see p. 521.)

The Carpet Beetle. — The larva of this, according to the *American Entomologist*, bids fair to be more injurious to carpets and woollen goods generally than the old and familiar clothes moth. The beetle feeds upon Spiræa, and on the pollen of the flowers, hence these plants are recommended to be grown as traps for the insect. The beetle has been introduced from Europe. The obvious precaution of employing rugs that can easily be moved rather than fixed carpets is suggested, and the use of tallow along the cracks and joints of the flooring and of tallowed paper underneath the borders of carpets is is also suggested : but what about the carpets ?

STOVE PLANTS FOR WINTER AND SPRING DECORATION.

(*Continued from p.* 468.)

Bouvardias, of which there are now many very beautiful varieties of various shades of colour, ranging from pure white up to bright pink or scarlet, are among the choicest of winter-flowering plants. At this season they are almost indispensable for bouquets, so neat and effective are they for that kind of work. At one time they were treated as greenhouse subjects, but the temperature there being insufficient they were never seen in anything like the perfection they now attain to in the hands of those who grow them largely for market, and thoroughly understand the treatment they require. The way they are managed is to put in fresh young cuttings annually as early as they can be got, and when struck and the weather warm enough to admit of their being placed in frames, they are planted out in leaf-soil or refuse peat, or a mixture of the two and loam, so that they may have something rich and open to feed on. In this, with the lights closed over them early after being sprinkled, they grow rapidly and make nice bushy little stuff for lifting and potting in the autumn, which is done early, that they may have time to get a little established before very cold weather sets in. By affording them light airy positions in the stove, such as a shelf near the glass, they commence flowering at once, and go on giving a constant succession till quite late in the spring. The plants should then be shortened back for the double purpose of getting them to break lower down and affording cuttings, when they may be shaken out and planted in the same way as those that are fresh propagated. The best sorts are Vreelandi, elegans, Hogarth, Humboldtii, Davisoni and Van Houttei.

Euphorbia jacquiniæflora.—This is likewise one of the most serviceable plants that can be grown, affording as it does a great quantity of bloom for cutting, and although the individual flowers are small, what they lack in size they make up in brilliancy of colour. When not required for moving from place to place they should be planted out in such a position that they may either be trained close under the roof or on a light back wall, as then they grow with much more freedom, and flower in the greatest profusion. Even after being cut they break again just below, as they will sometimes do in pots when the plants are vigorous and the wood well ripened. To get them into that desirable state, the plants should be fully exposed to the sun, and in the autumn only receive just sufficient water to keep them from flagging. Many complain of being unable to strike cuttings of this Euphorbia, but if they were to take them off before they attain a greater length than 3 inches and sever a piece of the old wood with them, they would find no difficulty in the matter. Taken off without this they invariably turn black and decay, and one cause of their doing so sometimes is that they are too soft and sappy from insufficient exposure. A cutting to be in a good state for rooting should be short-jointed and firm, and not drawn, through being shaded, or from the plants standing too far away from the glass. The best way to treat the cuttings is to insert them in sharp sandy soil in well drained pots, and then to cover with a bell-glass and stand them on any shady back shelf near the light in a stove. If they show any symptoms of flagging all that is needed to revive them is just to damp them by the gentlest syringing possible, and then to replace the bell over them at once. When struck they may be grown in any pit or frame during the summer, but should not be shaded, or they soon get to a great length, and never flower so well as they would otherwise do. Potted in 6-inch pots and stopped once or twice they form charming little plants for table decoration or for helping to fill stands in window recesses in warm rooms, but owing to its tender nature they will not do in a temperature lower than 55°, and are therefore not of much use or safe in a greenhouse where the Sericographis will stand.

Chilies Prince and Princess of Wales, from the highly ornamental pods they bear, are strikingly effective and most valuable for dinner-table decoration or using in a warm house, where, in a light situation and with a temperature above 50°, they will last in fine condition nearly the whole of the winter. To get the plants of a fair useful size no time should be lost in sowing the seed, which requires a good brisk heat to get it to germinate. As soon as they are up and of proper size to handle they should be potted singly and pushed on in a moist warm atmosphere till large enough to take their final shift in 6 or 8-inch pots. Like the Rivina humilis, these Chilies look much the best grown in the form of standards, as then their bright yellow pods hang down clear of the foliage, and are more seen than they are on such as are trained bush fashion. All that is necessary is to rub out any side shoots as they show themselves till the plants reach the desired height, when by nipping out the tops they will at once branch, and if these side shoots are stopped nice neat heads will be the result. In order to get them to set their fruit freely they should have plenty of air and be stood at a sufficient distance apart in a frame to let in the sun around them, which will not only cause them to become better furnished with pods, but will keep them close and compact. An easy way of managing these, and one which saves some amount of labour in watering, is to plant them out in any pit or frame that has been used for Potatos or other similar purposes, and then take them up for potting in the autumn, in which way they are but very little trouble, and as they never become sufficiently dry to cast any of their flowers as they sometimes do in pots, they are sure to bear a full crop of fruit. Red-spider and greenfly are their great enemies, either of which, if allowed to effect a footing, will soon cripple them beyond hope of recovery. Free syringing will keep the former down, and a few whiffs of tobacco smoke will settle accounts with the latter, but to render this effectual a still night should be chosen, and the dose followed up by administering a second the next morning.

Plumbago rosea, is a charmingly beautiful plant that bears numerous racemes of delicate rosy-pink flowers about the size of a sixpence, which have a pleasing effect arching over above the snowy white cloth of a dinner-table, or depending from the sides of a tall vase when used in a cut state. In habit it is so floriferous that even the tiniest plants produce bloom, and by growing them in 4 or 6 inch pots, quite neat little specimens may be had, that will come in admirably for general purposes. Unfortunately the petals are rather thin, and to improve the texture of these and render the flowers more lasting, they should be allowed to expand in a cool house where they do not get a higher temperature than about 60°, and stood so as to be close up to the glass that they may have the benefit of all the light and sun we get during the short days of winter. The way to treat Plumbago rosea is, when they have done flowering, to slightly rest them by keeping them a little dry at the roots, and then shorten them well back, when, as soon as they break again they should be shaken out and repotted in fresh soil and kept a little close to give them a start. Cuttings made of the young growth put in now will soon strike, and form nice little plants by the autumn. *J. S.*

(*To be continued.*)

Fig. 91.—Flowers of the Beurré d'Amanlis Pear.

PEAR BLOSSOMS.

Since we last wrote on this subject, considerable advance has taken place in the neighbourhood of London, and, on the whole, there is more bloom than we anticipated. The two illustrations we give, supplementary to those which have already appeared, are Easter Beurré (fig. 90) and Beurré d'Amanlis (fig. 91). The two furnish good examples of extreme forms. In the Easter Beurré, as grown at Chiswick, the leaves are oblong-obtuse at both ends, and with a minute point (not shown in the figure), and which in fact dries up and withers. The leaves are glabrous on both surfaces, but have a few hairs along the entire edges and at the tip; the leaf-stalk is very slender, and half the length of the blade. The flowers are about 1 inch in diameter. The flower-stalks are glabrous, about half the length of the leaves, and terminate above in a wedge-shaped flower-tube covered with hair, and which is the future Pear. The sepals spread widely, are of a triangular form, prolonged into a long point, and covered with reddish hairs on the inner surface. The petals are small in comparison to those of other sorts, oblong-obtuse, wedge-shaped at the base, where they taper to a short stalk. They are often irregular in form and size. The stamens are about half the length of the petals, the style separate to the base, and slightly hairy.

Beurré d'Amanlis offers a great contrast to the preceding. Its leaves are much longer, the slender stalk nearly as long as the blade, which latter is oblong, or, in some cases, oblong-lanceolate and acuminate, tapering at the base, and saw-toothed at the margin (though not so shown in the figure). The flower-stalks are half the length of the leaf and slightly downy. The flowers are 1½ inch in diameter, the flower-tube (or future Pear) is vase-shaped, contracted at the neck, and expanding above into a shallow-spreading cup from which the sepals spread. These latter are triangular acuminate, covered on the inner surface with whitish hairs. The petals are

nearly three times the length of the sepals, large, ovate, or roundish, very clear white. The stamens are less than half the length of the petals; the styles separate to the base and free from hairs. The flowers of this Pear are very distinct, and so handsome that, irrespective of the fruit, the tree might be grown for its ornamental character.

GRAPE GROWING AT EASTNOR CASTLE.

It is no unusual thing to meet people conversant with gardening matters who assert that fruits of all kinds, especially Grapes, are not grown any better now than they were a generation back, whilst others as stoutly maintain that the opposite is correct, and that better Grapes have been grown and shown within the last score of years than ever were seen before. Leaving the disputants to settle their difference as best they may, there can be little question that in Grape culture, as with most other fruits, there has been a very decided advance, inasmuch as in times past there were only a few growers to be met with here and there throughout the country who could produce them with that complete finish which marks the difference between good fruit in the ordinary sense of the term, and such as possess the highest excellence, whilst there are now many who can manage them in a way that leaves little or no room for improvement.

Yet it often happens that Vines for a time, whilst just in a certain stage, produce Grapes of the first excellence, and in a few years fall off, so as to much reduce the character of the fruit, and this whilst the management is in the same hands; but this has evidently not been the case at Eastnor, nor from appearance is it likely to occur. I had an opportunity of seeing the Vines here the last week in March, and a few notes respecting them may be interesting.

Beginning with the earliest house, originally furnished in the usual way with a number of Vines, which are now reduced to one Black Hamburgh, it has been forced by Mr. Coleman for twenty years so as to come in during the latter part of May, and I understand had been similarly forced for fifteen years before Mr. Coleman's coming to the place. The berries were taking their second swelling; the crop is a full one, not so many bunches as are frequently seen on old Vines, but with an absence of the small ones so usual after long forcing. Many of the bunches will run from 2 lb. to 3 lb.

There is a peculiarity in the way this Vine has been and is being treated that deserves notice. Like the rest of the Vines here it is planted inside the front wall with a portion of roots in the inside, and the rest in the outside border. It stands somewhat nearer one end of the house than the other, and a branch has been taken each way all along the front about 2 feet above the border, from which rods at intervals are taken up the roof in the ordinary manner. Twelve years ago a young Vine was planted immediately beneath the longest of the two of these principal branches, about midway from where it joins the main stem and its extremity; the young Vine so planted, as will be seen, necessarily crossed this horizontal branch of the old Vine, which was notched across, and the young cane fitted into the hollow prepared for it. The two were bound together, crossing, as they did, at right angles, and during the season became firmly united, after which the head of the young Vine was removed just above the point of union, consequently all the power of its roots was directed to assisting the branch of the old Vine, to which it was thus inarched crossways. The stem of the young Vine, only some 2 feet in length from the collar to where it joins the branch of the old one, is now as thick as a man's wrist, and the influence in helping to support the old Vine is unmistakably apparent by the greater vigour at that end of the house. So convinced is Mr. Coleman of this that last autumn, before starting the house, he planted three more young ones, like the first, just below the two main branches of the old Vine, and joined them to it in the way described: they are now united, and will doubtless impart new vigour to the old head.

Another house, adjoining the one above-mentioned, is started at the same time, but the temperature is kept lower, so that the crop is ripe three weeks later. Here, again, one Vine—Frankenthal—occupies most of the space, but on it have been grafted the White and Grizzly Frontignans and Foster's Seedling. At one end, not covered by the old Vine, the space is filled up with some Muscats in pots, plunged in the border. The crop collectively is most promising: some of the Muscat bunches on the pot Vines were over a foot long. The third in succession is a high-span-roofed house filled with Hamburghs alone, each Vine having several rods, the whole models of healthy vigour. They were just coming into bloom.

The next to follow is a small house two years planted, with seven Muscats of Alexandria occupying the middle, and a single Gros Colmar at one end, and one Madresfield Court at the opposite end of the house. Mr. Coleman is a firm believer in the extension system, and follows it up, and in pursuance of this all the Muscats but one are ultimately to be removed, retaining it and the two others before named, which will be encouraged to occupy the entire space. They are all very strong for their age, and showing abundance of fruit.

Then comes the big span-roofed house devoted to the old Black Hamburgh, now so well known, not alone to those who have seen it, but in a secondary way by very many more who frequently have looked upon the marvellously finished bunches produced by it, and so often exhibited by Mr. Coleman. In general condition it is in no way different from what it has been for some years; the young shoots were about a foot long, as stout and full of vigour as it is possible for them to be, mostly showing fruit from three or four joints—a circumstance that shows the thorough ripening of the wood which was effected last autumn, the sunless wet weather notwithstanding. But let it not be understood that this was secured with the later portion of the Vines here without extra means to supply that which, last summer, solar heat left deficient. Mr. Coleman says he burnt fifty pounds' worth of fuel extra last year for his Vines alone, and it is pretty certain that the money has been well spent, for it is needless to say that where Vines are in vigorous condition the wood takes more ripening than when weaker; and there is little doubt that where additional fire-heat was not used to late Vines last autumn, a good many tendrils will show where there should have been bunches. This Vine is planted inside at a short distance from one end of the house, the roots fill a good deal of space outside as well as inside; the inside portion of the border occupies the full width of the house, extending inwards for a considerable distance. Last autumn about 12 feet of the inner portion was removed and the roots cut back, with fresh soil added for them to run into. In fact, this partial removal and renewal is yearly going on at Eastnor, and is the key to the continual production, without any falling off, of perfectly finished Grapes, especially Black Hamburghs, combined of course with general skilful treatment.

Another house, principally filled with Muscats and a few Madresfield Court and Black Morocco, was nearly as far advanced as the big Vine, and, like it, was everything that could be wished for in condition. The latest house, all Lady Downe's except one or two Muscats and Gros Colmar, was just started, the bunches appearing in quantity from the shoots, which were no more than fairly broken. In the Grape-room there was still a lot of beautiful bunches, the remains of last year's crop from this house, the berries of the Lady Downe's plump and large enough to be taken for Gros Colmar. Mr. Coleman fully realises the almost unlimited quantity of water which strong, healthy Vines require when in full growth, and supplies them without stint accordingly, but he is equally careful to guard the outside roots from chilling autumn rains, to keep out which, as well as to keep in the warmth absorbed by the soil through the summer, the outside borders of all the houses forced have a good covering of Fern laid on them early enough in the autumn before heavy rains come on; over this is put shutters or oil-sheets to throw off the wet completely, and this covering remains until so far in the spring that the roots want water. *T. Baines.*

ANNUALS FOR POT CULTURE.

At a recent meeting of the Ealing and District Gardeners' Society a very interesting paper on annuals as pot plants was read by Mr. J. Roberts, The Gardens, Gunnersbury Park, Acton. Starting with the assertion that it was his purpose to treat of a few really good kinds of annuals that are not so generally grown as they deserve to be—leaving out of consideration such commonly grown subjects as Celosias, Balsams, Mignonette, Globe Amaranthus, &c., the merits and culture of these being generally understood—Mr. Roberts went on to notice a very general opinion held by gardeners that the flowering period of annuals is of short duration, and this has operated to deter many from cultivating them in pots. This is true of some annuals when grown outside and allowed to suffer from drought and overcrowding, but they are very different when grown in pots and kept well nourished with liquid manure. The blue Cornflower, Centaurea Cyanus, yields an immense quantity of flowers for several months from the same plants when liberally treated in pots.

Asters were specially recommended for conservatory decoration when well grown in pots: Reid's quilled Aster was one of the best for this purpose. The seeds should be sown in 32-sized pots in rich loamy soil about the middle of May, and the pots placed in a cold frame till the seedlings become strong, when they should be exposed to full sun and air by plunging the pots in a bed of cocoa-fibre in the open air. The plants should be thinned out to the strongest in the centre of the pot, care taken that it never suffers from drought, and by the middle of September it will develope into a fine plant, bearing from eight to twelve flowers, which will form a succession to those sown earlier in the season. Browallia elata cœrulea and cœrulea grandiflora are very useful for pot culture, and are highly effective at all seasons of the year. By making successional sowings they may be had in flower all the year round. A sowing made about the middle of February in a little warmth will make nice blooming plants during May and June, and will assist in giving variety at a season when there is not much in bloom except Pelargoniums. Another sowing should be made about the middle or end of June in a cold frame. The plants thus raised, if grown on without check, will prove very valuable for cutting purposes during the autumn months, and will last a considerable time in bloom, giving a hue of colour very scarce at that time of the year.

The different varieties of Candytufts—white, purple, crimson and flesh-coloured—are all useful in the autumn. The same treatment will suffice for these as for the Browallias, with the exception that more liberal drainage must be given, otherwise the plants are apt to damp off during the dull days of autumn. Centaurea Cyanus is, without exception, one of the best and most useful plants that can be grown in pots. The colour of the flowers is of a very attractive shade of blue, and gives a finish to a bouquet or a buttonhole second to no other subject. It is a very free-growing plant, and if successional sowings are made will furnish flowers all the year through. This annual requires very rich light soil, the plants in 32-sized pots, three or four in a pot. A large batch of these plants should be raised about the middle of June, and another at the end of July. The plants should be grown outside during the summer months, taking them under cover about the middle of September, when the earliest sown batch will be coming finely into flower, and the late sown batch will succeed it, and yield blue flowers throughout the winter months. It is necessary during winter to give the plants a warmer temperature than that of an ordinary greenhouse. Linum grandiflorum is another distinct annual, and a very useful one in pots through the autumn. The seeds should be soaked a day or so before being sown, but in every other respect the same treatment as for the Browallias is suitable.

There are several varieties of dwarf Lupins that make good pot plants, and are very fine and useful for late summer decoration. Two of the best are Lupinus nanus and nanus albus. Another most useful plant is Martynia fragrans, indeed it is one of the finest annuals grown: in addition to being beautiful in colour it is very sweet-scented, and therefore a fine subject for the conservatory in autumn. It is a Mexican plant, and requires warm treatment all through the growing season. The seed should be sown early in spring in a brisk heat; the soil must not be allowed to become dry during the period of germination, otherwise the cotyledons are apt to dry up after the outer shell has burst. A close, warm frame suits this plant through the summer months, with full exposure to the sun; the foliage should not be wetted with the syringe, and at all seasons water must be carefully given. Liberal drainage is necessary, and the soil must be light, rich, and sandy. The plants will require pinching several times through the growing season to keep them dwarf and bushy; and they need shifting into fresh soil once a month or six weeks. Useful sized plants of the Martynia can be grown in 24-sized pots. Nigella damascena is another annual that merits attention, and is striking and effective in pots. The same treatment as for the Candytufts will suit it. Some of the best varieties of Phlox Drummondi do finely in pots. It is very useful for decorative purposes. Rhodanthe atrosanguinea and R. maculata, as well as the white variety,

possess every good point as annuals for pots; they are dwarf in habit and profuse bloomers, rich in colour and chaste in form. Seed can be sown every month in the year, with the certainty that the plants will bloom. Rhodanthes make valuable decorative plants when grown in 48-sized pots, but if grown for cutting from will do best in 32-sized pots. A light rich soil, with good drainage, suits them: about six plants should occupy a 48-sized pot, and eight plants a 32-pot. A large batch should be sown about the middle of January, which will prove valuable during the early summer months. The dwarf varieties of the Sweet Scabious are useful subjects for pot culture. These plants possess an excellent habit of growth combined with great floriferousness. The colours of some of the varieties are very striking, and quite distinct from those of other annuals. They are most useful as autumn-flowering plants, and as they are somewhat slow of growth the seed should be sown earlier in the season than some others. The end of April is a good time to sow, and the best sized pots 24's. The seedling pots should be plunged outside during the summer months, always taking care the plants do not suffer for want of moisture.

There are some fine annuals which are very useful as spring bloomers when sown during the months of August and September, viz., Schizanthus retusus, Intermediate Stocks, Nemophila insignis, which makes one of the prettiest of basket plants when grown through the winter under glass; and others. Any one requiring a really fine basket plant will find it in Venidium calendulaceum, a very fine annual, and one too little known. It should be sown in the spring, and planted in a large basket early in the summer, and its pendent shoots will produce a great quantity of blossoms in autumn.

As a general rule the best soil for annuals in pots is a rich vegetable mould; about equal parts of good loam and leaf-soil will suit the greater part of them. It is necessary to be very watchful in the matter of water; if the plants are allowed to become very dry when young they become stunted in growth, and rarely ever become of much service.

AUTUMN STRAWBERRIES.

Amongst the many legacies bequeathed to gardeners through the sunless summer of last year, none are more conspicuous than the manifest scarcity of fruit that must succeed the existing poverty of blossom, which, estimated at its best, will fall far short of anything we have been accustomed to look forward to for years. Whatever may be said or written of a few trees here or there of some particular variety bearing a crop, it is an acknowledged fact that the average consumption of hardy fruit within the shores of these islands annually is so great that we are indebted to our friends upon the other side of the Atlantic for our main supply. What, then, are we to expect during the coming season?

The tons of foreign fruits that are imported into this country annually are chiefly consumed by persons who are wealthy enough to afford a dessert, but who choose to live without the luxury of a large garden.

The traditional history of many old-established gardens, which through all vicissitudes and fickleness of climate have hitherto yielded a supply equal to private demands, are likely under present circumstances to undergo a change this year, inasmuch as the supply of fruit will not be by many degrees adequate to the most modest demands—a consummation alike disappointing to all connected with horticulture.

In the face of this important crisis in horticultural history a question naturally arises as to the adoption of some scheme that would lessen the blank in the supply of hardy fruit, and establish a practice which well deserves the fullest consideration of horticulturists. I refer in this case to the cultivation of the Strawberry during the autumn months, the production of a crop of which costs considerably less than crops of no greater usefulness that are obtaind from forced plants from the month of February until the end of June. There is not a garden, whether large or small, where a few hundred plants are forced in the spring, whose owner may not enjoy a dish of ripe Strawberries from the open garden as late as the end of September; and how much more advantageous, and how much more satisfactory could the system be made by those who are possessed of better facilities, such as pits and frames, and heated glass-houses. If people were only educated to look for Strawberries in the autumn as they do in the spring, the system would soon become general; and I suppose it is not too much to affirm that a dish of ripe Strawberries will rank equal with a dish of any other hardy fruit as late as the end of November.

There is this much to be said upon the subject at the beginning—to accomplish the work properly it wants management. By this I do not mean particular skill, but merely keen, steady application, which, with perseverance and practice, will in time make the details of the work as well known as the commonest garden operation.

The first advice that I would commend to the notice of those who are disposed to give the system more than a lukewarm trial, would be to select proper sorts for the purpose, and not to confine experiments to one or two varieties.

I find that soil and climate have a marvellous effect upon the producing power of Strawberries, and that a variety which is the wonder of one neighbourhood may be a comparative failure in another. These and other local circumstances are learned by experience only, in the same way that by personal observation of the conduct of certain kinds, planted in different situations, something like reliable data may be obtained with regard to securing a crop, or a succession of crops, with as much certainty as we look for a succession of Peas, or anything else in season. It is not the intrinsic value of a crop that is always estimated in private gardens, but the satisfaction of having things at the exact time they are required.

To market growers a new field of resource would be opened up which could not fail to be remunerative, as by planting forced plants out earlier in the season there would be the prospect of gathering three crops in rapid succession, instead of two, as is the case under the present system. There may be something to be said about a market for them at that time of year; but as most articles now-a-days are disposed of according to the supply in the market, and as large quantities would not be forthcoming for some time, it is only fair to assume that good prices would be realised in those densely populated towns where green Almeira Grapes are readily purchased. A good supply in the market would soon wean people from regarding autumn Strawberries as a novelty; and, once their worth became recognised, their popularity amongst the middle and upper classes would be sure to increase.

One other point deserves special notice: the waste of the many forced plants that go to swell the rubbish heap in private establishments; these ought, I think, to become a recognised marketable article as between the grower and nurseryman. They are infinitely superior to young plants, and would be a profitable investment for that large class who have not as yet discovered the short way to success in many branches of horticulture. How many hundreds of owners of small gardens would be delighted to have the opportunity of purchasing plants at an increased cost that would yield two crops within twelve months, instead of one in two years, as is the case where runners are purchased and planted in the spring. And yet gardeners throw their surplus stock away, and nurserymen take no notice, and the small cultivator waits patiently for two or three years for a full crop of fruit, in sublime ignorance of the fact that a return equally good is obtainable in half the time by adopting a different system.

There is no more favourable time of year for commencing to lay a foundation upon the principle above suggested than the present month. Wherever the Strawberry is forced at all, the work is being prosecuted at the present time, and plans may now be conceived upon any scale (and the larger the better, where there is room) of planting from fifty to as many hundred plants. The occupier of a small garden will not be particular whether he finds himself the possessor of a crop of Strawberries in the middle of August or at the end of it; so that really in their case all that is necessary is to make a plantation at once according to instructions which shall be detailed presently, and leave the rest to the weather.

The position is altered with respect to practical gardeners, of whom different things are expected. In their case, then, the most certain way of proceeding to work with a view of having a succession of ripe fruit in the open garden during the autumn, would be to take ordinary care of plants as they are turned out of the forcing-houses by giving them the protection of a cold pit or frame for a few days, until the tissues of the leaves grow firm enough to stand the exposure of the weather. While the plants are undergoing this preparatory process, a suitable situation should be chosen for planting them. Preference would, of course, be given at any time to a south aspect, but any open quarter will suit them perfectly; indeed, an open plot in the garden is far superior to a sheltered one after the beginning of September, because the conditions afforded are more favourable for the plants to set their fruit, as the days grow short, and heavy dews hang about a long time in places where there is not a sweeping current of air or direct sunshine to absorb the moisture.

I used to plant them on a raised mound, where the soil was light and open, and the fruit never failed to set perfectly in every respect until the middle of October. In order to secure a regular succession of fruit, a batch of plants should be planted out every fortnight from the end of April until the beginning of June, and this would give full scope for lifting a stock for fruiting in pots as well. Before planting is commenced the ground should be in good working order, and the balls of the plants should be in a mellow state; in fact, both bodies of earth should be in an equable condition, otherwise planting cannot be performed efficiently. A safe way of going to work is to soak the balls of the plants with water, and protect them if the weather is showery until the ball will handle without being sticky. Then divest the plants of all decaying appendages, and loose the roots round the outside of the ball if they are hard and wrapped together, and proceed with planting at from 18 inches to 2 feet apart each way, according to the habit of the variety. The main point to be kept in view in planting out these plants is to see that the earth is pressed as firmly about the balls as the earth of the balls themselves, otherwise the roots will not take in a proper supply of water, and healthy progress will be rendered impossible.

I see no reason why cold pits and frames, which accommodate bedding plants in the spring, should not be used for fruiting Strawberries in the autumn. The protection from excessive rains, and other advantages to be secured in the declining autumn, are too clear to require special allusion except by way of reminder. A couple of hundred plants lifted from the end of September to the middle or end of October, and potted up carefully, would continue the supply to Christmas.

Where it is chosen to keep the plants for this purpose in pots, they should be kept behind a north wall for a couple of months, and then overhauled either by fresh potting or top-dressing where it is not convenient to shift them into larger sized pots. They will come into flower by the beginning of autumn, and there is no difficulty in working them along quietly to succeed those in the open garden. Relying upon the advice it was my privilege to give from time to time in the pages of the *Gardeners' Chronicle* upon this subject, I am presuming only upon reviving an interest in the present state of affairs in the cultivation of the Strawberry in autumn, from experience already detailed in your columns. *Wm. Hinds, Canford Manor, Dorset.*

AN AMATEUR GARDENER'S EXPERIENCES.—I.

It was my fortunate lot, though town-born and bred, to have as a boy friends and relatives in pleasant country places, and thus it happened that most of my longer schoolboy holidays were spent among rural sights and scenes. Attached to some of the houses I then visited were pleasant gardens, and one of my friends was an enthusiastic and successful gardener. I suppose I must have had a natural taste for gardening, for even as a very small child, while attending a dame's school, some of my pleasantest pastime was found in tending, in child-fashion, a tiny little garden—a very tiny one. It was in a sunny corner, though not in the most salubrious atmosphere, for my home was on the edge of a big smoky manufacturing town. I well remember my first transaction with a seedsman. One fine Saturday early in spring, I was out with a schoolfellow for a walk down the main road close to my home which led countrywards, and was the possessor of a penny, which at the age of six was a sum to think about. My companion was a juvenile gardener like myself, and was equally occupied on holidays in investigating

the progress of the Daisies and other simple plants we were able to get possession of. We were constantly lifting our plants to see how they were growing, for the notion possessed us, as it does most children, that growth was to be measured by the condition of the roots. On our way we passed the shop of the local seedsman, who was also the local corndealer. The arrival of the seed season he indicated by placing in his window a wooden tray separated into a number of small divisions, each of which was filled by packets of some one kind of flower seeds, each duly labelled with, to us juveniles, some mysterious name. The happy conjunction of a penny in my pocket, the alluring presence of the packets of flower seeds, and my interest in gardening, caused me to look at the contents of the wooden tray with marked purpose. I was not long in making up my mind. Among the tempting seeds offered for sale I found some labelled Love-lies-bleeding, and the name was so attractive that I boldly entered the shop and bought a packet. I am afraid I sowed the seeds too deeply, for though I watched for their growth with the most assiduous care, and made my little garden absolutely muddy with the supply of water I poured on it, my investment yielded no results except the occupation it gave me, and it was years after before I had the pleasure of seeing Love-lies-bleeding in flower.

Time passed on, my home was removed into the centre of the town, and my opportunities for gardening were limited to occasional visits to a schoolfellow who, fortunately for both of us, had a bright little plot in which, with the aid of his father, there were always to be seen in spring and summer some of the commonest hardy plants which seem as though they had been given purposely to encourage attempts to grow something even in the most uncongenial situations. The father of this boy had a nice "guinea" garden (so called from the yearly rent paid for it) in the outskirts of the town, and on one memorable summer's evening I was taken to see it. It was a delightful place in my estimation, cramful of old-fashioned plants, vegetables, big fruit trees, including a magnificent Siberian Crab tree, and oh! such an appetising bed of Strawberries. Even now I can revel over it in imagination, as I did then in reality in the privilege of gathering those luscious berries. Never since have I had fruit which so entirely satisfied me. I think that visit settled in my mind a fixed determination to have a garden of my own when I had reached man's estate. If any wavering on the subject existed it must have been driven away the following year, when I was set free in another charming old-fashioned garden in the pleasantest suburb of our town, and told I might eat my fill of Gooseberries, which hung in rich profusion dead ripe on numberless trees. Next to the aforesaid Strawberries those Gooseberries stand out in my memory as the choicest of fruit. There, too, were such numbers of Moss Roses and hardy herbaceous plants as I had never seen before, and I went home laden with lovely flowers. That garden was a real "pleasaunce" to me, and I always recur to it when I think of delightful gardens I have visited. Then came visits at least twice a year to an old relative residing in a delightful country town, where I made closer acquaintance with the occupants of a well-cultured garden. A year or two afterwards I made a visit to some friends of my family, old-fashioned farmers, whose homestead stood half-way up a hill-side overlooking the valley of the Teme. Never shall I forget that journey. I travelled some thirty miles by rail and then a dozen more by coach. It was May, a genial May: the rich pasture lands glorious in their brightest array; the multitudinous orchards one blaze of flowers, the perfume of Hawthorn bushes everywhere. It was my first visit to the rich orchard country of Worcestershire, and the remembrance of the delight it gave me is as vivid as though it had happened but yesterday.

The farmhouse was an old-fashioned, long, irregular building, facing south. It was covered with climbing Roses, Honeysuckle, some gigantic Fuchsias, and a Brown Beurré Pear tree. In front, gently sloping down from the house, was a lawn bordered at each end with glorious shrubs, and below it and at one end was a large well-managed kitchen garden. A few flower-beds cut out of the turf were gay with a profusion of bright blossoms. The flower gardening was all done by the farmer's eldest daughter, who was as enthusiastic in the pursuit of gardening as she was skilful. That was, for a farm garden, the brightest and best managed I have ever seen, and my first and subsequent visits to it deepened my interest in gardening and made me long still more for a garden of my own. Sometimes, while on a visit to these friends, I used to be taken to the admirable gardens of a neighbouring Baronet, and there I made my first acquaintance with a really skilled professional gardener—the first of a long list of men whom I am proud to regard as friends. I must confess to a great liking for good gardeners. I suppose it is the humanising nature of their occupation which makes them such pleasant companions. Speaking generally of such as I know best, I am bound to say they compare most advantageously with all classes of men of the same, and with many of higher, standing in the world. They are courteous and hospitable; they are cultured to a degree which those whe do not know them intimately would never suspect; not a few of them are well read in the best literature of the country; as a body they are thoughtful and cautious, and are not prone to form hasty conclusions. Even to strangers they are readily accessible when it is known that these visitors are interested in the pursuit of their lives. Take them for all in all, they are the pleasantest lot of men I know; and I say again, I am glad to number them among my best regarded friends. *Philanthes.*

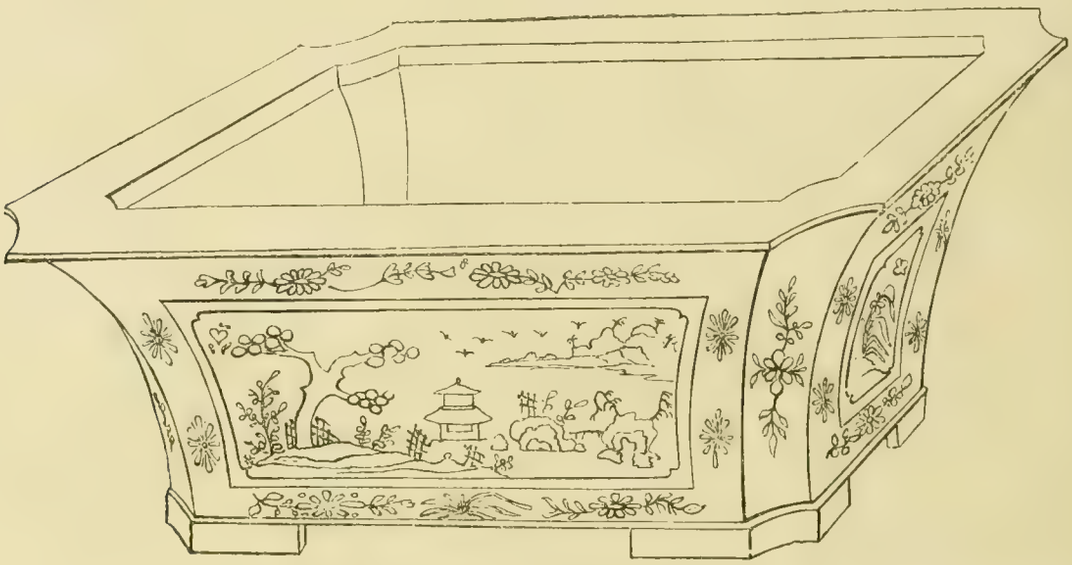

Fig. 92.—Chinese flower pot. (see p. 523.)

Foreign Correspondence.

Fruit Growing at the Cape.—Of native fruits little need be said—useful and luscious fruits are the products of civilisation. The early emigrants took the matured trees and shrubs to the colonies with them. In about 18,000 varieties of plants in Cape Colony there are few of them agreeable to European palates. The primitive Dutch settlers were great in horticulture; but it was to the French Huguenots, flying from persecution in their own country after the revocation of the Edict of Nantes in 1685, that the Cape is most indebted for the glorious Vine.

Some of the indigenous Cape fruits got European appellations, without much resemblance in flavour to those after which they were called. In this way we read of native Plums, native Oranges, native Apples, &c. The Natal Orange runs into Cape Colony. The rind is hard, the stones are poisonous, but the pulp has a sweet acid, which is welcomed by elephants and men; its odour is attractive. The Kaffir Plum and the wild Plum are not distasteful. There are stone fruits no larger than Peas, and a number of medicinal fruits. The wild Almond is deadly when fresh, but good after soaking in water. There are wild Chestnuts, Figs, Apricots, Melons, and Apples. The Kei Apple of the East is not an Apple, though looking like a small one. It is the fruit of a small tree which bears the name of Aberia Caffra.

The European fruits growing at the Cape cannot be surpassed by the best growing in England, France, or Italy. Every sort flourishes well. With 7000 cases in orchard and garden good results may be expected. Dutch Boers like to have their houses surrounded by fruit trees; the old villages of the colony, therefore, have a beautiful appearance. The Paarl district, not far from Cape Town, had 687 acres in orchard during 1878; Tulbagh had 460; Oudshoorn, 449; Calvinia, 448; Stellenbosch, 367; and Cradock, 349. Among such fruits the Orange took a foremost rank.

The Vine, in spite of the spread of modern disease, still occupies a prominent place, especially in the neighbourhood of Cape Town. Last year there were 8588 acres bearing. The Paarl division was said to have 20,000,000 Vines; Stellenbosch, 15,000,000; Oudshoorn, 6,000,000; Woreister, 5,500,000; and the Cape, 3,000,000. Every visitor to Table Bay runs off to Wynberg and Constantia to taste the delicious Grapes there. Many of these are converted into raisins, equalling the best Levantine ones in flavour. Nearly 3,000,000 lb. of dried Grapes were prepared in 1878.

As to the wines, there is a very large consumption in the colony itself, at a retail price of 3*s.* a gallon—much too easy a rate to be withstood, by the coloured races in particular. Brandy made directly from the Grape is in extensive request also among Kaffirs and

Hottentots. During 1878 there were made 4,485,665 gallons of wine and 1,067,812 gallons of brandy. The distillation goes on merrily, to the sad loss of much national virtue and wealth. At one time there was a vigorous exportation of Cape wines into Europe, but, prepared badly and unduly fortified for the voyage, they had a bad reputation. When made with care, it is said the wine there is equal to any Spain can produce. The high percentage of alcohol subjects them to an English duty of half-a-crown a gallon when 1*s.* is paid on French wines. The Pontac red wine of Constantia is made when the Grape is nearly shrivelled up. The Hanepoot, from the Muscat, is mostly preferred, having a great resemblance to Madeira. The Pontac loses its colour with age. A sort of hock is made from the Steen Grape, and is very strong. Most wines are prepared from the black and white Green Grape. The custom of adding spirit to the liquor alters the character of the natural wine. Cape wines are now being much improved in quality.

The newly proclaimed agricultural areas, open to selection on the system of ten annual payments of 1*s.* an acre, promise to be enormously productive in fruit. The rich soil, abundantly provided with running water, with the shelter of native woods, must yield plenteously. The new settlers taking up these fine farms will have delightful orchards about them in a few years, and be able to send their fruit to the English market with the same facility as Spain and Portugal did a few years ago. Any persons not farmers, but with gardening tastes, might embrace the liberal offers of the Cape Government, through their London agent in Blomfield Street, and form at the Cape as healthy and happy a home as could be had in any colony of the empire.

Canadian Notes.—We have had a very peculiar winter—not at all like our usual Canadian season. The cold and snow, which came very early, soon left us, and has only returned occasionally for a day or two, and we have had very little sleighing, but a great many delightfully warm and bright days. The lack of snow, however, has been disastrous in many instances to the fall Wheat, which where put in on at all unfavourable circumstances, has succumbed to the alternate frost and sun. The description of Wheat we have sown most of is the Seneca, which yielded us some excellent crops last year. March has had very little cold weather, but to-day has been cold enough —perhaps 15° or 20° below zero at sunrise.

The winter has been very cold in the great North-west—Manitoba and the other provinces; it is said as low as 47° below zero. The crops of Wheat there on high ground were good, but poor on the low ground, and many are changing their farms. Many farmers are selling out from this province to go there, and a large number are anxious to dispose of their farms for the same purpose, as a prairie farm soon brings in a good return; but still every one who goes is anxious to get some bush with it.

Potatos have kept well with us, and are selling at 45 cents a bag—say a farthing a pound your currency. The Early Rose is almost the only sort grown about here. Fat cattle are purchased for the English market at about 4½ cents per pound live weight—say 2¼*d.* per pound English currency. The lumber trade is reviving nicely, and prices have considerably advanced. A new trade has sprung up in Barrie in a large demand for ice, which is cut out of the Bay and loaded on to the railway trains alongside for Chicago and several other large cities of the United States. A long train is loaded every hour. *J. M., Minesing, Ontario, March* 24.

Florists' Flowers.

Seasonable Notes on Hardy Florists' Flowers.—Auriculas.—There is a good deal of work to be performed in May. There are always a few late flowering varieties that continue in flower until the second week in the month, but the usual routine work for the last days of April and the beginning of May is to remove the plants as they go out of bloom from the pit or house where they have been arranged to the frames behind the north wall, or any other place where the plants may receive shade during the hottest part of the day. The plants should be repotted towards the end of May, but the matter of two or three weeks either way is immaterial. Exhibitors who remove their plants to a considerable distance for exhibition find it necessary to repot them as soon as they get them home, that is usually about the end of April. I have repotted plants at that time, and found they did quite as well as at any other. The composition of the potting material and the care with which the operation is performed is of more import-

Fig. 93.—A mountain in a flower-pot, from a Japanese drawing. (see p. 528.)

ance than the time of the year. Use good yellow turfy loam four or five parts, rotten cow-manure one part, and one part leaf-mould; a little sand, and pounded but not powdered charcoal, may also be added. The lights should be removed from the frames except when it rains, or during very high winds.

Carnations and Picotees.

The cold cloudy weather we have had during the last ten days or more has not been conducive to the healthy development of these plants. It does seem that many of the old choice varieties have become constitutionally enfeebled through continuous propagation for a period in some cases exceeding fifty years, and in many instances a quarter of a century. We have a number of varieties recently raised from seed, and these are starting with a vigour not to be found in the older varieties. It may also be as well to remind growers that a change of stock is desirable. One grower called here last autumn, and told me that his stock of plants had so degenerated for want of change that scarcely any of them were capable of producing decent flowers. It is also a good plan to prevent certain plants from flowering, so that their whole strength may be thrown into the production of "grass." All the weak plants should be treated in this way. Mr. Simonite wrote to me quite recently to say that he would have to cut down many of his plants to save their lives. We are now turning our strongest plants out-of-doors, and placing sticks to them. It is not safe to turn them out without doing this, as many of the plants are injured by being loosened, and many of them might snap over. Keep them under glass as long as it is convenient to do so.

Dahlias.

Continue to repot these as they form roots, letting them remain in a gentle bottom-heat in a frame until they start again. Plants that are established in 5 or 6-inch pots, should be placed in cold frames not too close together. Admit plenty of air, even removing the lights altogether in fine weather; this promotes a healthy short-jointed growth. The glass lights must be covered over closely with mats at night if there is any danger of frost.

Gladioli.

We have now planted out the whole of the corms. The ground was not so dry as we like it to be, but we had some dry sand to place under and over the corms, and some dry loam to fill up the drills with. The seeds sown early in April in pots, and plunged in a hotbed, have now vegetated freely. By far the best plan is just to let the pots remain where they are, and as the plants progress in growth admit more air by day and do not shut up the frame quite close at night. The plants grow as freely as pots of grass would, and at a little distance the appearance of the frame is not unlike a patch of young Wheat. Water freely as the young plants require it.

Hollyhocks.

The earliest plants should now be well established out-of-doors and growing freely. One stem only should be allowed to each, and that must be fastened to the sticks as they advance in growth. The very latest propagated plants should be put out without any further delay. Many persons sow seeds early in the year, but I fancy that the end of May is as good a time as any. If they are sown earlier in the year the flowers make an attempt to flower the same season; a stem is formed, and flower-buds which do not open. Plants obtained from late-sown seeds will not do this, and will flower all the stronger next season. Keep the surface of the ground well stirred with the hoe amongst plants, seedlings or named sorts.

Pansies.

The instructions as to management are not very different to that given at p. 429. Follow out those instructions, also keep the ground free from weeds by hand-picking, also by stirring the surface with a Dutch hoe. The plants in pots will continue to produce flowers very freely, but manure-water must be given at each alternate watering, and air must be admitted freely. It may now be desirable to obtain a batch of young plants for late flowering; if so, there are plenty of small growths near the base of the plants. These can be pulled out with the fingers and inserted in hand-glasses in fine sandy soil.

Polyanthuses.

The border varieties, mottled and selfs, are now coming into flower, and they are very beautiful objects for the flower borders or when planted in masses. The gold-laced section when cultivated in the same way are even more attractive. Ours out-of-doors made very strong growth last year, and each plant is now a good mass with a dozen trusses on each. The seeds were sown at this time last year, and we have now sown batches both of the border Polyanthuses and Primulas. Now is a good time to sow the seeds, if this has not been done. The show plants in pots have not grown so freely this year as they did last, nor are they quite so early. All the varieties are now in flower, and the rich colours, laced with clear pale or deep yellow, are very pleasing. *J. Douglas, Loxford.*

Garden Operations.

KITCHEN GARDEN.

Artichokes.—As a rule, the cultivation of both kinds of these excellent vegetables is more restricted in extent than that of any other sort of edible—Cardoon, Salsafy, and Scorzonera excepted. This, in some measure, may be accounted for by reason of the mode of dressing and cooking them being, generally speaking, but imperfectly understood, excepting by trained hands in this art. The tuberous or Jerusalem Artichoke is undoubtedly more extensively grown in this country than the Globe kinds, which are used in a green state. The former is naturally an accommodating plant, seeing that the position it occupies at certain places is such as where scarcely any other subject will thrive; it does, however, succeed in this way in almost any soil and situation, and may not therefore inaptly be planted, if occasion requires, to screen any unsightly object which needs to be hidden during late summer and the autumn months. But for culinary purposes such places are not those from which an abundant yield of well-flavoured tubers are to be expected. For this end the plant should be placed where more sunshine and light abounds, and in soil moderately well enriched and which has been trenched deeply, and if it partakes of a sandy nature so much the better will the quality of the tubers prove to be. The planting of tubers may be effected at any time between the beginning of March and the end of April, in lines about 3 feet apart, 18 inches asunder, and 6 inches deep in the soil. Moderate-sized plants are the best for planting purposes. During the period of growth the ground about them should be kept free from weeds, &c., until the tubers are fully grown, which will be the case by the end of November, when they may be taken up and stored away, or otherwise be left in the ground and lifted as required. We prefer the latter course.

The Globe section comprises several sorts, but the best variety, in my opinion, is the Green Globe; its superiority to the others consists in the substance at the bottom of the choke and the scales—the eatable parts—being alike more fleshy and tender. The habit of this plant is naturally somewhat tender, so much so that scarcely a winter passes without its effects destroying the leaves of it entirely; but fortunately it is not so in the case of the roots. In my opinion many plants are sacrificed every year through having a superabundant quantity of material placed on the crowns as a means of protection against frost. The only covering the plants here have had during the past three seasons has been that which remained from a heavy mulching of manure applied the preceding spring, and the protection that is afforded by the leaves of the plants themselves being kept undisturbed in the autumn. The actual result of this experiment is highly satisfactory, inasmuch as our losses in the way of plants, even in this damp position, are less numerous now than they were when we covered the plants up more abundantly. The primary object in the cultivation of these plants is for the sake of the heads which they produce. This being the case, the most important consideration is how to obtain these in the best condition possible. As they are required to be young and tender and as large as possible, it is essential that the plants be grown as exuberantly as the nature of circumstances will admit. For this purpose, therefore, soil of the best quality is indispensable, which should be fully enriched, deeply trenched, and in a moist place if practicable. The plants should further have a liberal area devoted to them, to effect a proper development. In the course of practice we have found that where a demand for this edible is frequent and continuous throughout its season, the best way is to plant twice every year, at the spring and autumn, and destroy a corresponding number of plants accordingly. The former planting is made as soon as the plants have made about 6 inches growth, when we lift entirely and divide them into moderate-sized pieces, as many as are required for planting, and discard the rest. The selected roots are planted out at once in individual rows or otherwise, from 4 to 6 feet apart every way, according to the state and condition of the land and place where they are to be located. The autumnal planting is made precisely in the same manner about the middle of September. The rampant nature of the foliage of these plants, and the mulching material which is added, does in some measure preclude the growth of many weeds about them, and thereby diminishes the ordinary attention in this way, and confines it merely to mulching once annually, watering occasionally during very dry periods—to thinning out and taking away exhausted leaves and stems, and, for the purpose of obtaining very fine heads, to removing those laterals which spring from the main stems.

General work of a routine nature at this period will comprise such operations as hoeing and stirring the surface soil about seedling crops, and to setting out and thinning them afterwards. The plan of sowing all such crops as Onions, Carrots, and others of a like nature in drills, rather than broadcast, is infinitely superior to it, and more systematic in practice, and needs no commendation further than to remark that the trifling extra labour at the outset is more than compensated by the facilities which are gained for performing subsequent operations. As soon as the rows of these subjects are plainly distinguishable lightly hoe over the ground between the lines, and cross-hoe these again in the case of crops as Beet, Parsnips, Turnips, and any other subjects which can in the first instance be set out at from 9 to 18 inches apart, and thin out the bunches by hand afterwards. Of Onions and Carrots we are accustomed to leave double the quantity required for the crop, so that every other one can be drawn in a young state for use as required. Any preparations which may be necessary beforehand for getting out the plants of Vegetable Marrow should be made now, and those for Tomatos should be seen to likewise.

Forcing Department.—The preparation of Tomato, Capsicum, Gherkin, and ridge Cucumber and Vegetable Marrow plants will demand a share of attention now; all these plants should be got into a strong condition, and be properly hardened off before the time for planting them out arrives. See also that none of these subjects are allowed to assume a stunted state for the want of more pot-room during the period, but rather shift them on into larger pots, so that they may shoot off freely when they are planted out, and make the most of the short time they have to exist out-of-doors. Other crops, as French Beans, Tomatos, Potatos, Carrots, &c., will need to be freely ventilated on sunny days, and plentifully supplied with water as occasion requires: the former subject should be pinched at about the second joint to make them bushy, and long kinds, as the Canadian Wonder, should be kept upright.

Frame Ground.—These conveniences will in many cases be occupied by plants in preparation for other places, as Celery, Brussels Sprouts, &c. Freely ventilate all these kinds of plants, and Peas, &c., likewise—those here are now blooming profusely, and promising well for subsequent results.

Mushroom-house.—This place should be kept cool and moist, and the beds be watered whenever required. This will also be applicable to beds made at other places. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

The Cherry-House.—In this compartment here the Cherries are ripening rapidly, those at the most forward part of the house being already ripe enough to gather. Under these conditions the fruit itself must be kept perfectly free from moisture in any form. The ordinary dampings of the house may, however, be continued, provided air be constantly left on the house at its apex to prevent condensation taking place in a manner that will affect the fruit. Freely ventilate at all times, according to the state of external circumstances, and at such times as these are most favourable allow a constant current of air to pass through the house; at times of an opposite character, recourse should be had to other heating appliances to supplement this deficiency, and to ensure a circulation of warm and dry air. See that those formidable pests, the black flies, do not gain a footing anywhere about the trees; if so, they must be destroyed at once by dipping the affected leaves or shoots in a decoction of tobacco-water, or that made from Quassia chips. Take whatever precautions may be deemed expedient to prevent birds from attacking the Cherries at those parts which in the course of ventilation may be at times fully exposed to their depredations. Sparrows are the most daring visitors in this way. As the shoots on the trees lengthen, those which are to be retained must be tied in, and others which are not wanted should be stopped at the fifth or sixth leaf. *G. T. Miles, Wycombe Abbey.*

Peaches and Nectarines.

The trees in early houses, from which ripe fruit will be gathered about the end of May and through the month of June, will now require the final thinning of fruit and wood; and when this has been com.

pleted the young shoots which have been allowed to make unrestricted growth during the stoning period, which extends over a space of five or six weeks, should be neatly tied to the trellis as the work of elevating the points of the fruit to the influence of the sun proceeds. Where quality is preferred to quantity sound healthy trees, well furnished with active roots established in internal borders, may be allowed to carry one fruit to every square foot of trellis covered with foliage, while Nectarines may be left a little closer together; but beyond a certain point nothing is gained by leaving a great quantity, as the formation of the stones weakens the trees, and the fruit, when ripe, is small in proportion to the excess. Shoots which emanate from the bearing wood of the current year should be allowed to grow evenly all over the trees without being stopped, as they will become the fruit bearers next season, and where other growths have been left between them and the terminals they should be removed, as the former require more room for the development of their leaves. Terminals should not be stopped until they reach the extremity of the trellis; but shoots intended for removal after the fruit is gathered will increase its size by being pinched when the last swelling for ripening sets in. Carefully water the roots with ample supplies of diluted liquid at a temperature of 70° to 80°, as the great strain of the crop, in addition to the extensive breadth of foliage exposed to the sun, enables trees in properly drained borders to take large quantities; indeed, the most frequent cause of premature ripening may be traced to an insufficient supply to the roots through the last stages. When the fruit is fairly on the move for the last swelling, the temperature by day may be considerably increased, provided the trees can be allowed to rest by night, when a circulation of air will add greatly to the colour and flavour of the fruit. Syringe twice a day with clear soft water, as water containing lime disfigures the fruit; and endeavour to have the foliage quite free from red-spider when the ripening stage necessitates its discontinuance. It is of no use trying to hasten the stoning process in succession-houses, as the fruit must have time, an equable temperature, and generous treatment. Follow up disbudding until every shoot that is left will have full space for development and exposure to the solidifying influence of light and air. Disbud the trees in late houses, and thin off all small and badly placed fruit, leaving a fair percentage for choosing from when the most promising take the lead. Syringe copiously when the weather is fine, and ventilate by night and day when it is an advantage to have the fruit as late as possible. *W. Coleman, Eastnor.*

Orchard-house.

We can now tell what are our prospects of a crop, and it is very satisfactory to know that Peaches, Nectarines, Plums, and Pears are as good as usual. On some of the trees there were but few blossoms, and such will have a poor crop or none at all; but we generally have more trees in the house during the spring months than space can be spared for them during summer. As soon as the trees can be moved out-of-doors they will be placed in a position where they can be fully exposed to the sun, and partially sheltered from the north-east and south-west winds. Pears and Plums do remarkably well when the trees are in pots, and they can be moved out-of-doors into a warm position. Many varieties of Pears, when they are cultivated under such conditions, are even superior to those that can be obtained from walls, the colour of the fruit and its high class quality being remarkable. Plums are not quite so good as those grown under glass, and they are apt to be spoiled by deluges of rain in the autumn. Such fine Plums as Transparent Gage, Jefferson, and Coe's Golden Drop are well worth any space under glass that they may require. I have sometimes placed trees of the earliest ripening Peaches and Nectarines out-of-doors to ripen their fruit, but have not been very successful with them. The fruit is often small and badly coloured, besides being of poor flavour, even as compared with wall fruit. The details of the work are very simple, and may be summed up in a few words. At 6 o'clock in the morning open the top ventilators a little, and give the trees a thorough syringing with clear rain-water. About 8 o'clock more air should be admitted, unless the weather is cold. The temperature may rise to 70° in the shade, and this will do no harm. About 4 o'clock shut up the house, and syringe again if the weather is genial, but in cold, cloudy weather it is better not to syringe at all at night. The best time to water the trees is in the afternoon, before shutting up the house. Strawberry plants on the shelves also require attention now. As soon as the fruit is fairly set thin out all but nine or a dozen of the most promising on each plant. Where the orchard-house trees have been forced a little, the trees will now have made considerable growth, and the shoots must be stopped, beginning at the top of the tree. It is not always best to stop the weak growths, but it is quite necessary to stop those that would run up to 2 feet or more; if such strong growths are stopped at the fifth leaf, three or more weaker growths will be thrown out, but no more of them need be retained than may be necessary. The fruit must also be well thinned out; this is generally of inferior quality, owing to the owner wishing to have more than the trees will actually bring to perfection. No greater mistake can be made than in over-cropping the trees. The fruit is not only under size, but it is deficient in quality; and the trees will also suffer, and fail to produce a satisfactory crop next season. *J. Douglas, Loxford.*

PLANT HOUSES.

Orchids.—As a rule every good Orchid brought for the first time into the market has its merits rather over-lauded than under. Maxillaria venusta grandiflora is an exception. When this excellent Orchid was sold in the imported state for the first time, buyers of it thought that the most they would get out of it was a good variety of M. venusta. Had they got no more for their money they would not have done badly, for M. venusta itself is a good thing when well done, and the prices paid were not high. The variety, however, proves itself to be a far better thing than the species. Its flowers are quite equal in purity of colour and sweet perfume, are much better in shape, and, above all, hold themselves erect, in the way of Lycaste Skinneri. It is, indeed, the nearest rival to Lycaste Skinneri alba of any Orchid I know. This plant grows luxuriantly potted in peat and sphagnum, with its pot two-thirds full of drainage, alongside and under the same treatment as Odontoglossum crispum. The collector states it to be very free flowering in its native habitat, and that he has seen as many as fourteen flowers to one bulb. This may be so, as quite that number can be obtained from a bulb of Lycaste Skinneri; but under cultivation the Maxillaria up to the present time has not proved itself to be very free flowering. This may be owing to our not having properly ripened up the bulbs, and we intend next autumn to withhold, at any rate for a short period, the liberal waterings which the plant delights in when growing. Another cool Orchid which came over in large quantities about the same time is Odontoglossum pardinum. Great was the praise bestowed upon this plant, and a marvellous picture, said to represent the plant flowering in its native habitat, did its work well, from the seller's point of view, for many an extra bid was given on the strength of its being a correct representation. Many plants of O. pardinum from this sale have now flowered in various collections, and I am afraid have received far more curses than blessings. In many cases, instead of assuming the bright colours depicted, it has been as dull as Gomezia planifolia; especially has this been the case with plants grown within the evil influence of London smoke. Here, and also in other places where the air is clear, the plants have turned out quite up to our expectations, in colour, form, and habit of flowering. We look upon it as quite an acquisition to the cool house, and feel certain that when we have established our plants, so that they make bulbs as large as the imported ones, that O. pardinum will be a very showy plant. O. pardinum will grow perfectly well, potted in well drained peat and sphagnum, and kept under the same moist, cool, and airy conditions as Oncidium macranthum. The new Odontoglossum Edwardii should have exactly the same treatment. It is now flowering, and its violet colour and Violet scent, make it a very desirable plant. It proves to be also both a free grower and a free bloomer. Plants of Phalænopsis amabilis, grandiflora, and Schilleriana will now be starting both roots and new leaves; if any require top-dressing, or new baskets or pots, let them at once be seen to ere the roots get too long. Where these plants are grown standing on side stages, woodlice are very apt at this period to crawl up and eat the tips and edges of the young leaves. A few scooped out Potatos should be laid here and there to trap these pests; they may also be caught in the very act, during the nightly round with the lamp. The temperature of this house must now be decidedly tropical; 75° must be the lowest day temperature, with a rise by sun-heat of from 5° to 10°. The night temperature should be about 68°, a few degrees less will do no harm; but the day temperature should be strictly maintained. In the same house, Grammatophyllum Ellisii will be pushing its young breaks, and must now be treated generously as regards water. Avoid getting any down the young breaks, as they are easily rotted. This being a shy flowering plant it will be best to keep it rather under than over potted till it shows flower, when a careful shift would no doubt do good in giving its many large roots new feeding ground. In the Cattleya-house special attention must now be paid to Lælia elegans and its varieties. When resting these Lælias are as easily kept in good order as the many species of Cattleyas, but when growing they are certainly more easily upset by sudden falls in the temperature or by water lodging in their young breaks. They delight in an airy, moist, warm atmosphere, but should be placed as far away from the ventilators as possible. Give them a trifle more shade and water than such short-bulbed Cattleyas as C. Mossiæ. This house should now have a day temperature of 70° if maintained by fire-heat, with a rise of from 5° to 10° by sun-heat. Ventilate freely whenever the external air is above 50°. With the exception of frosty nights there is now no need to use fire-heat in the cool house. On such nights turn the heat on as late as possible, and off as early as possible next morning. Ventilate freely whenever the external air is above 45°, and shade the moment the sun is carrying the inside temperature above 65°. *J. C. Spyers, Burford Lodge, Dorking.*

Plants in Cold Frames. — Amongst other hardy plants that we are cultivating in pots are the Fritillarias. This is a very interesting class of plants, and they succeed well in this way. F. Moggridgei, with its bright yellow flowers; F. Burnatii, with dark, dull maroon, and the pure white variety of F. Meleagris, are now in flower; they are quite hardy, and the only object of having a few in pots is to be able to enjoy them when they are quite spoiled with the rain out-of-doors. The hardy Cypripediums are even more interesting, and nearly all of them succeed in pots. What they need is syringing overhead once or twice daily when they are making their growth. I also like to have the surface of the soil covered over with growing healthy green moss. We have now in flower C. acaulis, C. Calceolus, and C. pubescens. Many other species are growing freely, and will flower in their season; the growing plants must be shaded from too much sunshine. We have also Podophyllum Emodi flowering: it seems to succeed well with pot culture; it has been potted in peat with a little leaf-mould added, and the plants seem to thrive well in the same frame with Auriculas. The species of hardy Primulas have now very nearly all gone out of bloom; they have been removed to a partially shaded place. The plants have been placed in hand-glasses, but the lights are removed in the same way as those over the Auriculas. We do not like these Primulas being exposed to dashing rains. *J. Douglas, Loxford, Ilford.*

TOWN GARDENING.

Lawns and Walks.—Lawns will require constant attention now. They should be well rolled with a heavy roller twice a week, and the slopes, which are often neglected, should be especially attended to. It is our practice before we commence with the machine to skim over the lawn with the scythe to take off the rough bents; I have tried several times to do without the scythe, but with unsatisfactory results. Walks should also be well rolled, and if previous to rain a little finely sifted gravel were put on and rolled in, it would greatly improve their appearance.

Carpet Beds.—I would suggest to those contemplating carrying out a design, not to attempt more than they have plants sufficient to carry out well. For the benefit of those who may not be so well versed in the number of plants required, I may state, if they arrange Golden Feather, Alternantheras, Echeveria secunda glauca, with Koniga, Mesembryanthemum, &c., at 4 inches apart, they will not be far wrong; some single plants may take more space than this, but this will be found a fair average.

Columnar Beds.—The first idea of the formation of these beds originated in a miniature form, which is at present retained. With wire netting ½ inch mesh and 1 foot 3 inches high forms a column of 5 inches in diameter and set it on a circular piece of wood 8 inches diameter, place it in an ornamental Staffordshire glazed pan. The column and pan are to be filled with stiff loam, pricking the whole full of Selaginella Kraussii (denticulatum) with a Fern on the top, placing it in a warm house. In the course of a few weeks it will be covered, presenting one of the prettiest ornaments for the centre of a table that can be imagined.

Bedding Plants.—All glass structures at command should be overflowing with plants in preparation for use in the open air. The great difficulty often experienced is, not the striking of the cuttings, but the place to put them in when potted off. Bedding Pelargoniums should be well hardened off in cold frames or temporary structures prepared for the purpose previous to planting out in the flower garden. Continue to prick off seedlings as they advance, and take care of such plants as Lobelias, Petunias, and Verbenas raised from seed; although they are not to be trusted to for planting in the principal beds or borders they come in very handy for side borders, &c.

Window Boxes.—These will occupy the attention of most gardeners at this season of the year. It is essential that they should be well furnished, and Pelargoniums form a prominent part, with yellow Calceolaria and white Stocks, intermixed with Lobelia speciosa and Petunia, plant and plant, hanging over the edge of the box. This will make one of the prettiest window boxes that can be imagined. They should be filled and placed in a cool house or frame for a fortnight or three weeks, to get well established before placing them in the windows. *W. Gibson, Royal Hospital Gardens, Chelsea, S.W.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	April 26	Sale of the Freehold Property, Beech Nurseries, Southend, at the Auction Mart, by Protheroe & Morris.
Tuesday,	April 27	Royal Horticultural Society: Meeting of the Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Manchester Botanical and Horticultural Society's Spring Show, and National Auricula Society's (Northern Section) Show, in the Town Hall, Manchester. Clearance Sale of Stock in Trade and Glass Erections, at Baker's Farm, Willesden, by Protheroe & Morris.
Wednesday,	April 28	Sale of Bleak House and 10 acres of Freehold Land, at Caterham, Surrey, at the Mart, by Statham, Hobson, Richards & Co.
Thursday,	April 29	Sale of an Importation of Orchids from Burmah, at Stevens' Rooms.

FROM time to time we have spoken in strong terms of the folly and futility of the precautions taken by various foreign Governments, as well as by some of our colonies, against the invasion of the PHYLLOXERA. No one will impute to us insensibility to the ravages of this frightful pest, no one will accuse us of disparaging any legitimate and rational measure of precaution; but the means proposed are not rational—they are simply stupid. They will in all probability fail in their object; they will, nay, they have already effected a wholly unwarrantable injury on horticulture and the industries connected therewith.

We have now before us the full text of the Convention at Berne of September 18, 1878, agreed upon by plenipotentiaries from the Swiss Confederation, His Majesty the Emperor of GERMANY, King of Prussia; His Majesty the Emperor of AUSTRIA, Apostolic King of Hungary; His Catholic Majesty the King of SPAIN, the President of the French Republic, His Majesty the King of ITALY, and His very faithful Majesty the King of PORTUGAL. These very faithful, catholic, apostolic, and republican personages, by their representatives, have enacted and ratified (December, 1879) a joint convention, and after taking some months to consider its terms, have approved and do approve all and several the arrangements made, and promise that they shall be inviolably observed. This, in substance, say they all—in French, in German, or in Portuguese, while His Majesty of AUSTRIA makes use of the Latin tongue, and declares:—"Nos visis ac perpensis conventionis prædictæ articulis, illos omnes et singulos ratos hisce gratosque habere declaramus, Verbo Nostro Cæsareo Regio spondentes, &c." As it is impossible to credit these august personages with any but the most benevolent and high-minded intentions towards their subjects, we can only regret that their good purpose was not sought to be effected with a little more knowledge of the habits of the Phylloxera. It is to be regretted that, while advocating every reasonable precaution against the attack of the insect, and adopting the most stringent means for its destruction in places where unhappily it has appeared, they did not also see to it that the regulations enacted were at once likely to be effectual for the intended purpose, and not injurious in any other way.

Here are, in substance, the principal enactments of this international convention:—

Art. 2. Wine, table Grapes without leaves or shoots, Grape seeds, cut flowers, market garden produce, seeds of all kinds and fruits, are perpermitted to be circulated freely. (Italy and Spain have not ratified the convention because the terms are not sufficiently stringent, and from what we have seen and heard of the proceedings at Italian custom-houses, the Italian regulations may bear the palm for absurdity.)

Plants, shrubs, and various products of nurseries, gardens, greenhouses, and conservatories, cannot be introduced into one state from another except through certain custom-house establishments, designated for this purpose by the contracting parties, and under the conditions defined in Art. 3.

Uprooted Vines (*arrachées*) and dried Vine canes (*sarments*) are excluded from international circulation.

Neighbouring states will come to a mutual understanding for the admission of Grapes for the vintage, crushed Grapes (*marc*), composts, trellises, training stakes already used, with the reserve condition that these objects do not come from an affected district.

* * * *

Art. 3. The objects (above enumerated) as being allowed to be transported from country to country through the medium of certain specially designated custom-houses must be accompanied with an authoritative certificate stating, α, that they come from a district reputed to be free from phylloxera, and specified as such on a special map kept revised up to date by the several states; β, that they have not been recently introduced.

Vines, cuttings and shoots, can only be transmitted in closely fitting cases screwed down, but easily opened for purposes of inspection..

Plants, shrubs, and various products of nurseries, gardens, conservatories, are to be solidly packed, the roots completely divested of soil (!); they may be surrounded by moss, and covered in any case by packing-cloth, so as not to allow of the escape of any *débris*.

It is not necessary to cite any more of the regulations, of which we have given the substance nearly literally. Any one conversant in any degree with the nature of the insect, will see that these regulations must be futile—that their good effect, if any, can be but accidental and temporary, and that, on the other hand, great injury is likely to be done to horticulture and commerce. These regulations appear to be as reasonable as it would be to treat a man who had one foot frost-bitten by plunging his other foot into a furnace.

It is unfortunately not possible to do much either in the way of prevention or of cure. What little can be done in this way should be done as thoroughly and stringently as possible; but it is not necessary, as the high contracting parties are now doing, to pile a second and wholly unnecessary evil on the top of the first.

—— JAPANESE NURSERIES.—Among the very interesting photographs brought from Japan by Mr. MARIES, and which were exhibited recently before the Royal Horticultural Society, was one representing a Japanese flower-shop which was so characteristic that we sought and obtained permission to reproduce it in our columns (fig. 94). It represents a portion of Mr. KOSOBURO'S nursery at Yokohama, and shows the proprietor with the members of his family surrounded by their floral treasures, among which latter may be seen the Sciadopitys in a small vase, the Raphis flabelliformis, various Cycads, &c. Among the Mongol faces is one of an Anglo-Saxon type surmounted by a very English-looking straw hat. The intruder among the Japanese domesticities is none other than Mr. MARIES himself, to whose exertions we owe so many fine introductions among Conifers and other plants. It may be interesting at this time to quote the late Mr. FORTUNE'S account of his visits to some Japanese nurseries, which runs as follows:—

"The whole country here (outskirts of Yedo) is covered with nursery gardens. One straight road more than a mile in length is lined with them. I have never seen in any part of the world such a large number of plants cultivated for sale. Each nursery covers 3 to 4 acres of land, is nicely kept, and contains thousands of plants both in pots and in the open ground. . . . On entering the gateway a pretty little winding pathway leads up to the proprietor's house, usually situated near the centre of the garden. On each side of this walk are hardy ornamental trees and shrubs of the country, often dwarfed or clipped into round table forms. The beautiful little Yew—Taxus cuspidata—occupies a prominent place among dwarf shrubs. Then there are the different species of Pines, Retinosporas, Thujas, and the beautiful Sciadopitys verticillata, all duly represented. Plants cultivated in pots are usually kept near the house of the nurserymen, or enclosed within a Bamboo fence. Glasshouses are not yet in use for rearing tender plants, instead of which sheds and rooms fitted with shelves are used, into which the Japanese huddle them for shelter during the cold months."

In one garden he found nothing but varieties of Acorus growing in square Nanking pots (fig. 92), and in each pot was a rock of agate, crystal, or other rare stone, many of them representing the famous Fusiyama, or Matchless Mountain of Japan (fig. 93).

—— Mr. W. H. FITCH.—It is with great satisfaction that we are enabled to announce that a pension of £100 per annum from the Civil List has been awarded to Mr. W. H. FITCH, F.L.S., in consideration of his services to botanical science. There can be but one feeling, that in this matter a very right thing has been done.

—— PROFESSOR BAYLEY BALFOUR.—We learn that this gentleman, whose arrival at Socotra we noted, as it were, only the other day, has returned after a short sojourn in that island, bringing with him large collections in zoology and other branches of natural history, including living and dried plants, drawings, &c. We heartily congratulate the zealous Professor on his safe arrival, and on the success which has attended his expedition. Professor BALFOUR has suffered from an attack of fever, which has enfeebled him, but he is otherwise in good health. We look forward with the greatest interest to the narrative of this brilliant dash into a next to absolutely unknown territory.

—— ROBERT FORTUNE.—From various quarters—from Germany, France, and Belgium, as well as from our own country—we have received letters expressive of admiration of FORTUNE'S labours. Surprise has also been expressed that we have not given a portrait of the famous botanical collector. This arises from no fault or neglect of ours. We had repeatedly asked our friend to allow us to gratify our readers, and permit us to pay him this homage. Within the last month also we repeated our request, but from various reasons without success. The following letter, written to us some time since, will suffice to indicate the esteem in which he was held in other countries than our own:—

"I have read with pleasure the notice of this great botanical traveller and successful author. Though England counts him among her children, all Europe is under obligation to him. There are no gardens deserving the name that have not been enriched by his introductions. Had he only introduced Chamærops Fortunei, the only hardy Palm we have, we should have owed him a debt of deep gratitude. English, French, Belgians, Germans, Italians, Spaniards, we are all under such obligations to him that to forget them would be ungrateful. P. JOSEPH-LAFOSSE, *Saint Come du Mont près Carentan.*"

—— CONGRESS OF ITALIAN HORTICULTURISTS.—The first national exhibition of the Federation of the Horticultural Societies of Italy will be held in Florence from May 15 to 24, on which occasion a congress will be held for the purpose of consultation and dicussion on matters relating to horticulture in Italy. Cav. EMANUELE ORAZIO FENZI is the President, and the subjects named for discussion are:—

"The utility of horticulture on morals and material welfare of humanity."

"Mode of establishing horticultural societies in the principal cities of Italy."

"Schools for instruction in practical horticulture."

"New varieties of plants, flowers, and fruits."

"Pomona Italiana."

"Dry and preserved fruits."

"Commercial products, imports and exports of horticulture."

"The Phylloxera."

—— PROFESSOR BALDWIN.—The *Irish Farmers' Gazette* understands that Prof. BALDWIN is about to retire on a well-earned pension from the appointment he has so ably filled for many years as Superintendent of the Agricultural Department of the National Board, Dublin.

—— Hardy Spring Flowers.—Among many other things in flower at Mr. Ware's Hale Farm Nurseries, Tottenham, are a few which deserve mention; such as extra fine examples of Cypripedium macranthum, many varieties of Fritillaria latifolia, Trilliums, and Primula cortusoides amœna [Sieboldii]; Iris persica, several varieties of Mertensia, the yellow Corydalis bracteata and C. nobilis, an innumerable variety of Narcissi, Muscari atlanticum, M. Szovitzianum, Erythronium purpureum, E. giganteum, &c.

—— The Queen at Laeken.—On her return from Baden Baden, Her Majesty paid a short visit to the King and Queen of the Belgians at Laeken, and was conducted by the King through the State apartments. Their Majesties and suite also visited the gardens, and minutely inspected the magnificent conservatory, which is the largest and handsomest structure in Europe; also the subterranean corridors and theatre, which have been erected at enormous cost, and furnished in good taste. Her Majesty seemed impressed with the appearance of the Palms and Tree Ferns, which have been removed from Enghien at such a heavy cost, and appreciated the natural effect produced by the grandeur of the stately Palms, and the natural setting of Ferns, Begonias, and various other ornamental plants. On leaving the conservatory, Mr. Wills, who has been engaged to carry out the decorations of the large conservatory, &c., was presented by His Majesty King Leopold to the Queen Victoria, when Her Majesty was pleased to compliment Mr. Wills on his success. Mr. Wills was permitted by His Majesty to have handsome bouquets, composed of Tea-scented Roses, Orchids, &c., sent by special messenger from London for presentation to their Majesties and the Royal Princesses.

—— Plums.—We do not now associate an abundance of ripe Plums with cholera, or indeed with milder forms of sickness. What superstition of that nature once existed is now pretty well dead, and we can learn to regard an abundance of the succulent fruit not only with equanimity, but also with considerable pleasure. Plum crops are scarce visitors; that is, a Plum crop which is worthy of the name. In nearly all gardens there are found annually a few fruits more or less, but this small quantity gives few indeed to the million. It is when fruit is plentiful—when the trees are heavy laden, and a dry time permits of the fruit being sent to market in good condition—that the masses get their share, and for one season all alike rejoice in the great abundance. Market growers, who are practical men, and judge of the fruit seasons by the returns they give pecuniarily, tell us that we get a fair Plum season about once in five years, with intermittent sprinklings. It is now five years since we had a marvellously heavy crop, and it would seem to have taken the trees all the intervening time to get strong and productive again. Are we now again to reap the fifth year crop, as the trees now full of bloom promise a great abundance of fruit? That the wood and fruit-buds on the Plums are matured there can be little doubt, as these are formed early in the summer, and the now expanded bloom has a healthy, vigorous appearance. Further, the weather is so far propitious, as the change of wind has brought a most favourable temperature, and Nature is active. In the hope that the trees will bring forth this year a big crop, it will be well if housewives will get ready the jam-pots, and prepare for a busy preserving season.

—— Orobus alpestris.—This species, which is a near ally of O. vernus, is now in company with the latter, and several of its varieties, flowering at Kew. O. alpestris, a native of Hungary, has narrow leaflets and purplish-red flowers, and is a more slender plant than the much commoner O. vernus. A very striking variety of the last named is cyaneus, which bears a profusion of metallic blue blossoms; albus is a form with fine creamy-white flowers, and O. flore-pleno is a double one, white suffused with red. There are few more charming border plants than these old-fashioned herbs, with their elegant, brilliantly coloured, pea-shaped blossoms.

Fig. 94.—A Japanese nursery garden. (see p. 528.)

—— National Rose Society. — We are informed that a meeting of the executive committee was held at the rooms of the Horticultural Club on the 13th inst., George Baker, Esq., Vice-President of the Society, in the chair, when various arrangements connected with the forthcoming exhibitions of the Society were made. Judges were selected, and amongst other decisions arrived at were the following:—That on the day of the Crystal Palace exhibition a *dejeûner* would take place at 1 o'clock, open to any members of the Society who might wish to join, and that certain members of foreign Rose societies would be invited as guests; that silver-gilt and silver medals of the Society would be presented to the Society of Rosarians at Antwerp, and to the

Society of Brie-Comte-Robert, to be allocated according to the wishes of their respective committees, this presentation being made in response to offers of a similar character made from the President and Secretary of those Societies. We are also informed that two errors have unfortunately crept into the schedule, and are requested to state that in Class 21 it should be "8 distinct," instead of 6; and in Class 22, "24 distinct," instead of 8. Those classes are correct in the schedule issued by the Crystal Palace Company. Members of the Society should remember that, by the arrangements made with the Crystal Palace Company, they will have the privilege of admission to the exhibition for half-an-hour before the general public.

—— The Orchids at Lake House, Cheltenham.—Amongst a number of Orchids we lately saw flowering in Mr. Wyatt's collection at Lake House, Cheltenham, the following were particularly noticeable:—

Dendrobium lituiflorum	Odontoglossum Roezlii
,, suavissimum	,, ,, album
,, crassinode	,, triumphans
,, chrysotoxum	,, Cervantesii
Cymbidium Lowianum	,, Hallii
Oncidium concolor	,, cirrosum
,, Weltoni	Lycaste Skinneri
Cypripedium villosum	Epidendrum vitellinum

—with many others coming on, including a plant of Dendrobium Falconeri, grown cooler than usual; it was flowering freely from two or three joints each of the numerous small slender bulbs, and when the blooms were expanded would be very much fuller than it is generally seen. When well flowered this is one of the most beautiful as well as elegant habited of all Orchids. Near it was a specimen of the equally handsome D. Devonianum with eleven blooming bulbs, the longest of which were 3 feet in length, and proportionately stout.

—— Flower Show at Turnham Green.—The show of spring flowers which is to be held in the new Vestry Hall, at Turnham Green, on Thursday next, in aid of the funds of the West London Hospital, promises to be of an unusually interesting character, as besides the numerous subjects that will be brought out in competition for the prizes, the Messrs. Veitch, Herbst, Hooper, Aldous, and other nurserymen, as well as the newly formed General Horticultural Company, have promised to contribute from their stores of florticultural wealth. A special feature in the arrangement, which appears to be exciting much local interest, is the throwing open of the Royal Horticultural Society's Gardens for promenading to all who visit the show. The general management is in the hands of Mr. A. F. Barron, and we trust the day may be fine, and the visitors as numerous as at the Chiswick *fêtes* of old.

—— Institution of Surveyors.—The next meeting will be held on Monday evening, April 26, when the adjourned discussion on the paper by Mr. C. G. Saunders, on "Quantities and Quantity Practice," will be resumed. The chair to be taken at 8 o'clock.

—— Orchids at Davenham Bank, Malvern.—In Mr. J. D. Perrin's collection there are a number of very fine plants, principally cool and intermediate heat-requiring species. A specimen of Masdevallia ignea has sixty-three flowers, M. Veitchii twenty-six flowers, M. Harryana, 2½ feet across, not yet in bloom: last season it had open at one time 150 flowers; M. Davisii forty strong bulbs, M. Chimæra, Ada aurantiaca had open eleven stout spikes of its bright orange blooms; Arpophyllum giganteum pushing eighteen erect densely packed bloom-stems, the plant 3½ feet through; Dendrochilum glumaceum with seventy elegant drooping racemes. Smaller specimens of the following were also in flower:—

Odontoglossum crispum	Cypripedium villosum
,, Hallii	,, barbatum
,, Pescatorei	,, niveum
,, cordatum	,, Sedeni
,, gloriosum	Dendrobium Wardianum
,, Cervantesii	,, crassinode
,, Insleayi	,, thyrsiflorum
,, Alexandræ	Phaius maculatus
,, luteo-purpureum	Lycaste Skinneri
,, pulchellum	Cattleya Trianæ, many vars.
Sophronites grandiflora	

Amongst several very fine plants of Odontoglossum vexillarium is one with eleven very strong leads, grown from a single bulb in five years. In the warm division is an extraordinary plant of Vanda suavis (Veitch's variety); it consists of six strong growths, the largest of which is over 5 feet high from the top of the pot, with all the leaves fresh and healthy right down to the bottom: it is showing twenty-seven spikes of flowers, and when in bloom will no doubt be a specimen such as is seldom met with.

—— National Auricula Show: Northern Section.—We may remind our readers that the Northern section of the National Auricula Society will hold its show in Manchester on Tuesday next, April 27, when, judging from the appearance of the flowers shown at South Kensington on Tuesday last, a good gathering may be anticipated. It is highly gratifying to see the increased interest which is being taken in this favourite flower. Those of our Southern growers, however, who may elect to try their luck in the North, must remember that the strict properties in all the groups are more vigorously followed in making awards than they are in the South; by which we do not mean that inferior flowers have a better chance southwards than northwards, but that the points adopted are somewhat different—for example in the North an alpine Auricula must be a shaded flower, while here in the South both shaded and unshaded flowers are admissible. The exhibition will be held in the Town Hall in conjunction with the spring show of the Botanical and Horticultural Society.

—— Cattleya Skinneri.—The Hon. and Rev. J. T. Boscawen sends us a grand specimen of this fine old Orchid. The plant is, we are informed, growing in an 8-inch pot, and has produced seven noble spikes of its large exquisitely coloured blossoms, all being in bloom together. On the spike before us there are nine finely developed flowers. The plant must be a model of successful cultivation, and we need not wonder that its owner is enraptured with it.

—— Hyde Park Decorations.—We understand that the authorities have arranged with Mr. Anthony Waterer, of Knap Hill, to furnish an annual display of American plants in Hyde Park, the plants being removed and replaced every season, or as frequently as may be found necessary. No better arrangement could have been made for the pleasure of the sojourner or resident in the metropolis, and no better locality could have been selected for bringing them under the view of all classes. Already we observe there are some beds planted with hardy Azaleas, a tribe of plants whose glowing colours, if the spring at all favours a kindly development, will light up Rotten Row as it was never yet wont to be lighted. The rich and sparkling colours of these Azaleas, and the fragrance given off by some of them, are quite enchanting, and it has always been a subject of regret that they have bloomed and faded away unseen, except by the comparative few who make an annual pilgrimage to Knap Hill. The Azaleas have not often been a prominent feature at the Rhododendron shows held in the metropolis, as the flowering season of the two subjects does not quite coincide; but once get them to bloom but freely in Hyde Park, where everybody can see them, and they are certain to make their mark, and to create a floral sensation. They have been so much improved, too, of late, that it would be a matter of regret if they did not again—as they used to do—attract the notice of those who have American gardens to decorate. In the case of the Azalea beds already planted, we notice that Mr. Waterer has introduced, for present effect, an edging of what we understand is to be called the Hyde Park Yellow Polyanthus, a hose-in-hose variety of the richest golden-yellow, which has come into Mr. Waterer's hands, and which thrives amazingly in the Woking soil and atmosphere. Just now it may be seen in very effective condition, planted in strong clumps, closely together, as a margin to the beds of Azaleas, which are in many cases large plants, 5 to 6 feet in height, and splendidly furnished with buds.

—— Sexual Differentiation in Epigæa repens.—In his *Synoptical Flora of North America* Dr. Asa Gray states that the flowers of this are heteromorphous and inclined to be diœcious or diœciodimorphous. Mr. Lester F. Ward, as we learn from the *American Naturalist*, has been studying the subject, and read a paper thereon last September before the American Association for the Advancement of Science at Saratoga. He found Epigæa to be diœcious or subdiœcious. The staminate flowers are, in all respects, much larger than the fertile ones; and all the flowers in a patch were invariably found to be of the same kind—either all staminate or all fertile. The amount of surface covered by staminate plants greatly exceeds that covered by the fertile ones. There is an actual discrepancy in the measurement of the flower, amounting to about 30 per cent. in the length and about 40 per cent. in the width of the corolla. The fertile plants often fail to fruit, so that fruiting specimens are rarely met with.

—— Saxifraga flagellaris.—At Kew this pretty Saxifraga is now flowering freely. From the centre of the rosette of spathulate, spreading, ciliated leaves, springs the flower-stem, which bears from one to three yellow flowers. The number of long filiform stolons, bearing at their extremities small buds which serve to reproduce the plant, originated, without doubt, the name of Spider-plant, given to it by the sailors of the various Arctic Expeditions. It is a native of the Arctic regions of both hemispheres.

—— Currant Bushes on Railway Banks.—In the last number of the *Flore des Serres* M. Putzeys makes a practical suggestion as to the utilisation of these waste spaces, and after enumerating various shrubs whose use is more or less general, he goes on to recommend the culture of the common Currant (*Groseiller commun*). Its roots would bind the soil well, its foliage would prevent the drying of the soil, its propagation is easy, and its fruit are commercially valuable. We strongly commend the notion to the authorities. Raspberries, Strawberries, and many other plants might be grown in similar fashion, and would require little attention, the primary object being the maintenance of the banks, not the quality of the fruit.

—— Grevillea Thelemanniana.—For elegance and grace of habit, combined with beauty of foliage and flowers, few West Australian plants surpass this—one of the most desirable of cool greenhouse plants. The pale green feathery leaves are not unlike those of some Artemisias, and the flowers—which are very freely produced even by young plants—are pink, with green tips. In a recent volume of the *Botanical Magazine* the species was figured under the name of G. Preissii. Plants are now blooming in the temperate-house at Kew.

—— Bagshot and Windlesham Horticultural Society.—The annual exhibition will take place on Tuesday, July 6, by the kind permission of H.R.H. the Duke of Connaught, in Bagshot Park.

—— Putney and District Chrysanthemum Society.—The third annual exhibition of this Society is fixed to take place at the Assembly Rooms, Putney, on Tuesday, November 16.

—— The Weather.—General remarks on the weather during the week ending April 19, issued by the Meteorological Office, London:—The weather during the first few days was very rainy and unsettled, but by the 7th it had become fine generally, and continued so, except at some western stations, during the remainder of the period. Thunderstorms, with hail, were experienced over the Channel generally on the 14th, and at Hastings, Dover, and Yarmouth on the 15th. The temperature was about equal to the mean in Scotland and the southern and eastern parts of England, but slightly below it in all other parts of the kingdom. The thermometer was generally highest during the latter part of the period, and on the 19th rose to 69° at Cambridge, and 67° in London. The lowest of the minima occurred at most places on the 14th, and at Blackpool a reading of 28° was recorded. The rainfall was more than the mean in all districts, except "England, N.W.," the excess being rather large in Ireland and the south and east of England. Bright sunshine showed a slight increase over the greater part of England, but a decided decrease in Scotland and Ireland. In the "Midland Counties" and "Ireland, N." the sun was only to be clearly seen for about a fifth of the time it was above the horizon. The wind was generally north-easterly during the first three days, but on the 16th it changed suddenly to south-west in the south, and to east in the north, and on the three following days a southerly current prevailed all over the country. In force the wind was generally moderate in the east and south-east, but fresh or strong in the west and north-west, and on the 18th blew a strong gale at many of our western stations.

A NEW CROCUS FROM TURKESTAN.

(*Continued from p.* 235, *vol.* xii., 1879.)

Crocus Korolkowi.—About a fortnight ago I received from Dr. Regel, under the name of "Crocus aureus, Sibth.," specimens of an orange Crocus from Samarkand, which, I have no doubt, is an undescribed species. In general aspect it resembles a small form of C. aureus, with the outer segments externally suffused with dull purplish-grey. The most essential character in which it differs from aureus is in the structure of the corm tunic, which consist of a thin membranous base interlaced with true fibres. These are generally parallel, though tending to a reticulated arrangement. The corm tunic of C. aureus, though apparently made up of fibres, is in reality cartilaginous, produced towards the base of the corm into flat linear parallel divisions. There are also good distinguishing points in the leaf-structure, as well as in the anthers and stigmata, which I need not here refer to. Dr. Regel accepts the plant as a new species, and suggests its being called Crocus Korolkowi, under which name it will shortly be described in the seventh *fasciculus* of his *Descriptiones*.

Crocus Korolkowi was collected by Fedtschenko around Samarkand, at Dargam, near Samarkand, and in the valley of the river Sarawschan in Kokania. It was also collected by Korolkow during the Russian expedition to Chiwam, between Taschkent and Karak-Ati, as well as in the Kara Tau Mountains near Boraldai in Western Turkestan.

This discovery is of special interest as regards the eastern extension of the genus. Crocus Korolkowi seems to be generally distributed between 40° and 45° N. lat., and 67° to 71° E. lat. No other orange Crocus has before been known to occur east of the borders of the Black Sea, distant 1300 miles west of Samarkand, and its habitat forms an intermediate stepping-stone between the West Caspian district, till lately supposed to be the most eastern limit of the genus, and the Ala Tau range, the home of C. alatavicus, which is 400 miles still further to the east in Central Asia. The occurrence of these two species in a region so far removed from the remainder of the genus opens up an immense area, hitherto so little explored, in which many more species may yet be met with. C. Korolkowi has the aspect of a vernal species, though no record of the date of collection accompanies the specimens sent me by Dr. Regel. *George Maw, F.L.S., Benthall Hall, near Broseley, April* 17.

Home Correspondence.

In Memoriam: Robert Fortune.—I read of the great collector's and public benefactor's death with the most acute regret. When a few months since my good neighbour, Mr. Grieve, wrote of his claims on the honour and gratitude of horticulturists, I was requested to take the matter up, but the opportunity passed, and now I hear only the words, "Whatsoever thy hand findeth to do, do it with thy might," and do it at once. Robert Fortune is gone, and your leader is a fitting memorial to him; but I cannot help joining you in a protest against the powers that be in their neglect of such men as Fortune while rewards thick as Blackberries are showered down upon those whose clafms are but of a temporary nature. Fortune devoted health, strength, life, to enrich his country with the beautiful and useful vegetation of a new, because previously unopened world. He bound India to us with stronger ties than a scientific frontier. He introduced a new industry, which is destined to cement India to us by more friendly and lasting bonds than that of the mere promises of vassal chiefs. In his efforts to introduce and establish Tea culture in India he virtually opened a mine of wealth which is destined not only to enrich but civilise our vast empire in the East. But all these patriotic works went for nothing with our higher powers. And yet how we all long to honour him. Surely we horticulturists can, if no one else will. Let us ask the Society of Apothecaries to grant us a site in the Botanic Gardens at Chelsea for a marble or granite bust of our good, great, truly noble, though still simple Robert Fortune. I shall be glad to contribute a guinea to this purpose. David Douglas has a simple monument in the kirkyard of New Scone. A bust at Chiswick or at Chelsea, enwreathed with some of Mr. Fortune's best and most useful introductions, would be a fitting testimonial from the horticulturists of Great Britain to Robert Fortune, collector, author, patriot, philanthropist. *D. T. Fish.* [To us it appears that Chiswick is the proper place, and the Royal Horticultural Society the proper body to carry out the movement. Meanwhile we shall be pleased to help forward so worthy a cause. Eds.]

Narcissus ornatus.—Welcome as are all spring flowers, none are so much so as this, the most useful of all Narcissi. As I write, there are before me four large beds with many thousands of fully expanded blooms. For Easter decorations this species is unrivalled, blooming as it does between March 25 and the middle of April; in foliage it is slightly different from N. poeticus, but in colour and shape of flower it is hardly distinguishable from that species, and I am confident that, when it gets to be better known it will be grown in quantity by the legion of caterers for Covent Garden and other flower markets. It requires no particular preparation of soil, and is so hardy, even when in bloom, that when, as frequently happens, a heavy fall of snow completely covers it, it will, when the snow melts, be as fresh as ever. Another good thing is now in bloom, viz., the silver and gold striped double Daffodil, now so seldom seen in collections. *M. W. W.*

Dynamite for the Removal of Roots.—Dynamite is the invention of Mr. Alfred Nobel, a Swiss mining engineer, and has been before the public for the last ten or twelve years, and for the past few years has been brought into requisition for many purposes where other explosives would have been of little use: Amongst them may be named the blowing up of Hell Gate in New York harbour, the smashing up of the *Vanguard*, and lately the operations at the scene of the lamentable accident at the Tay Bridge, where it has been used for breaking the massive girders under water. It is not necessary for me to reiterate the many uses to which it has been put; my present object is to give a few practical details respecting the use of it in removing tree roots out of ground. In the park here our usual method was blasting them with powder or grubbing them up, but this we found a slow, tedious, and expensive process. In this age of progress we were determined to try the more expeditious mode of removing them by dynamite. For the information of those who have not seen this substance, it may be interesting to note a few particulars of it. Dynamite is composed of 75 per cent. of pure nitro-glycerine, and 25 per cent. of an infusorial or porous earth, which is procured from the bottom of some of the German rivers. This earth is ground and prepared finer if possible than the best biscuit flour, and when looked at through a powerful microscope every grain is porous, or in other words, honey-combed, so that each grain soaks up and retains its share when mixed of nitro-glycerine. The above proportions are just sufficient to make the dynamite plastic or pasty without allowing the liquid nitro-glycerine to exude. In appearance it is of a reddish colour, and is made up into cartridges of different sizes varying from 1 to 2 inches diameter and 4 inches long. In the park here we have been recently felling trees for the purpose of doing away with the hedgerows and crowded appearance of this part of the estate, to improve the landscape and allow those which are left to fully develope themselves. Owing to most of the trees having grown in hedgerows they have formed much stronger roots than if they had been grown in a wood, therefore more labour and explosives were required to take them out of the ground. The tools or implements required are of simple description, viz., an earth-auger, which is similar to an old-fashioned wood auger, 2 inches diameter at the bit, and about 4 feet long, and fitted with a slightly hollowed shield or cap which the man fits against his chest when boring, and which is used for boringholes between the fangs; a crowbar, grafting and stock axe. These are all the implements that are required. The operation is as follows: — Suppose a large root is to be removed out of the ground, a hole is made with the earth auger as described above, beween two of the strongest fangs; this is put in at an angle, so that the bottom of the hole is as near under the centre of the root as possible. The hole is then charged with a few cartridges of dynamite, according to the size and strength of the root, a primer cartridge containing cap and fuse is then inserted on the top of the charge, and the whole rammed down with loose earth by a wooden rammer. The end of the fuse is then lighted, this explodes the cap, and that in its turn the dynamite, and the whole mass is usually blown out, breaking up the root into convenient pieces for loading up or burning. The fuse is cut off at sufficient length so as to allow the workman to get out of danger, which is usually from 50 to 100 yards, according to the strength of the charge. After the charge has exploded seldom anything remains but a large hole much resembling the bed of a boiler. I took particular notice that no damage whatever was done to the surrounding trees. We had nearly 400 roots got out by this process, and with two of our common labouring men, with one man sent by the agents representing the Dynamite Co., Messrs. Johnson & Co., Dudley, we have been able to remove from twenty-five to thirty per day of roots averaging from 1 foot 6 inches to 4 feet 6 inches in diameter. I find from careful calculations made that we have been enabled to remove the roots in a far more expeditious manner than hitherto, and at from 50 to 60 per cent. less cost. No one need be prevented from using dynamite on the score of its being dangerous, for with ordinary care it is in my opinion as safe to use as gunpowder. From my recent experience in the use of dynamite in removing tree roots, I can with confidence recommend it for that purpose. *J. Smith, Mentmore, Bucks, April* 19.

Propagation of Bedding Plants.—The requirements for bedding out here are considerable, one border alone taking over 8000 plants, but we make short work of their propagation. About 1 inch of cocoa-nut dust is spread on the slate benches in the stove-house, and the cuttings inserted thickly, just as they are taken off (without removing the two lower leaves, as is usually advised), and covered with glass resting on strips of wood 3 inches high. Ageratums, Alternantheras, Coleus, Iresine and Verbenas strike root freely in a week, and are then pricked out in light soil in shallow wooden boxes. Old brandy cases cut in halves answer admirably, as being not only of a handy size for carrying, but where it is necessary to economise space, as it is here, they are infinitely preferable to the circular pans or pots in ordinary use. Ample drainage is secured by making five or six holes in the bottoms of the boxes—only a few minutes' work with a centrebit. *George Duffield, Winchmore Hill, N.*

Ivy-leaved Pelargonium, St. George.—I send you a truss of flowers from one of my hybrid Ivy-leaf Pelargoniums, St. George. You will see there are four distinct flowers on the truss, the lightest coloured flower being the true colour of St. George. This is the first truss I have had come in this way. The flaked flowers would be very nice if I could get it to come true. I shall strike the shoot and see if it will do so. *J. George, Putney Heath.* [A very interesting sport, the flaked flower especially. Eds.]

Hardy Cypripediums: Primula villosa.—Allow me to correct an error in "N.'s" article on hardy Cypripediums, p. 490. Describing C. pubescens, he says, "Flowers precisely similar to C. Calceolus." They are very different, C. pubescens being all yellow, and C. Calceolus yellow and purple. (See Redoute's figures, Nos. 19 and 20.) C. pubescens is a most common plant, much easier to grow, and a more abundant flowerer. In what parts of the North of Scotland does "R. L." find Primula villosa? (p. 500). No one else seems to have found it there. [No doubt, a mistake.] *Henry N. Ellacombe, Bitton Vicarage.*

Rating Hothouses.—This subject was raised in the pages of the *Gardeners' Chronicle* some years ago by Messrs. Protheroe & Morris, who suggested that the matter should be tested by bringing a case into court, and there the matter dropped. To the writer it seems the present is a favourable time for reviving the subject, when many of the nobility and gentry of these islands sell the produce of their gardens, and are practically market gardeners and nurserymen, and when we have great joint-stock co-operative market gardens and nurseries, with many names of the Upper Ten Thousand as directors, advertising that by that means they hope to dispose of the produce of their gardens to the best advantage. Such competition is no doubt a serious matter for the man who has invested his means with a view to getting a living by his trade as a nurseryman or market gardener, yet he would have no right to complain were he not handicapped in the race to a very serious extent. To illustrate, I will give a case from each side—real ones. One man hires 4 acres of land, that was let for 30*s.* an acre for agricultural purpose; he erects £3000 worth of glass on it for the production of fruit for market, and a dwelling-house. The assessor comes round and assesses him at £215 a year. He returns his income at £600 a year, and after a time is called upon to produce his books to prove that his return should not be increased —said books prove that he had made an ample return. Thus for the produce of 4 acres of poor land with structures on it that are not heritages—as it has been proved in a court of law, that if put up for trading purposes they can be removed, and do not become part of the freehold—one man is assessed on £215 and has to pay income tax on £600. The other case is that of a nobleman who encloses 20 acres of land, which previous to enclosure was let as a market garden at £12 an acre—equal to £240. He has erected a fine gardener's house, and all other

necessary buildings, with numerous ranges of glass. He sells all that can be spared of the produce, and in turning up the rate-book for his county I find he is rated at £120 a year. I do not know what return he makes to the Income-tax Commissioners, but I am morally certain he does not return £600 a year. I call the assessor's (in my county) attention to this and similar cases, he shrugs his shoulders, and says, "I know nothing about it. It is not in my jurisdiction, and noblemen's gardens are not kept for profit, they are luxuries and are lightly taxed." This may have been true when noblemen and gentlemen, as in my early days, gave their gardeners a list of friends and neighbours to whom to give, with their compliments, any surplus fruit or vegetables there might be after their own wants were supplied, but the case is altered when some of them have gone the length of taking their gardeners into partnership with them, by giving them a percentage on all they can sell out of their gardens. In remarking to my salesman, who I know does his very best for me, on the poor rates I was getting for my Grapes, his reply was, "The market is glutted with the produce of the gardens of the nobility and gentry." I hope the public benefit by this excessive supply—no doubt they do; and we have no right to complain except on the ground that, as men solely dependent on our business as nurserymen and market gardeners, we should not be so heavily taxed, while dukes, lords, and ladies, who are in the same line of business, should all but escape scot free as far as taxation goes. There is another class of men, not rare, that have some business—it may be grocer or lime merchant—who, in instances known to me, grow and sell from 2000 lb. to 3000 lb. of Grapes annually; they are merely assessed on the rent of their house, and the Income-tax Commissioners know if they make any return to the income-tax for their Grapes. These are hardships that a very hard-working industrious class of men have to combat, and the attention of the proper authorities cannot be called to them a day too soon. Whether it is legal or not to assess a nurseryman's hothouses, who lives by the sale of his produce, it cannot be right not to assess a duke's or lord's when he happens also to be a nurseryman or market gardener, as so many of them are now. I am anxious to have the opinions of some of your well informed correspondents on this subject. It is one I don't mean to let sleep. *A Market Gardener.* [A very important matter, which should be fairly and temperately discussed. Eds.]

Carnation Souvenir de la Malmaison.—It may interest you to hear that I have a flower of the Souvenir de la Malmaison Carnation, measuring 4½ inches in diameter. Is this an unusual size? It looks as if it was a double flower—one inside the other, but the flower is perfectly formed and round. *J. Arthur Wallington, Manor House, Keevil.*

Daffodils.—In your report of my lecture two clerical errors occur, and for these I hold myself responsible. They will not trouble the reader who brings to the subject a glimmering of knowledge and a grain of charity, but they may as well be corrected. In the remarks on the Poet's Narciss I appear to have said, "Whall shall we say of bicolor, which has two flowers and a yellow centre?" As a matter of course biflorus is intended, and I am to be understood as ranging it as a variety under N. poeticus. In the forecast of the work of the student I suggest that in a thousand years all the difficulties will be cleared up, but the rate of correction assumed will necessitate a term of 100,000 years. [Will it be cleared up then? Eds.] *Shirley Hibberd.*

Ouvirandra fenestralis.—Having been fairly successful in the culture of this most interesting aquatic, the Ouvirandra fenestralis, I gladly accede to "Urania's'" request (p. 458 of the *Gardeners' Chronicle*) by jotting down a few notes as to the method which we employ, in the hope that some supposed difficulties may be cleared away. First of all, we have tanks or tubs made of Oak, 3 to 3½ feet in diameter by 1 to 2 feet in depth. They are placed in a lean-to stove with a south aspect, the bottoms of the tubs resting on the pipes which heat the house, while the upper rim is within a foot from the glass. A lead pipe for conducting water is attached to each tub, by which they are filled. The plants are all either in pots or flats, any size desired, from thumb-pots upwards—in fact, as large as the tanks will hold. The soil used for potting is fibrous loam, rather rough, with a good sprinkling of silver-sand. We have tried different kinds of soil with nearly equal results, so that there is little in the soil used to cause failure in growing it. They are potted up to within an inch of the rim of the pots with the compost, filling in the remainder with clean gravel, small pieces of marble, or anything to keep the soil from being washed about. They are next placed in the water, raising them on inverted pots to suit the different sizes of plants—always keeping the crowns at least 2 inches beneath the surface of the water. Rain-water, if it can be had clean, is decidedly the best. Any water fit for domestic use will do quite well. The temperature of the water ranges from 65° to 75°, but we have seen it thriving amazingly in much lower temperatures than this. The water should be frequently changed, at least once in the month. What we consider to be the main cause of failure is allowing the water to become almost stagnant—a condition conducive to the growth of confervæ, whereas it ought to be thoroughly aërated. Keeping the plants clean from confervæ is the greatest difficulty with which we have to contend. To effect this we have adopted various means, the best being to change the whole of the water once a week for a time whenever confervoid growth appears. This we do by removing the plants into a spare tank, running off the water, and scrubbing the insides of the tubs, making them thoroughly clean, then filling them up with fresh water, and allowing it to stand for a day before putting the plants back again. The plants are also cleaned by syringing them well in the spare tank; but as this mode takes up a considerable amount of time, we are obliged to resort to other means. Instead of removing the plants and changing all the water, we draw off with a siphon two or three panfuls only, using the syringe freely, which not only clears off any loose confervæ, but also aërates the water. We then fill up the tubs with fresh water, flushing it over the edges. Another way of getting rid of confervæ, which we occasionally adopt, is that of excluding the light by covering the tubs with a board or lid, leaving it on for a week or two, when the confervæ will be found whitened, and can then be easily syringed off. When the plants are clean, all that we do with them is to syringe slightly once a day, running in a little fresh water to fill up the tubs. As to the mode of increasing this plant by division of the root, the warning given by the writer of the otherwise excellent cultural remarks in your last number is quite unnecessary, as we have taken off hundreds of plants in this way, and have never yet seen one piece fail to grow at any time; and so far from any injury being done to the stock plants by this process, we rather think it improves them. The conclusion we have arrived at, after lengthened observation, is, that had we a constant stream of moderately warm water running through our tanks, we should hear of less failures in growing this beautiful aquatic; and the nearer we can approach to this condition the better will be the results. *R. L.*

Spring Gardening at Belvoir. — Your correspondent, in his description of the spring garden at Belvoir Castle, does not bring out sufficiently what is its most striking feature. Now this is the natural air it has: that the wild character of the scenery and ground is preserved, notwithstanding the beds of artificially raised flowers with which it is covered. The ground is admirably suited to its purpose. A wild and shelving hill, surrounded by forests thinned with great skill, the distant woods beyond, afford the means of making a series of terraces, all sheltered from the northern blast. The flowers seem almost as if Nature had in her prodigality planted them to form masses of colour in their own way, and if a rare plant is there it seems as if it were so by accident. I do not enter into details—I only give the impression the garden gives. It is the right direction which gardening should pursue if the general aspect of Nature is to be preserved. The art of the gardener should be, not to force Nature into unusual forms, but to control and embellish what Nature suggests. *Brinsley Marlay.*

New Torenias.—Last year I was much struck with a new Torenia which I saw, sent out I believe by Mr. Thomson, of Ipswich, the flowers and foliage of which greatly resemble those of the old well-known T. asiatica that used at one time to be such a great favourite for growing as a basket plant—a purpose its gracefully pendulous habit rendered it particularly suited for; and it is surprising that such a useful, showy subject should have gone so much out of cultivation. This may be partly owing to the great heat it required, as it could only be grown in a stove; but T. Fournieri—the one alluded to above—has the merit of being sufficiently hardy to endure the temperature of a greenhouse or conservatory during the summer, added to which it is so exceedingly floriferous that even very small plants of it come crowded with blossoms. Instead of being of a trailing nature, like its congeners already named, the habit of T. Fournieri is very compact and bushy, and the shoots just sufficiently stiff, if grown with proper light, to stand without any support. I tried to save the plant I had during the winter, but failed, and I infer therefore that it is an annual; and as it may be so easily raised from seed, and attains to the flowering size so quickly, any one by getting a packet now, and sowing in light soil, may soon have plants that will be of great service for the embellishment of rooms and other decorative uses, and it is even said that it is sufficiently hardy for bedding. Should it turn out to be so, it will be an acquisition and quite a fresh feature in gardens, where its colour will blend well with variegated Pelargoniums, and take the place of Violas, Verbenas, &c., that are so fugacious in hot summers—weather that would suit this Torenia exactly. To induce the seed to germinate freely, it requires the

Fig. 95.—Fritillaria thunbergii. (see p. 533.)

assistance of a little warmth, such as may be afforded by a Cucumber frame, in which the young plants, too, grow with great freedom. The points of the shoots of these strike readily, so that a stock may soon be worked up; but as seed it is not expensive, it is hardly worth resorting to that mode of propagation. Peaty soil, or such as contains plenty of leaf-mould and sand, appears to suit best to grow it in, and for single plants 6 or 7 inch-pots are quite large enough to use for the final shift, as with plenty of water greater root-room than they afford is not required. T. Baillioni is another fine species, having bright golden-yellow flowers, which show up in pleasing contrast with the fine blue of the other. The treatment this needs is much the same as that requisite for T. Fournieri, both of which I hope to try outdoors this season, and report results. *J. S.*

Vines Failing.—A singular instance of failure in young Vines has recently come under my notice. They were planted three years ago in a border of what to all appearance was good turf with some broken bones and charcoal; the first year they made very satisfactory growth, reaching the top of a lean-to house, 16 feet wide and the same in height. Last year they were cut down to within 3 feet of the ground. The grower being anxious to obtain a few bunches from each, they were started in the beginning of February, broke all right, but soon took on a "hard, dry" look, producing small foliage, and short stunted looking growths. Yellow spots by-and-bye began to appear on the leaves, and their whole appearance was that of premature ripening; the bunches gradually began to dry up, and got as hard as a piece of wire, and before blooming time scarcely a trace of buds was to be seen. I enclose some bunches from these Vines this year, which are, as you will see, useless, but what the cause is is quite a mystery; they have exactly the same stunted dried-up look about them as last year. A few supernumerary Vines were planted in the middle of the border last year; they grew well, and this year showed plenty of fruit but now all seem to be going in the way indicated. Were these Vines under the care of a novice I should say there was something radically wrong in their management, but the unfortunate grower of them has long ago won his spurs in the horticultural world, and in fact is a noted grower of good Grapes, having taken leading honours at both local and international exhibitions on several occasions. Traces of wireworm have been seen in the border, but not to any extent; woodlice are also very numerous. On examining the roots they seem healthy. I should feel very much obliged if you would publish this letter, with the view of eliciting information. *Visitor.*

FRITILLARIES.

Two Fritillaries have lately been shown before the Royal Horticultural Society, which demand some comment at our hands. The first (fig. 95), which is the F. Thunbergii of Miquel,* is a Japanese species remarkable for its long, narrow, linear leaves, terminating in a tendril, and for its small bell-shaped flowers, greenish and mottled with pale purple (fig. 96). It is an interesting species, referred as a variety to F. verticillata by Mr. Baker. The last named is native to the Altai Mountains, and differs in having a style as long as the ovary, whereas in the variety the style is nearly twice as long as the ovary. The plant was shown by Messrs. Veitch.

Fig. 96.—THE YELLOW FRITILLARIA, F. MOGGRIDGEI.

F. Moggridgei† is, according to Mr. Baker, merely a dwarf, broad-leaved, yellow-flowered form of F. delphinensis (which is purple-flowered), and native of the maritime Alps. As shown by Messrs. Backhouse, of York, recently, it appears to be a dwarf species, with rather large, cylindrical-bell-shaped, yellow flowers. It is a specially desirable species to grow, from its distinct character and handsome appearance.

* *F. Thunbergii*, Miquel; Uvularia cirrosa Thunberg, Kunth; Fritillaria collicola, Hance, *fide* Baker; F. verticillata var. Thunbergii, Baker, in Journ. Linn. Soc. xiv., 258.

† *F. Moggridgei*, Boiss., in Moggridge, Cont. Fl. Mentone, t. 25; Planchon, Bull. Bot. Soc. France, 1873, 116; F. delphinensis var. Moggridgei, Baker, in Journ. Linn. Soc. xiv., 255.

Reports of Societies.

National Auricula (Southern Section): *April* 20.—The members of the Southern section of the National Auricula Society are to be congratulated on the success of the second exhibition which they have held in the Royal Horticultural Society's large conservatory; for the display brought together on Tuesday was certainly the largest and most complete that has yet been made, and it drew a larger number of paying visitors than have before attended the gardens on any of the show days held this season. An agreeable sign of rising prosperity in connection with the Auricula Society, was the increased number of competitors — not a large number, it is true, but of a stamp that augurs well for the future. A greater number of plants have not in our recollection been brought together in the South, but as a result of the ungenial character of the past autumn and winter the quality of the flowers was not so fine as last year. The plants made a good growth early in the autumn, which, however, they failed to thoroughly mature, and as a consequence when the severe frost came they lost more foliage, or "grass," as it is technically termed, than is conducive to a good spring bloom. Many of the choicer varieties, such as Headly's George Lightbody, have not flowered at all kindly, while many of the selfs, which are naturally of a lighter substance than edged flowers, came even flimsier than usual, and of a most disappointingly fugitive character, in fact becoming as flat as ditch-water in a couple of days. As a consequence of all this many varieties got into the winning stands that last year, and indeed in all ordinary good seasons, fail to get shown at all in the small competing classes. The Northern florists were more strongly represented than they have ever been at the Southern shows, and as usual held their own in the various contests into which they entered. The Rev. F. D. Horner again had the honour of showing the champion flower, which on this occasion was Champion as well by name, a neat truss of six pips of Page's fine flower being singled out for that honour. Mr. Horner was also 1st for twelve, and very successful in other classes; as were also Mr. Ben. Simonite, Mr. Barlow, Mr. Pohlman, of Halifax, and Mr. Mellor, of Ashton-under-Lyne, while the Southern growers had able representatives in Mr. Douglas, Mr. Turner, and Mr. J. T. D. Llewelyn. The seedling classes brought out quite a bevy of first-rate flowers, upon which Mr. Douglas has promised shortly to bring his experienced judgment to bear. Polyanthuses were more numerously represented than usual, and Mr. Barlow carried all before him, besides showing in a seedling named Sunrise one of the most perfect light body coloured flowers that has ever been shown. The following is the list of the prizes awarded:—

Twelve Auriculas, dissimilar.—1st, Rev. F. D. Horner, Kirkby Malzeard, Ripon, with Erebus (Horner), a seedling black self; Cecil Dalton (Horner), a grey-edged seedling; C. J. Perry (Turner); John Simonite (Walker), Freedom (Booth), Anna (Traill), Frank Simonite (Simonite), Heroine (Horner), a fine seedling plum-coloured self; Excelsior (Horner), a seedling grey-edged; Czar (Read), grey-edged; Lady Blucher (Clegg); and Ajax (Horner), a seedling grey-edged. 2d, Mr. James Douglas, gr. to F. Whitburn, Esq., Loxford Hall, Ilford, with John Waterston (Cunningham), C. J. Perry (Turner), Admiral Napier (Campbell), Lancashire Hero (Lancashire), Smiling Beauty (Heap), Alexander Meikle-john (Kay), Green-edge (Campbell); True Briton (Hepworth), and four seedlings. 3d, Mr. B. Simonite, Rough Bank, Sheffield, with R. Gorton (Simonite), green-edged; Frank Simonite, Talisman, Alex. Meikle-john (Kay), Mrs. Douglas (Simonite), a lovely pale plum-coloured self; Lancashire Hero (Lancashire), Col. Taylor (Leigh), C. J. Perry (Turner), and four seedlings.

Six Auriculas, dissimilar.—1st, the Rev. F. D. Horner, with Complete (Sykes), Lancashire Hero (Lancashire), Frank Simonite (Simonite), Ringdove (Horner), Ajax (Horner), and Colonel Taylor (Leigh). 2d, Mr. R. Dean, Ranelagh Road, Ealing, with Richard Headly (Lightbody), Earl Grosvenor (Lee), Lord of Lorne (Campbell), Sophia (Chapman), Mrs. Smith (Smith), and Lancashire Hero (Lancashire). 3d, Samuel Barlow, Esq., Stakehill House, Chadderton, Manchester, with C. J. Perry (Turner), Lovely Ann (Oliver), Glory (Taylor), George Lightbody (Headly), Colonel Taylor (Leigh), and Beauty (Traill). 4th, Mr. E. Pohlman, Halifax, with New Green (Headly), Mazzini, a seedling black self; Acme (Read), John Waterston (Cunningham), John Crossley, a seedling green-edge; and Brilliant, a dark plum-coloured seedling self. 5th, Mr. T. Mellor, Ashton-under-Lyne. 6th, J. T. D. Llewelyn, Esq., Penllegare, Swansea. Mr. James Douglas and Mr. Simonite also competed.

Four Auriculas, dissimilar.—1st, Mr. E. Pohlman, with the seedling Mazzini, George Lightbody (Headly), Venus (Wright), and New Green (Headly). 2d, the Rev. F. D. Horner, with Sapphire (Horner), a seedling violet-purple self; John Simonite (Walker), Phantom (Horner), a seedling grey-edge; and Lancashire Hero. 3d, J. T. D. Llewelyn, Esq., with Apollo (Hudson), Richard Headly (Lightbody), Geo. Lightbody (Headly), and Ne Plus Ultra (Fletcher). 4th, Mr. T. Mellor,

with Complete (Sykes), a seedling grey-edge, a seedling green-edge, and a seedling dark maroon self. 5th, Mr. J. Douglas, with Smiling Beauty (Heap), Alexander Meiklejohn (Kay), Metropolitan (Spalding), and a seedling green-edge. 6th, Sam. Barlow, Esq., with Lancashire Hero, Anna (Traill), Beauty (Traill), and King Coffee (Horner), a self, well named.

Two Auriculas, dissimilar.—1st, Mr. E. Pohlman, with Imperator (Litton), and Lancashire Hero. 2d, the Rev. F. D. Horner, with Lancashire Hero and Thetis (Horner), a seedling grey-edge. 3d, Mr. Ben Simonite, with Frank Simonite, and a seedling green-edge of his own raising. 4th, Mr. T. Mellor, with Richard Headly (Lightbody) and C. J. Perry (Turner). 5th, S. Barlow, Esq., with C. J. Perry and Robert Traill (Lightbody). 6th, Mr. R. Dean, with Sophia (Chapman) and Royal Purple (Headly).

Two Auriculas, dissimilar (open to exhibitors not competing in the four previous classes). — The only exhibitor in this class was the Rev. E. L. Fellowes, Wimpole Rectory, Royston, who was awarded the 1st prize for Robert Traill (Lightbody), and Topsy (Kay).

One green-edged Auricula.—1st, the Rev. F. D. Horner, with Page's Champion ; 2d, Rev. F. D. Horner, with Cyclops, a seedling ; 3d, Mr. R. Dean, with Rob Roy (Smith) ; 4th, Rev. F. D. Horner, with Orion, a seedling ; 5th, Mr. B. Simonite, with Richard Gorton (Simonite) ; 6th, Rev. F. D. Horner, with Col. Taylor (Leigh) ; 7th, S. Barlow, Esq., with Col. Taylor ; and 8th, Mr. T. Mellor, with Lord Palmerston (Campbell).

One grey-edge Auricula.—1st, the Rev. F. D. Horner, with George Lightbody (Headly) ; 2d, Mr. Pohlman, with Alderman C. E. Brown (Headly) ; 3d, Mr. R. Dean, with Rev. F. Tymons (Dean), a seedling ; 4th, Mr. Douglas, with George Lightbody ; 5th, — Kyrle Penson, Esq., with George Lightbody ; 6th, Mr. Douglas with Richard Headley ; and the Rev. F. D. Horner, 7th and 8th, with Lancashire Hero.

One white-edged Auricula.—1st, J. T. D. Llewelyn, Esq., with Catherina (Summerscales) ; 2d, Rev. F. D. Horner, with John Simonite (Walker) ; 3d, Mr. Douglas, with Silvia (Douglas) ; 4th, Mr. B. Simonite, with Frank Simonite ; 5th, Mr. R. Dean, with Mrs. Campbell (Cunningham) ; 6th, Mr. B. Simonite, with True Briton (Hepworth) ; 7th, Mr. E. Pohlman, with Sophia Dumaresque ; and 8th, Rev. F. D. Horner, with Smiling Beauty (Heap).

One self Auricula.—1st and 3d, Mr. Pohlman, with Blackbird (Spalding) ; 2d, S. Barlow, Esq. with the same variety ; 4th and 5th, Rev. F. D. Horner, with seedlings raised by Mr. B. Simonite ; 6th, Mr. Pohlman, with Mazzini ; 7th, the Rev. E. L. Fellows, with Master Hole (Turner) ; and 8th, Mr. Pohlman, with Topsy (Kay).

Fifty Auriculas.—1st, Mr. James Douglas, with a capital group, which included no alpines, but in which many of the previously named varieties were to be found, as well as such sorts as Confidence (Campbell), Ellen Lancaster (Pohlman), Colonel Champneys (Turner), Alma (Lightbody), Lady Sale (Smith), Lord Clyde (Lightbody), Silvia (Douglas), and a few seedlings. J. T. D. Llewelyn, Esq., with amongst others already named, Ringleader (Kenyon), grey-edged ; Earl of Errol (Dickson), Meteor Flag (Lightbody), Green Hero (Yates Morris), Queen of Greens (Headly), Lycurgus (Smith), Mr. Sturrock (Martin), and Prince of Greens (Traill). 3d, Mr. Charles Turner, Slough, with a neat lot, which included specimens in duplicate of such varieties, raised by himself, as C. J. Perry, Colonel Champneys, James Douglas, Clipper, Rupert, John Fowle, and Sarah, also Pizarro (Campbell), Eliza (Sims), and Vulcan (Sims).

Twelve alpine Auriculas, dissimilar.—1st, Mr. Turner, with a well-flowered lot, all of his own raising, and consisting of Colonel Scott, Mrs. Dodwell, Napoleon III., Miss Froud, Unique, Evening Star, Dr. Denny, Mrs. Llewelyn, James Fowle, Queen Victoria, King of the Belgians, and W. R. Bragg. 2d, J. T. D. Llewelyn, Esq., with Mrs. Llewelyn, Godfrey, Mrs. Dodwell, Lustre, Tenniel, Napoleon III., King of the Belgians, Evening Star, and Queen Victoria (Turner), Diadem (Gorton), and Mrs. Meiklejohn (Meiklejohn). 3d, Mr. J. Douglas, with Mrs. Llewelyn, Queen Victoria, and Slough Rival (Turner), Bismarck and Florence (Douglas), Diadem (Gorton), and six seedlings. 4th, Mr. R. Dean, with a selection from his new strain of laced varieties.

Six alpine Auriculas, dissimilar.—1st, Mr. Turner, with King of the Belgians, Sambo, Mrs. Dodwell, Mrs. Thompson, Mrs. Ball, and Shirley Hibberd. 2d, Mr. R. Dean, with Colonel Scott, Diadem, King of the Belgians, Satisfaction (Dean), Dazzle (Dean), and Mercury (Turner). 3d, J. T. D. Llewelyn, Esq., with Diadem, Lustre, John Leech, Percival, Elcho, and an unnamed. 4th, S. Barlow, Esq., with Ovid (Gorton), Etna (Turner), Elcho (Turner), Diadem, Beatrice (Turner), and Dazzle. 5th, Mr. Douglas.

Single specimen alpine Auricula.—Five out of the six prizes awarded in this class fell to the lot of Mr. Turner, who was 1st with Titian, 2d with Mrs. Ball, 3d with King of the Belgians, 5th with Unique, and 6th with Duchess of Connaught ; Mr. Douglas being 4th with Meiklejohn's Mrs. Meiklejohn.

Seedling Auriculas.—Fourteen prizes were awarded for seedling Auriculas in the following order, those to which the letters F.C.C. are added being also awarded First-class Certificates :—Green-edge, 1st, Rev. F. D. Horner, with Cyclops (F.C.C.) ; 2d, Mr. R. Dean, with Smith's Rob Roy (F.C.C.) ; 3d, Rev. F. D. Horner, with Orion (F.C.C.). Grey-edge.—1st, Mr. R. Dean, with the Rev. F. Tymons (F.C.C.) ; 2d, J. T. D. Llewelyn, with an unnamed flower ; 3d, the Rev. F. D. Horner, with Thetis (F.C.C.). White-edge.—1st, Mr. J. Douglas, with Conservative (F.C.C.) ; 2d, Mr. B. Simonite, with Mr. Dodwell (F.C.C.). Selfs.—1st, Rev. F. D. Horner, with Heroine (F.C.C.) ; 2d, Mr. B. Simonite, with Mrs. Douglas (F.C.C.) ; 3d, Mr. T. Mellor, with Lord Salisbury (F.C.C.) Alpines.—1st, Mr. Turner, with Unique (F.C.C.) ; 2d, Mr. Turner, with Titian (F.C.C.) ; and 3d, Mr. Douglas, with Flora Douglas ; all these belong to the gold-centred section.

Six dissimilar gold-laced Polyanthuses. — 1st, S. Barlow, Esq., with Cheshire Favourite (Saunders), George IV. (Buck), Exile (Crownshaw), Lord Lincoln (Cox), Lancer (Bullock), and Sunrise (Barlow), a very pretty and exceedingly "correct" seedling, of a rich reddish chestnut body colour, and very pure lacing. 2d, Mr. James Douglas, with George IV., Cheshire Favourite, Lancer, Exile, President (Hilton), and Queen of Tyne (Craggie). 3d, J. T. D. Llewelyn, Esq., with Duke of Wellington (Smith), Cheshire Favourite, Mrs. Welby, Kingfisher (Addis), Exile, and George IV.

Three gold-laced Polyanthuses.—1st, S. Barlow, Esq., with President, George IV., and Exile. 2d, Mr. R. Dean, with Cheshire Favourite, President, and Exile. 3d, Mr. Douglas, with George IV., Cheshire Favourite, and Lancer. 4th, J. T. D. Llewelyn, Esq., with Formosa (Burnard), Exile, and F. D. Horner (Jackson).

For twelve dissimilar fancy Auriculas S. Barlow, Esq., took the 1st prize with the only group shown ; and the 1st prizes for twelve each of dissimilar fancy Polyanthuses and double and single Primroses were awarded to Mr. R. Dean. In the class for the best plant of Smith's Duke of Wellington Polyanthus only one prize was awarded, viz., the 1st, to Mr. Douglas.

Twelve hardy Primulas.—1st, Mr. Douglas, with P. cashmiriana, P. sikkimensis, P. denticulata, P. farinosa alba, and the varieties cœrulea alba, lilacina, laciniata alba, and Pink Beauty of P. cortusoides amœna. 2d, J. T. D. Llewelyn, Esq., with three varieties of P. cortusoides amœna, P. denticulata erosa, P. japonica, P. cashmiriana, P. Monroi, P. cortusoides, and P. viscida.

In addition to the large display of Auriculas, the exhibition also included a good assortment of subjects of a miscellaneous character, kindly sent by various nurserymen. Perhaps the most important of these was a magnificent group of Clematises, varieties of Azalea Mollis, and various forms of Japanese Acers from the nurseries of Messrs. James Veitch & Sons ; a large group of flowering and fine-foliaged plants from Mr. B. S. Williams ; a group of decorative plants from Mr. Aldous ; another one of stove and greenhouse plants from Messrs. Osborn & Sons ; a large collection of cut Daffodils from Messrs. Barr & Sugden ; a grand group of twenty Tea Roses in pots from Messrs. Paul & Son, Cheshunt, which was awarded a 1st prize by the Royal Horticultural Society, and which included well-grown and splendidly bloomed specimens of Souvenir d'un Ami, Madame Willermoz, Jean Ducher, Marie Van Houtte, Madame de St. Joseph, Anna Olivier, Madame Margottin, Catherine Mermet, &c. Mr. Parker, of Tooting, showed a large and superbly-flowered bush of Rhododendron Countess of Haddington Improved, a marked improvement on the type, in the form of its flowers, which are also more heavily shaded with rose. From Messrs. Hugh Low & Co. came flowering plants of Odontoglossum Roezlii superbum, and the creamy-yellow flowered Dendrobium heterocarpum ; Messrs. Standish & Co., of Ascot, a splendid stand of three dozen cut blooms of Gardenia intermedia, some of which measured as much as 4 inches in diameter ; and Messrs. Hooper & Co., of Covent Garden, had a choice group of stove and greenhouse plants. Mr. Cannell sent fine masses of Pansies, Polyanthuses, and Auriculas, also a number of well-flowered specimens of Tropæolum tricolorum. A collection of Cactuses from Mr. Boller, and some fine stands of Pansies from Mr. H. Hooper, of Bath, also deserve notice.

Scottish Horticultural Association. — The ordinary monthly meeting of this Association was held on Tuesday evening, the 6th inst., in the hall, 5, St. Andrew Square, Edinburgh. The President, who was in the chair, in opening the fourth session, spoke of the prospects of gardeners as becoming more bright, and he trusted that better seasons were now in store for all. He then alluded to the adaptation of the electric light for growing and forcing plants, fruits, flowers, and vegetables. The want of sunshine was a great drawback in Scotland during the past year, and any invention that will make up for this deficiency must be considered one of the greatest inventions of the age. He next referred to the syllabus for the year, which was more than usually attractive, and augured well for a successful session.

Mr. John Sadler, Royal Botanic Gardens, made some observations on the recent Herbaria competition. He went on to notice the various specimens exhibited, and more particularly the prize collection. In making up a herbarium, one of the grand things was to make a selection of characteristic specimens. For instance, if you have a tree, you will take a sprig of it, but you must also take a flower and fruit by which it can be distinguished. In all the collections there were mistakes in nomenclature. The manner in which the drying process was best accomplished was then shown. After a few days the plants are dry. There are plants that one may try to dry and fail after two months, and the flower actually opens after six months. The best way to treat these is to put them in boiling water for five minutes, and afterwards dry them. The drying of plants, though a simple matter, was the thing in which many failed.

Exhibits. — Mr. Robertson Munro, Abercorn Nursery, received a Certificate for Primula ciliata var. Lindsayi, an improved seedling from purpurata, and raised by Mr. Robert Lindsay, Royal Botanic Gardens ; it has a strong and vigorous habit, with flowers double the size of its parent. Mr. Andrew Hunter, Newhailes Gardens, exhibited two scented Tropæolums in full flower, named Mrs. Shand. Messrs. B. H. Remmers & Co., Glasgow, exhibited a machine by which gardeners could make their own pots for bedding plants. The composition used is cow-dung and garden earth mixed in about equal proportions : they can either be air-dried or dried by artificial heat ; in either way they are ready for using in twenty-four hours. The roots of the plants grow easily through the sides of the pots, therefore each plant remains in its own pot, which, when embedded in the soil, soon disintegrates, and thereby becomes a source of nourishment to the plant itself.

Royal Botanic : *April* 21.—This Society was fortunate in having as fine a day for its second as for its first spring show, and also in being able to show its visitors a very excellent display of plants, thanks more to the miscellaneous class than to the subjects specially invited for competition. In the large conservatory, which was again requisitioned for space, the General Horticultural Company (John Wills) Limited, Messrs. James Veitch & Sons, and Mr. B. S. Williams each exhibited large groups ; that from the former consisting in the main of tastefully grouped fine-foliaged plants, such as Crotons and Dracænas, but including also a very attractive batch of Odontoglossum vexillarium, and two immense plants of Arpophyllum giganteum, which bore twenty-three spikes of blossoms between them ; the entire collection being margined in front with a broad band of Selaginella, the beauty and good taste of which was spoilt by some lettering done with flowers of Gardenias. Messrs. James Veitch & Sons' contribution consisted of an admirable group of standard and half-standard Roses in pots, flanked on either side with a rich display of Clematises and brightly coloured varieties of Azalea mollis, toned down with the beautiful foliage of various Japanese Acers. Plants, old and new, rare and common, yet all beautiful, formed the bulk of Mr. B. S. Williams' collection. In this part of the exhibition was also a small group of Orchids from the choice collection owned by F. A. Philbrick, Esq., Q.C., Avenue Road, Regent's Park (Mr. Heims, gr.) ; a large group of show and alpine Auriculas, from Mr. Turner ; a dozen each of show varieties from Mr. Turner and Mr. Douglas, in competition, and decided to be of the order of merit in which we have written the exhibitors' names. Messrs. James Carter & Co. showed several nice varieties of bedding Pansies and Violas ; and Mr. Henry Hooper, of Bath, contributed a large assortment of the fine Pansies that he grows and exhibits so well.

In the long corridor Messrs. James Veitch & Sons had another excellent group of plants, new and rare stove and greenhouse flowering and fine-foliaged subjects ; and Mr. William Bull also contributed a collection of an equally admirable character. Messrs. Paul & Son, of Cheshunt, showed a remarkably good group of nine Roses in pots, for which they were awarded the 1st prize ; as also a liberal contribution of well-flowered large and small plants to the general display. In all cases the foliage and flowers were all that could be desired, and especially so in the case of the specimens of Dupuy Jamin, Marquise de Castellane, Céline Forestier, Cheshunt Hybrid, Madame Victor Verdier, La France, Perfection de Montplaisir, Annie Laxton, and Anna Alexieff, which formed the primary group. For twelve stove and greenhouse plants, Messrs. B. Peed & Son, were 1st, and Mr. G. Wheeler 2d, the former showing amongst others a well-flowered plant of Tremandra verticillata, and a handsome half specimen of Erica elegans, &c. For half-a-dozen Azaleas, amateurs, Mr. G. Wheeler came in 1st, and Mr. Ratty, gr. to R. Thornton, Esq., The Hoo, Sydenham, 2d ; while in the corresponding class for trade growers, Messrs. B. Peed & Son were 1st, and Mr. H. James, Norbury Nursery, Streatham, 2d. In a poor class of Cinerarias, Mr. G. Wiggins, gr. to H. Little, Esq., Hillingdon Place, Uxbridge, was 1st, and Mr. Ratty 3d ; the first-named exhibitor also taking 1st prizes for six Amaryllis and nine Pelargoniums. Daffodils in great variety came from Messrs. Barr & Sugden ; cut Roses of great merit from Mr. Walker, of Thame, and Messrs. Paul & Son ; Gardenias from Messrs. Standish & Co. ; and a dish of very fine President Strawberries from Mr. Walker.

New Plants Certificated.

A considerable number of new plants were submitted for adjudication, and the following Botanical Certificates were awarded :—To Mr. William Bull, for Rhododendron assamicum with glabrous lanceolate leaves, and white flowers about 2 inches in diameter ; for Masdevallia Wallisii, one of the Chimæra group ; for Juncus zebrinus, the banded Rush ; for Drosera filiforme, an upright growing species with leaves from 3 to 4 inches long, and densely covered with glandular hairs ; for Acacia sphærocephala, a handsome

dark green leaved species, with its branches thrown out from the main stem at almost right angles, and having a pair of remarkable dark brown spines about 1½ inch in length at the junction of each leaf-stalk with the stem; for Tillandsia musaica; for Maranta Kerchoveana, a showy leaved plant, pea-green in colour, with regular dark blotches arranged in lines on either side of the midrib; and for Sarracenia flava picta. To the General Horticultural Company, for Dracæna Thomsoni, a large broad-leaved form, greenish-bronze, margined with crimson; for Dracæna aurantiaca, the long, linear, arching leaves of which are of a salmon-orange shade, changing to pale bronzy green with age; for Dracæna Ernestii, a neat habited, dwarf, and nicely coloured plant, of a fine stamp for table decoration; for Croton Baronne James Rothschild, the fine seedling raised by MM. Chantrier, of Mortefontaine, and which has long broad leaves of a rich bronzy-copper colour, with crimson veins; for a handsome specimen of the variegated leaved Tillandsia tessellata; and for Adiantum Bausei ×, the new Maidenhair, with drooping pinnæ, described at p. 456, vol. xiii. To Mr. B. S. Williams, for the fine Choisya ternata, Maranta Kerchoveana, Adiantum Bausei, and Adiantum mundulum, a pigmy form, described last year at p. 48, vol. xiii. To Messrs. James Veitch & Sons for Alsophila tomentosa, a new Tree Fern from Java, with handsome feathery-looking fronds; for Polystichum tripterum, a wiry habited Japanese species; and for Cypripedium marmorophyllum ×, a hybrid between C. Hookeræ and C. barbatum, with handsomely marbled foliage, a dark bronze slipper, rose tinted pale bronze petals, and a pale striped upper sepal. To Mr. Shore, The Gardens, Henbury Hill, Bristol, for Pteris serrulata Shorei, a finely crested form, more pendulous in habit than any of the varieties of this type that we have seen. To Mr. Boller, for Aloe myriostigma, the large, fleshy, pendent leaves of which are irregularly striped with white; and to Messrs. Hugh Low & Co., Clapton, for Odontoglossum Roezlii superbum, a very fine variety, with rich purplish-crimson blotches at the base of the upper pair of sepals and a large yellow blotch at the base of the lip. Floral Certificates were awarded to Mr. B. S. Williams for Amaryllis Mrs. Burroughs, a bright crimson-scarlet, margined with white and a light centre. To Mr. Howard, Southgate, for the showy yellow Chrysanthemum frutescens Etoile d'Or. To H. Little, Esq., for Amaryllis Princess Dagmar, a bright scarlet, with a white centre; and to Mr. Turner for Auricula Mrs. Ball, a golden-centred shaded alpine.

Edinburgh Botanical: *April* 8.—The Society met at 5, St. Andrew's Square, Dr. W. Craig, Vice-President, in the chair. The following communications were made:—

I. Note on the Flora of Colonsay, and list of Plants Collected July, 1879. By Mr. Symington Grieve. In the catalogue were upwards of twenty-one new plants hitherto unmentioned in this section of Mr. H. C. Watson's botanical geographical areas.

II. Note on some New Zealand Plants recently presented to the University Herbarium by Mr. J. F. Cheeseman, of the Museum, Auckland, New Zealand. By Mr. Taylor. This large collection includes beautiful typical specimens of Haastia, Raoulia, and other endemic New Zealand Compositæ.

III. Dr. Cleghorn exhibited twigs of Aristotelia (Friesia) racemosa, raised by Mr. Martin, gr. at Wester Lea, Edinburgh, from a seed accidentally deposited in the stem of a New Zealand Dicksonia, where it germinated three years ago between the fronds about 2 feet from the ground. The seedling was transferred to a pot, and is now in a greenhouse. It has not flowered, but is a robust plant 4½ feet high. This is a remarkable illustration of the spontaneous introduction of an exotic.

IV. Report on Temperatures and on the Progress of Open-Air Vegetation at the Royal Botanic Garden for March. By Mr. John Sadler, Curator.

V. Miscellaneous Communication.

The Past Winter in Arran.—In the light of the frequent advocacy of our western coasts as suitable localities for the extensive growth of Australasian trees and shrubs, the following observations, communicated by the Rev. D. Landsborough, of Kilmarnock, may not be uninteresting. Arran, it is well known, is not subject to the extreme falls of temperature so deadly to plant life on our eastern coasts. Accordingly, Australian and New Zealand genera, supposed to be aliens to our usual British climate, grow freely in it. Mr. Landsborough reported, regarding plants grown in the Cromla garden, near Corrie: One of the Blue Gums—the most hardy of which in Arran is the Eucalyptus pendula—hardly touched last winter, is sadly injured by this. Two other kinds of Gum-tree, raised from seed obtained from the Blue Mountains, New South Wales, have been planted. The very beautiful New Zealand Fern, Todea hymenophylloides, has proved quite hardy, though not under the spray of a waterfall, as was thought necessary for the full development of Todea superba. The Todea hymenophylloides was planted only last summer, but grew at once, and the fronds of the mature plant promise to attain perhaps to the size of those of Lastrea Filix-fœmina. The fronds now are almost as green as during summer. The Cordylines, C. indivisa, C. australis, and C. Veitchii, are all untouched by the frost; so, too, are Photinia serrulata, Desfontainea spinosa, Edwardsia grandiflora, Elæagnus japonica variegata. A fine plant of the old single red Camellia planted last year was also untouched, and was in flower all last month (twenty-five blooms), the flowers in perfect order. A Cork tree—Quercus suber—and a plant which Mr. Landsborough takes to be Cunninghamia sinensis, both growing for the last twenty years at Brodick Castle, are both uninjured by this winter's frost.

The following plants were on the table in bloom from the forcing department of the Royal Botanic Garden:—Anigosanthus breviflorus, raised from seed sent by Surgeon-Major Fleming from Natal, where this Amaryllidaceous plant proved poisonous to horses of Her Majesty's troops; an Iberis from mountains above Crasse, obtained from G. Maw, Esq.; an Erythronium Nuttallianum; and a new variety of seedling from Primula ciliata, which it is proposed to designate P. ciliata var. Balfouriana.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, April 21, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
April	In.	In.	°	°	°	°	°	°	°		In.
15	29.50	—0.24	51.1	39.3	11.8	43.8	— 2.7	42.9	97	E.	0.35
16	29.66	—0.09	58.0	38.0	20.0	46.5	— 0.1	41.1	80	S.W.; S.S.W.	0.00
17	29.83	+0.08	63.6	38.2	25.4	50.2	+ 3.4	41.6	73	S.	0.00
18	29.86	+0.11	60.5	40.5	20.0	49.7	+ 2.7	43.1	80	S.S.W.	0.00
19	29.72	—0.03	67.8	48.6	19.2	57.1	+ 9.9	45.4	65	S.S.W.; S.	0.00
20	29.75	—0.01	62.6	44.6	18.0	51.3	+ 3.9	47.3	86	S.W.	0.26
21	29.80	+0.04	59.6	41.0	18.6	48.8	+ 1.2	43.8	89	WSW; W.	0.00
Mean	29.73	—0.02	60.5	41.5	19.0	49.6	+ 2.6	43.6	81	S.; S.W.	sum 0.61

April 15.—Overcast, dull, with rain till 4 P.M. Fine at night. A cool day.
— 16.—A fine day, partially cloudy. Milder. Sky clear at night.
— 17.—A fine bright day. Warmer. Cloudy at night.
— 18.—A fine warm day, cloudy towards evening, very cloudy at night.
— 19.—A fine bright warm day. Overcast at night. Very dry.
— 20.—A fine bright day. Cloudless at night. Heavy rain in early morning, and a shower at 4 P.M.
— 21.—A fine day, cloudy at times. Cool. Strong wind.

London: *Barometer.*—During the week ending Saturday, April 17, in the vicinity of London the reading of the barometer at the level of the sea decreased from 50.13 inches at the beginning of the week to 29.65 inches by the afternoon of the 14th; increased to 29.71 inches by the morning of the 15th; decreased to 29.65 inches by the afternoon of the same day; increased to 29.92 inches by the evening of the 16th; decreased to 29.85 inches by the afternoon of the 17th; and was 29.94 inches at the end of the week. The mean reading for the week at sea level was 29.83 inches, being 0.09 inch above that of the preceding week, and 0.08 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 63½° on the 17th, to 47° on the 14th; the mean value for the week was 54½°. The lowest temperatures of the air observed by night varied from 34° on the 12th, to 42° on the 14th; the mean value for the week was 38°. The mean daily range of temperature in the week was 16¼°; the greatest range in the day being 25½°, on the 17th, and the least 5°, on the 14th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—April 11, 42°, — 3°.8; 12th, 42°, — 3°.9; 13th, 46°.9, + 0°.8; 14th, 44°.3, — 2°; 15th, 43°.8, — 2°.7; 16th, 46°.5, — 0°.1; 17th, 50°.2, + 3°.4. The mean temperature of the air for the week was 45°.1, being 1°.2 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were above 120° on the 12th, 13th, 16th, and 17th, but on the 14th and 15th the readings did not rise above 55°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 29¾° on the 12th and 32° on the 13th and 17th; the mean of the seven lowest readings was 34½°.

Wind.—The direction of the wind was N.E., S.E., and S.W., and its strength moderately strong.

The weather during the week was generally showery, cool, and the sky cloudy. Friday and Saturday were the finest days.

Rain fell on five days; the amount measured was 1.05 inch.

England: *Temperature.*—During the week ending Saturday, April 17, the highest temperatures of the air observed by day were above 62½° at Blackheath, Leicester, Cambridge, and Hull, and below 54° at Wolverhampton, Bradford, and Leeds; the mean value from all stations was 59¼°. The lowest temperatures of the air observed by night were below 34° at Blackheath, Leicester, Cambridge, Wolverhampton, Sheffield, Hull, and Bradford; and above 39½° at both Truro and Plymouth; the general mean from all places was 35¼°. The extreme range of temperature in the week was above 30° at both Cambridge and Hull, and below 18° at Truro and Plymouth; the mean range of temperature from all stations was 24°.

The mean of the seven high day temperatures of the air was above 54° at Truro, Brighton, Blackheath, Cambridge, and Sunderland, and below 50° at Wolverhampton, Bradford and Leeds; the mean value from all places was 52°. The mean of the seven low night temperatures of the air was below 38° at Blackheath, Cambridge, Wolverhampton, Nottingham, Sheffield, and Hull, and above 42½° at both Truro and Plymouth; the mean value from all stations was 39¼°. The mean daily range of temperature in the week was above 16½° at Blackheath and Cambridge, and below 10° at Plymouth and Liverpool; the mean daily range from all places was 12¾°.

The mean temperature of the air for the week from all stations was 44¼°, being 6° higher than the value for the corresponding week in 1879. The mean temperature was above 46° at Truro and Brighton, and below 43° at Wolverhampton, Nottingham, Sheffield, Bradford, and Leeds.

Rain.—Rain fell on every day in the week at Bradford, and on four or fivedays at most other places. The heaviest falls were about 1 inch at both Blackeath and Bradford, and the least falls were 0.22 inch at Liverpool and 0.33 inch at Plymouth; the average fall over the country was 0.60 inch.

The weather during the week was very dull and showery at times, but generally fine.

Scotland: *Temperature.* — During the week ending Saturday, April 17, the highest temperatures of the air observed by day varied from 60° at Edinburgh to 52° at Perth; the mean value from all places was 55½°. The lowest temperatures of the air observed by night varied from 33° at Perth to 36¼° at Edinburgh; the general mean from all stations was 34¾°. The mean range of temperature in the week from all places was 20¾°.

The mean temperature of the air for the week from all stations was 44°, being 5½° higher than the value for the corresponding week in 1879. The mean temperature of the air was above 44½° at Edinburgh and Leith, and below 43½° at Perth.

Rain.—The heaviest falls of rain were 0.93 inch at Edinburgh, and 0.90 inch at Leith and Perth; and the least falls were 0.33 inch at Glasgow and 0.38 inch at Paisley; the average fall over the country was 0.65 inch.

Dublin.—The highest temperature of the air was 51¾°, the lowest 33¾°, the extreme range was 18°, the mean 43¼°, and the fall of rain 0.96 inch.

JAMES GLAISHER, F.R.S.

Answers to Correspondents.

Asparagus Beds: *G. T.* You had better remake the beds and replant them at once. Dig out the heavy soil 18 inches deep, drain it well, making an outlet for the water, and make up again with soil in which a considerable proportion of gritty material has been mixed, raising it a foot above the general level. Growing plants are best to plant, but it must be done carefully.

Dendrobium: *J. V. K. P.* The leaf looks as if it had suffered from too dry an atmosphere. It may possibly have been caught by bright sunshine while immature.

Double Cyclamen: *H. C. Wilmot.* The Cyclamen varies occasionally, with an abnormal number of segments, and yours is probably one of these cases. They are probably permanent, but so far as we have yet seen no improvement on the normal form.

Double Primroses: *W. M.* The natural tendency would be that double-flowered plants left to their fate

would lose more or less of their doubleness for want of feeding, as very high culture might occasionally induce doubleness; but we do not believe they would, under any conditions, turn to hose-in-hose flowers, which are a distinct type into which the Primrose family has a tendency to vary.

Errata. — At p. 491, in my remarks on the York Nurseries, there is an error. I wrote "—5° Fahr., or 37° of frost." That was the lowest temperature recorded at York last winter. *J. Douglas.*—In the article on Gardenias, at p. 489, for "dry heat," read "dung heat." *D. T. F.*—May I be permitted to state that in p. 500, the second line from the top, should be read, "When the first mowing begins," not "crowding;" and in the fourth line from the end of the subject, read "silvery grace," not "grass." *H. M. E.*

Eucalyptus: *J. Steele.* We believe the seeds are correctly named, but without further evidence it is impossible to be quite certain.

Insects: *C. H. W.* Your Picea Nordmanniana is attacked by one of the aphides, which we cannot determine as all the specimens (females) are dead, each having deposited a mass of small flesh-coloured eggs which will shortly hatch. Fumigation would destroy them whilst very young. *I. O. W.*

Names of Plants: *T. F., Mill Hill.* 1, Opuntia cylindrica; 2, Opuntia leucotricha; 3, Gasteria verrucosa; 4, Sparmannia africana. — *W. P., Epping.* Scilla natalensis.—*J. J.* 1, Narcissus incomparabilis; 2, N. incomparabilis aurantius; 3 and 5, the double Florence Daffodil—N. Telemonius plenus of Haworth; 4, N. incomparabilis flore-pleno; 6, the double form of the single white N. incomparabilis Peerless, commonly called the double Orange Phœnix; 7, Luzula campestris (the field Wood-rush).—*James Wilson.* Eucalyptus globulus.—*E. H. M. S.* Atriplex halimus.—*M. J., Annan.* 1, Brassea Lanceana, var.; 2, Adiantum hispidulum; 3, Doodia caudata; 4, Asplenium bulbiferum; 5, Nephrodium decompositum; 6, send again when more advanced. —*E. C.* Cymbidium pendulum.—*Inquirer.* Cymbidium eburneum. We should like to see a more ample specimen of the Passion-flower. It may be new.—*C. W. D.* Chrysosplenium oppositifolium.—*Rhodo.* Rhododendron campanulatum.—*D. P.* 1, Cyanotis repens; 2, Doronicum caucasicum; 3, Phlox setacea; 4, Myosotis, not recognisable; 5, Corydalis, not recognisable without the flowers; 6, Isolepis gracilis.—*Subscriber.* The largest flower is Cattleya Skinneri. Please send better specimens of the others, and number them. *C. R.* 1, Davallia canariensis; 2, Asplenium bulbiferum; 3, Lantana (leaves only); 4, Cyanotis repens variegata; 5, Passiflora cœrulea. They are all very bad specimens.—*A. J. M.* Dondia epipactis.—*T. P. P.* Anemone apennina.

Pansy: *J. C.* Very like the variety sent out as Cliveden Yellow in its general character, but of a richer shade of yellow, and very much larger in the flowers, which are of equally good form and subtance. It will no doubt make a very effective bedder.—*C. H.* Your seedling is a rich deep purple self, darker than Cliveden Purple, but as the flowers were collapsing, that is all we can say of it. The Orchid is Bifrenaria Harrisonæ.

Peaches: Disbudding, Stopping, and Thinning Fruit: *J. S.* If you will refer to the Peach Calendar for the past or present year you will find complete answers to your questions. Disbudding should be performed piecemeal at intervals of a few days, and when finished the young growths should be about 6 inches apart after they are tied down. If the trees have not covered the trellis, allow all terminal shoots to grow to their full length, stopping only those which are likely to become too strong, and so destroy the balance of the tree. A shoot 12 inches in length should not carry more than one fine Peach to maturity. Mediocre Peaches are plentiful enough, but to have them as fine as they can be grown, say 8 oz. to 10 oz. each, one fruit to every square foot of trellis covered with foliage will be found a heavy crop when ripe, and quite as much as the trees can support from year to year. When Peaches have completed the first swelling they will be about the size of pigeons' eggs, but different kinds vary in size; they will then cease swelling for a period of nearly six weeks, and this is called the stoning period, during which the temperature should be kept as equable as possible. When the last swelling for ripening sets in all shoots that will have to be cut out after the fruit is gathered may be stopped, to prevent over-crowding and to increase the size of the fruit. We do not approve of pinching in summer or shortening back in winter. The finest trees in Britain have been grown on the extension principle, the great secret being thorough ripening of the wood. *W. C.*

Polyanthuses: *S. F. & Co.* Neither of them are of any value as florists' flowers.

Roots in Drain: *J. H. C.* We cannot identify the roots taken out of the drainpipes without better evidence than that you supply. You should search on the spot.

Todeas: *Beginner.* The Todeas should be potted in well drained peaty soil, and set in a close frame either in a greenhouse or sheltered place outdoors, the plants being sprinkled once or twice daily. The Tree Ferns, if dormant, must not get any water in their crowns until they have started, but should stand in a house in which the atmosphere is moderately moist, and if large trunks they may be lightly sprinkled occasionally.

Vines: *J. T. S.* The rods or main branches of your Vines should be about 3½ feet apart. The shoots may be stopped at one, two, or three joints beyond the bunches. The point is to leave them as long as possible without trespassing on each other, or crowding the leaves. You must bend the shoots gradually a little one day and again the next. They will bend easily in a little while, so do not be in too much hurry.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* Advertisements, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Catalogues Received:—Ellwanger & Barry (Mount Hope Nurseries, Rochester, N.Y.), Catalogue of Ornamental Trees, Shrubs, Hardy Perennials, &c. —M. Bruant (Poitiers, Vienne, France), Catalogue of Florists' Flowers, Bedding Plants, &c.—Woolson & Co. (Passaic, N.J., U.S.A.), Descriptive Catalogue of North American Bulbs, Roots, &c., for 1880.—James Cocker & Sons (Aberdeen), General Spring Catalogue of Bedding and other Soft-wooded Plants. — Thomas S. Ware (Hale Farm Nurseries, Tottenham), Spring Catalogue of Hardy Florists' Flowers.—Robert Mack & Son (Catterick Bridge, Yorkshire), List of Choice Dahlias.—William Potten (Sissinghurst, Staplehurst), a Select List of Pelargonium and other Bedding Plants.—Louis de Smet (Ledeberg-lez-Gand, Belgium), Catalogue of Plants. — John Laing & Co. (Stanstead Park, Forest Hill, S.E.), Priced List of Tuberous-rooted Begonias.

Communications Received.—E. W. B.—J. H. K.—D. C. P. —J. L.—J. V & Sons.—J. R. J.—J. W.—E. M. E.—S. J. C. —J. G.—F. R. S.—P. M.—H. L. & Co.—W.—W. B.—Brazil.—T. S.—Messrs. Crossley Brothers.

DIED, on April 19, at 52, St. Paul's Road, Camden Square, N.W., Mary Anne, widow of the Rev. Joshua Dix, Rector of Allhallows with St. John the Evangelist, Bread Street, E.C. (and for several years a member of the Council and chairman of the Floral Committee of the Royal Horticultural Society), and eldest daughter of the late Henry Boys, Esq., of Malmains, Waldershire, Kent, in her 68th year.

Markets.

COVENT GARDEN, April 22.

We are now feeling the effects of the fine spring, all sorts of house produce reaching us in as plentiful and as good condition as we have experienced for some years. With only a moderate demand, however, prices keep very low, Strawberries alone meeting with a brisker demand. Large quantities of Asparagus from France and Spain have arrived during the week, as also the first Gooseberries from the West of England. *James Webber, Wholesale Apple Market.*

Fruit.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Lemons, per 100	6 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– 1 6	Pears, per dozen	4 0– 8 0
Gooseberries, green, per quart	1 0– 1 6	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb.	8 0–12 0	Strawberries, per oz.	0 6– 0 9

Vegetables.

	s. d. s. d.		s. d. s. d.
Artichokes, p. bush.	10 0–14 0	Horse Radish, p. bun.	4 0– ..
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— English, p. 100	12 0– ..	Mint, green, bunch	1 6– ..
— French, per bun.	7 0–25 0	Mushrooms, p. baskt.	1 6– 2 0
— French natural, per bundle	3 6– ..	Onions, per bushel	8 0– ..
Beet, per doz.	1 0– 2 0	— Spring, per bun.	0 6– ..
Brussels Sprouts, lb.	0 6– ..	Parsley, per lb.	1 6– ..
Cabbages, per doz.	1 0– 2 0	Peas, per lb.	1 0– ..
Carrots, per bunch	0 8– ..	Potatos (new), per lb.	0 3– 0 9
— French, per lb.	0 6– ..	Rhubarb (Leeds), per bundle	0 9– ..
Cauliflowers, per doz.	2 0– 5 0	Seakale, per punnet	3 0– ..
Celery, per bundle	1 6– 4 0	Shallots, per lb.	0 6– ..
Chilis, per 100	3 0– ..	Spinach, per bushel	5 0– 6 0
Endive, per score	4 6– ..	Tomatos, per dozen	3 0– ..
Garlic, per lb.	1 0– ..	Turnips, new, bunch.	0 6– ..
Herbs, per bunch	0 2– 0 4		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 160*s.* to 200*s.* per ton. German, 6*s.* to 7*s.* 6*d.* per bag; new English, 1*s.* 6*d.* per lb.

Plants in Pots.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ferns, in var., doz.	4 0–18 0
Azaleas, per dozen	18 0–60 0	Ficus elastica, each	1 6– 7 6
Begonias, per doz.	6 0–18 0	Foliage Plants, various, each	2 0–10 6
Bouvardias, per doz.	12 0–24 0	Fuchsias, per dozen	9 0–15 0
Cinerarias, per doz.	6 0–12 0	Genista, per dozen	9 0–18 0
Cyclamen, per dozen	9 0–24 0	Hyacinths, per doz.	4 0– 9 0
Cyperus, per dozen	4 0– 9 0	Myrtles, per doz.	6 0–12 0
Dielytra, per doz.	9 0–15 0	Palms in variety, each	2 6–21 0
Dracæna terminalis	30 0–60 0	Pelargoniums, scarlet zonal, per doz.	4 0– 9 0
— viridis, per doz.	12 0–24 0	Spiræa, per dozen	6 0–18 0
Erica various, per dozen	12 0–30 0		
Euonymus, various, per dozen	6 0–18 0		

Cut Flowers.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Pelargoniums, 12 spr.	0 6– 1 0
Anemone, 12 bun.	3 0– 6 0	— zonal, 12 sprays	0 3– 0 9
Arum Lilies, per dozen	3 0– 6 0	Primroses, 12 bunch.	1 0– 1 6
Azalea, 12 sprays	0 6– 1 0	— double, white, 12 bunches	1 6– 3 0
Bouvardias, per bun.	1 0– 4 0	Primula, double, per bunch	1 0– 1 6
Camellias, per doz.	1 0– 6 0	Roses (indoor), doz.	1 0– 9 0
Carnations, per dozen	1 0– 3 0	— Roses, Fr., doz.	2 0– 6 0
Cyclamen, 12 blms.	0 4– 0 6	Spiræa, 12 sprays	1 0– 2 0
Epiphyllum, 12 blms.	0 6– 1 0	Tropæolum, 12 bun.	1 0– 3 0
Eucharis, per doz.	4 0– 6 0	Tuberoses, per dozen	4 0– 6 0
Euphorbia, 12 sprays	3 0– 6 0	Tulips, 12 bunches	4 0– 8 0
Gardenias, 12 blms.	2 0– 8 0	Violets, French, per bunch	1 6– 2 6
Heliotropes, 12 sp.	0 6– 1 0	— English, p. bun.	1 0– 2 0
Hyacinths, 12 bun.	6 0–12 0	Wallflowers	4 0– 9 0
Lily of Val., 12 spr.	0 9– 2 0	White Lilac, Fr., per bundle	4 0– 8 0
Mignonette, 12 bun.	6 0– 9 0		
Narcissus, various, 12 bunches	6 0– 9 0		

SEEDS.

London: *April 21.*—The market to-day was moderately attended, and seeing that the season is now drawing to a close, there was a fair general consumptive demand. Values all round stand at the unusually low level previously described. Choice Canadian Clover seed in particular, being unprecedentedly cheap, continues in great favour. Alsike and Trefoil are now most reasonable. White Clover is steady. Timothy and Lucerne are rather scarce. Spring Tares find buyers on former terms. The sale for Mustard and Rape seed is slow. Of Sainfoin the supply appears exhausted. Buckwheat and Linseed are without change. Very low quotations prevail for bird seeds. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade was extremely heavy at Mark Lane on Monday. English Wheat was 1*s.* to 2*s.*, and foreign 2*s.* to 3*s.* per quarter cheaper than on Monday se'nnight. Barley was dull and cheaper to sell. The malting season is now over. Malt moved somewhat in favour of buyers. Oats were in limited request and the turn lower; while Maize suffered to the extent of another 6*d.* per quarter. Beans were steady. Peas met with a small demand and were slightly easier. Flour was decidedly flat, both sacks and barrels being a good 1*s.* cheaper.—On Wednesday English and foreign Wheat was quoted as on Monday. Barley met with a small inquiry, and as regards Oats, Maize, and other articles there was extremely little doing. No change was reported in prices, but the general tone of business remained flat. The weather continues most propitious for the crops, and accordingly the most sanguine anticipations are indulged in.—Average prices of corn for the week ending April 17:—Wheat, 47*s.* 11*d.*; Barley, 33*s.* 8*d.*; Oats, 24*s.* 6*d.* For the corresponding period last year:—Wheat, 41*s.* 2*d.*; Barley, 30*s.* 11*d.*; Oats, 20*s.* 7*d.*

CATTLE.

At Copenhagen Fields on Monday trade in beasts was slow, and prices on the average not so good as last reported. Choice quality sheep met with a ready sale at higher rates. Good lambs and calves were scarce, and made higher prices. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.*; calves, 5*s.* 6*d.* to 7*s.*; sheep, 5*s.* 4*d.* to 5*s.* 8*d.*, and 6*s.* to 6*s.* 8*d.*; lambs, 8*s.* 6*d.* to 9*s.* 6*d.*; pigs, 4*s.* 6*d.* to 5*s.* 4*d.* — On Thursday, notwithstanding short supplies, trade was dull in tone, and presented a drooping tendency. Both beasts and sheep sold slowly at rather under Monday's prices. Lambs were decidedly weaker, but calves were fairly steady.

HAY.

Tuesday's Whitechapel Market report states that there was a moderate supply of fodder, and trade was quiet at firm rates:—Prime Clover, 100*s.* to 132*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 105*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 38*s.* per load.—On Thursday there was a fair supply of hay and straw on offer. The trade was very dull at the above prices.

POTATOS.

The Borough and Spitalfields Markets reports state that home-grown Potatos command a ready sale and full prices, but the trade seems dull as regards foreign, owing to extensive supplies. Scotch Regents, 140*s.* to 160*s.*; ditto Champions, 180*s.* to 200*s.*; Lincoln ditto, 180*s.* to 190*s.*; Victorias, 160*s.* to 180*s.* per ton; German reds, 4*s.* 6*d.* to 7*s.*; Duch rocks, 4*s.* 6*d.*; and French white, 4*s.* 6*d.* per bag.—During last week 74,616 bags of Potatos were receved at London from Hamburgh, 15,466 bags 16,039 sacks Stettin, 15,766 bags Danzig, 7003 Harburgh, 2000 Bremen, 1088 Harlingen, and 2818 casks Colburg.

COALS.

The following are the prices current at market during the week:—East Wylam, 15*s.* 6*d.*; West Hartley, 14*s.* 3*d.*; Walls End—Harton, 14*s.* 6*d.*; Hetton, 16*s.*; Hetton Lyons, 14*s.* 6*d.*; Lambton, 15*s.* 6*d.*; Original Hartlepool, 16*s.*; Wear, 14*s.* 6*d.*; Tunstall, 14*s.* 6*d.*; Chilton Tees, 15*s.* 6*d.*; Hawthorn, 14*s.* 9*d.*; South Hetton, 16*s.*; Tees, 15*s.* 9*d.*; Radford Navigation, 15*s.* 9*d.*

Government Stock.—The closing price of Consols on Monday was 98⅜ ⅞, for both delivery and the account. Tuesday's figures were, for delivery, 98 11/16 to 98 13/16, and 98¾ to 98⅞ for the account. On Wednesday the closing prices were 98⅝ to 98¾ for both delivery and the account, and on Thursday they were, for delivery, 98⅝ to 98¾, and 98 11/16 to 98 13/16 for the account.

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(Free of Duty.)

CORRY & SOPER'S NICOTINE SOAP

(PATENT).

An effectual and speedy Eradicator of Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight, and all Parasites affecting Plants, without injury to Foliage.

It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.

Especially adapted for the Destruction of Blight on the Coffee Plant.

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general INSECTICIDE.

It has now undergone a thorough test by some of the most practical men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with **Perfect Safety to Foliage.**

It may be used as a Dip or Wash for any description of out or indoor Plants, and as a Dressing for the Bark of Fruit Trees, Vines, &c., it has no equal.

The following is a fair sample of Testimonials, selected from some hundreds lately received from men of considerable experience:—

Messrs. J. & J. HAYES, *Nurserymen, Edmonton, London, N., on Feb.* 9, 1880, *write*:—

"We consider your Nicotine Soap a great boon to all who have anything to do with plants or fruit growing, as it is so very useful for dipping and syringing when it is not convenient to fumigate. You are quite at liberty to make what use you please of this."

Messrs. OSBORN & SON, *The Fulham Nurseries, London, write*:—

"We have given your Nicotine Soap a fair trial, and our experience confirms the character you give it, that it is an unrivalled preparation for killing insect life, without injury to plants."

Mr. B. MALLER, *Burnt Ash Nursery, Lee, London, S.E., on Feb.* 21, 1880, *writes*:—

"I have given your Nicotine Soap a fair trial, and I must now say it is very satisfactory. I am now having it used freely for syringing, ½ pint to 4 gallons of water, without the least injury to the foliage."

Mr. J. C. SPYERS, *Orchid Grower to Sir Trevor Lawrence, Bt., Burford Lodge, Dorking on Nov* 24, 1879, *writes*:—

"I have now tried in many ways your Nicotine Soap as an insecticide for Orchids, and it has given me great satisfaction," &c.

Messrs. BARNWELL & TILBURY, *Nurserymen, Worthing, on March* 19, 1880, *write*:—

"Having used Corry & Soper's Nicotine Soap this year, we can with pleasure say it is the most useful insecticide that has ever come under our notice. We have tried it on Strawberry plants when in bloom, and find it most effectual in destroying the fly, whilst it does not in the least injure the plants or flowers, but gives a better and healthier growth to the plants."

Mr. GEORGE ABBEY, *Gardener to C. M. Palmer, Esq., M.P., Grenkle Park Garden, Saltburn-by-the-Sea, on February* 20, 1880, *writes*:—

"The Nicotine Soap I had from you I find a safe and powerful insecticide, being destructive of every kind of insect infesting plants, and in no instance has any injury been done to the foliage. At a strength of 3 oz. to a gallon of water, I have use it for syringing Peaches during growth for the destruction of red-spider, without injury in any way (only to the insect!—which it instantly kills). At that strength to 4 oz. to the gallon it may, with perfect safety, be employed for syringing every description of fruit tree, whether under glass or outdoor, and a majority of plants, without the least injury, whilst at the same time it destroys aphides—green, brown, blue, and black—thrips, and red-spider. At a strength of 6 to 8 oz. to a gallon of water, I have employed it very successfully for destroying mealy-bug, brown and white scale, both by syringing the plants and applying with a brush, its effects upon the insects making its application gratifying; whilst from its grateful smell, it is pleasant than otherwise. At a strength of 8 oz. to the gallon I found it a first-rate winter dressing for fruit trees, mealy-bug on Vines, as well as a destroyer and preventive of red-spider, thrips, and aphides. It also destroys American blight."

The following Nurserymen authorise us to say they have used the Nicotine Soap with unqualified satisfaction:—

J. Laing & Co., Forest Hill, London, S.E.; Hawkins & Bennett, Twickenham, S.W.; G. Edwards, Balham, S.E.; James Walton, Lee, S.E.; D. S. Thomson, Wimbledon, Surrey; F. & A. Smith, Dulwich, S.E.; J. Peed & Son, Roupell Park, Lower Norwood, S.E.; G. Brand, Winchmore Hill, N.; Hooper & Co., Covent Garden, W.C.; Lucombe, Pince & Co., Exeter; Edwin Cooling, Derby; T. Frost & Sons, Maidstone; W. C. Drummond, Bath; G. & W. Yates, Manchester; W. Bryant, Rugby; J. Stewart & Son, Dundee; J. Cocker & Son, Aberdeen; J. Charlton, Tunbridge Wells; Edmonson Bros., Dame Street, Dublin, &c.

Sold in jars, 8 oz., price **1s. 6d**; 20 oz., price **3s.**; and in tins, 14 lb., price **15s. 6d**; and drums, 28 lb., price **25s**; 56 lb., price **50s**; 112 lb., **95s.** Full directions for use on each package.

And 2 oz. sample jars, **6d.** each.
Full directions for use on each package.

Manufacturers of Tobacco Powder, Tobacco Juice (duty free), Tobacco Paper and Cloth, and Horticultural Sundriesmen.

May be obtained from all Seedsmen and Florists.

Wholesale from the Manufacturers,

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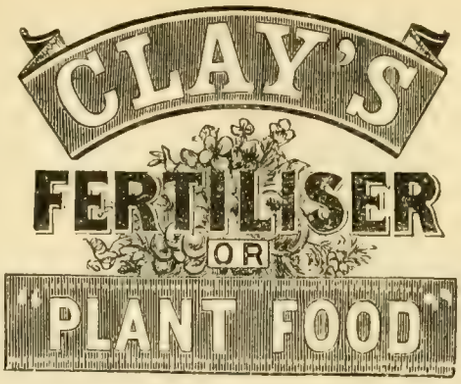
BONDED TOBACCO STORES,
SHAD THAMES, LONDON, S.E.



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This Manure is composed of *highly concentrated animal matter*, and is entirely different from Guano, Nitrate of Soda, and all Chemical Manures, which are merely stimulants, and in the end exhaust and deteriorate the soil. It is really a *Plant Food*, and all Crops appear to benefit in a most remarkable manner from its application. It is now being used most successfully

For all Farm Crops,
For all Kitchen Garden Crops,
For Lawns and Flower Gardens,
For Vines and Strawberries,
For Melons and Cucumbers,
For all Soft-wooded Plants,
For all Stove and Greenhouse Plants,
For Camellias, Azaleas, and Gardenias.

Sold in Packets 1s. each, and in Bags,

¼ Cwt.	½ Cwt.	1 Cwt.
7s. 6d.	12s. 6d.	20s.

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BEST BROWN ORCHID PEAT, 5s. per Sack, 5 for 22s 6d.
BLACK FIBROUS PEAT 4s. 6d per Sack, 5 for 20s. Sacks 4d. each.
COARSE SILVER SAND, 1s. 6d. per Bushel.
YELLOW FIBROUS LOAM, splendid LEAF-MOULD and PEAT MOULD, 1s. per bushel.
TOBACCO CLOTH and PAPER, highly effective—Cloth, 8d per lb.; Paper, 7d; Roll Paper, best quality, 1s.
Write for Price List.

W. HERBERT & CO.,
Broad Street Mews, Broad Street, City, E.C., (turning opposite Metropolitan Railway Station).

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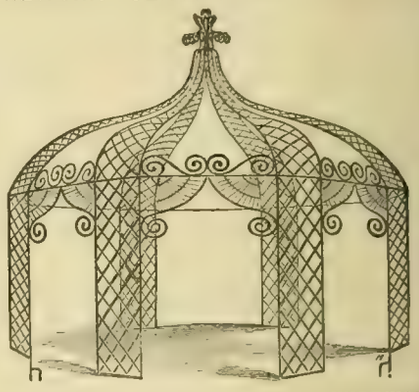

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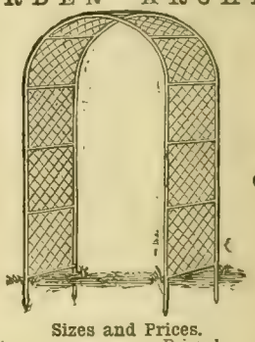

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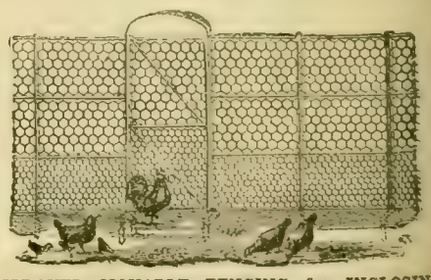

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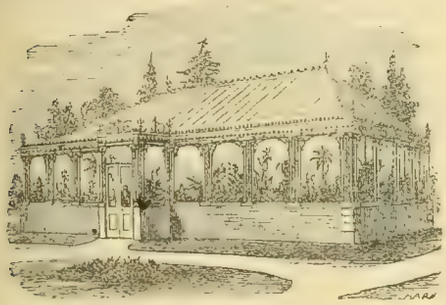

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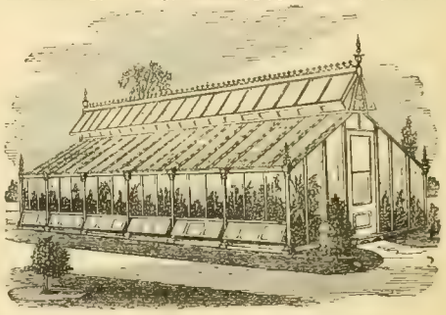

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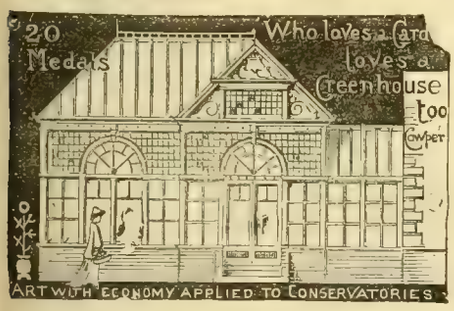

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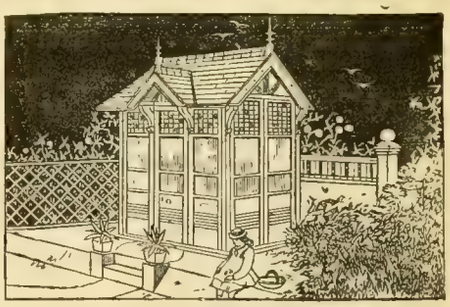

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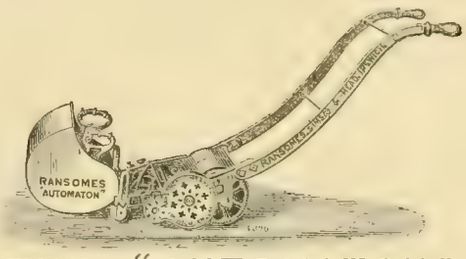

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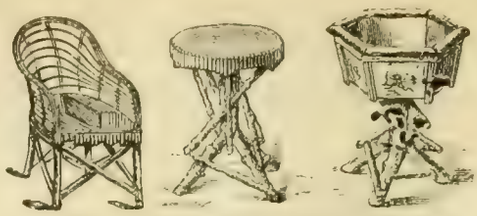

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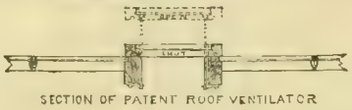

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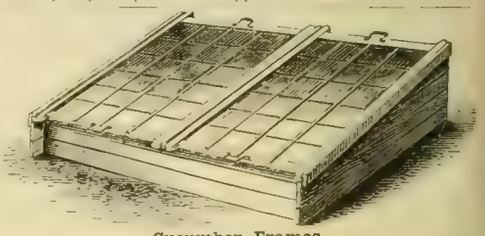

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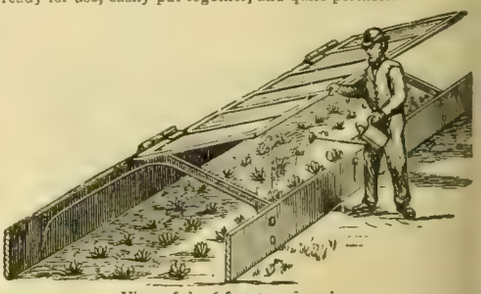

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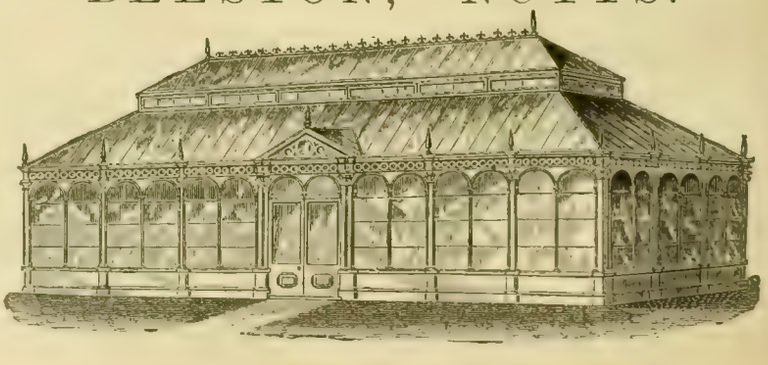

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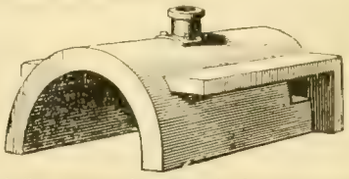

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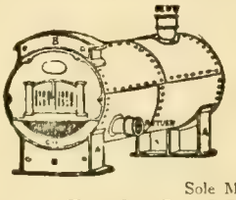

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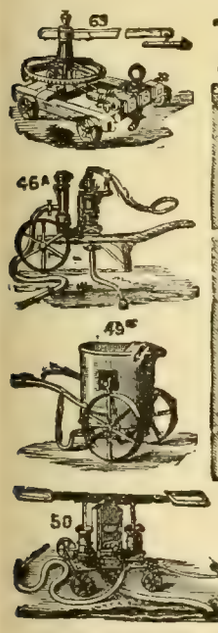

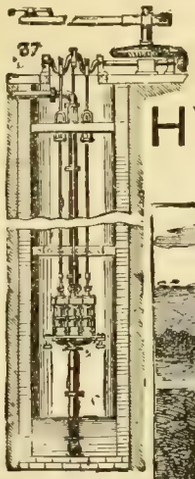

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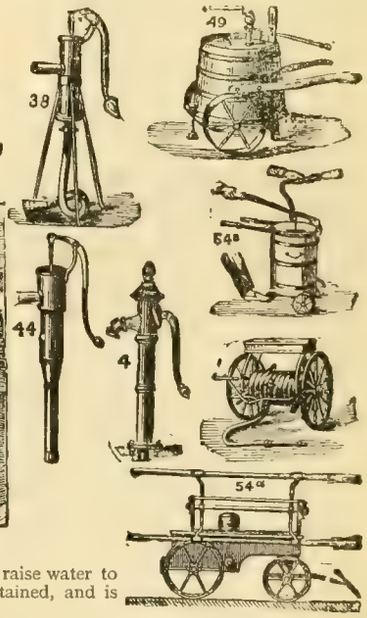

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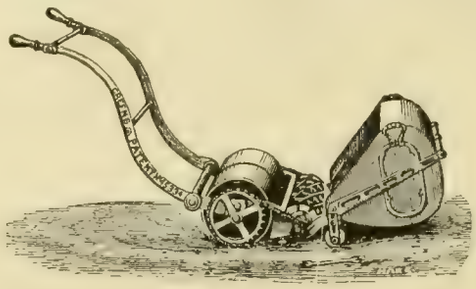

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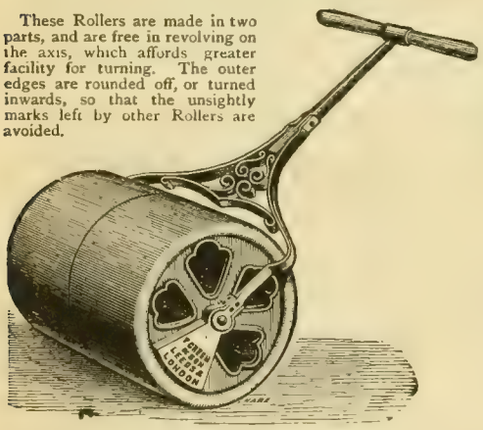

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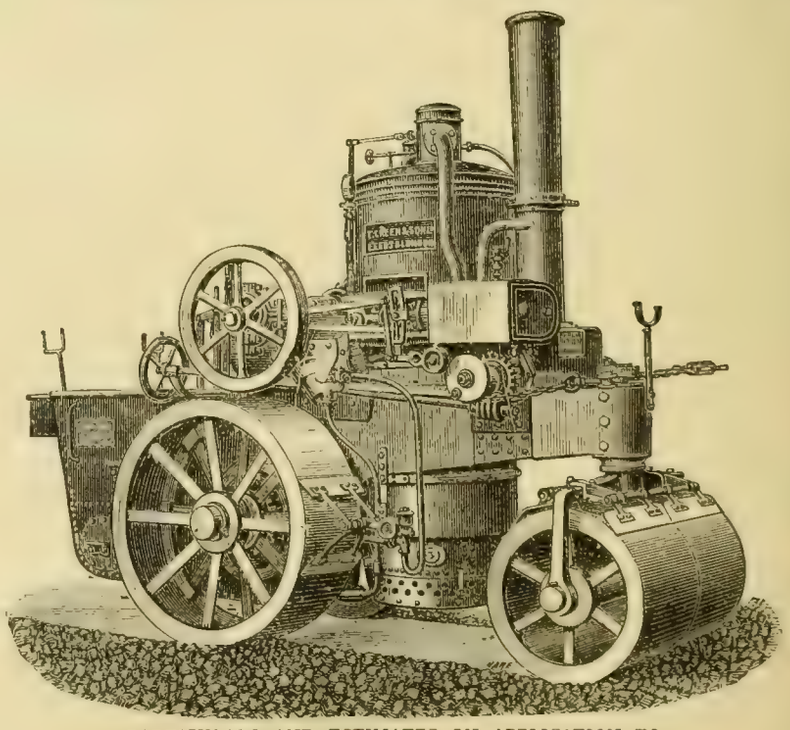

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Phylloxera Dr. W. p. 566.

THE

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Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 *to the end of* 1878," *to secure them at once.*

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,, 15.	,, 21.
,, 29.	March 20, 27.
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The ANNUAL EXHIBITION of the above Society will be held on SATURDAY, July 10, by kind permission of N. W. J. Strode, Esq., in the grounds of Camden House, Chislehurst, the residence of H. M. the Empress of the French.
For Schedules of Prizes, &c., apply to the Honorary Secretary, T. A. MITCHELL, Esq., The Woodlands, Chislehurst.
Annual Subscription, £1 1s., to be paid to the Treasurer, JOHN SCOTT, Jun., Esq., Elmstead Grange, Chislehurst.

CLAY CROSS HORTICULTURAL SOCIETY.
ANNUAL EXHIBITION, AUGUST 10. PRIZES, £350. Twenty plants, £25, £20, £15, £10, £5. Other prizes in proportion. Shedules ready shortly.
J. STOLLARD, Secretary.
Clay Cross, near Chesterfield.

ROYAL AQUARIUM, WESTMINSTER.—The THIRTY-FIFTH ANNUAL EXHIBITION (open to all England) of the BOROUGH of HACKNEY CHRYSANTHEMUM SOCIETY will be held, as above, on WEDNESDAY and THURSDAY, November 17 and 18, when valuable Silver Cups, &c., will be awarded as usual. The Schedules for this Exhibition also includes a liberal scale of Prizes to be awarded to FRUIT and VEGETABLES, and may be had on application to
WILLIAM HOLMES, Hon. Sec.,
Frampton Park Nursery, Hackney, N.E.

THE LIVERPOOL HORTICULTURAL ASSOCIATION.
The Schedules of the above Association are now Ready, and all intending Exhibitors may obtain a copy on application to
R. WASHINGTON, Secretary.
37. Aigburth Road.—April 26, 1880.

Echeveria metallica—Sempervivum tabulæforme.
H. CANNELL has a fine stock of the above, and can offer them cheap.
The Home for Flowers, Swanley, Kent.

ANTHURIUM ANDREANUM (Linden); First-class Certificate.—The grand novelty, described in the *Gardeners' Chronicle*, 1880, on p. 490, and illustrated on p. 497, will be SENT OUT on the 1st of OCTOBER next, at Twenty Guineas each. The subscription list is now open at this establishment. Descriptive CATALOGUES on application.
J. LINDEN, Exotic Nurseries, Ghent, Belgium.

Seeds—Seeds—Seeds.
WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

Gardenias.
MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

GERMAN ASTERS. The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

CABBAGE PLANTS.—200,000 Red Pickling, at 5s. per 1000. Good strong healthy plants. Cash or reference from unknown correspondents.—Apply to
W. VIRGO, Wonersh Nursery, near Guildford, Surrey.

To the Trade.
HOME-GROWN MANGEL WURZEL and TURNIP SEEDS.
H. AND F. SHARPE will be pleased to give special quotations for their fine selected stocks of home-grown MANGEL WURZEL and TURNIP SEEDS.
Seed Growing Establishment, Wisbech.

Vines for Present Planting.
JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.
CATALOGUES free. The Trade supplied.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

CUCUMBER PLANTS.—Telegraph (true). Strong, healthy plants now ready. Apply to
A. WATKINS, Hockerill Nursery, Bishops Stortford, Herts.

Gentlemen's Gardeners, Amateurs, and Others
REQUIRING
GARDEN POTS of best quality, are requested to send their orders to
J. MATTHEWS, Royal Pottery, Weston-super-Mare.
Price List on application.

Dwarf Box Edging.
FOR SALE or EXCHANGE, Four Thousand Yards, at 30s. per 1000, or £5 the lot. Apply SHARMAN, Norton Hall, Stratton, Bath.

WANTED, CALCEOLARIA Golden Gem, good DAHLIAS and VERBENAS. State price per 100 to E. COOLING, Derby.

WANTED, choice CUT FLOWERS—M. NIEL and Scarlet ROSES, FERNS, Choice FRUIT, &c.
H. UNWIN, Commission Agent, 14, James Street, Covent Garden, W.C.

SUTTON'S HOME-GROWN SEEDS, &c.
PARIS, 1878.
In addition to FIVE PRIZE MEDALS awarded by the Juries, the LEGION OF HONOUR (*a superior distinction accorded to no other English Exhibitor of Seeds*) was conferred on our Managing Partner by the French Government.
SUTTON AND SONS, Reading, London and Paris.

POT ROSES.—The Largest and Finest Stock in the country of hardy well-established Plants for present Planting or Greenhouse Culture.
Priced LISTS free by post.
WM. PAUL AND SON, Paul's Nurseries, Waltham Cross, Herts.

To the Trade and Amateur Rosarians.
NEW ROSES in POTS. TEA and NOISETTE ROSES in Pots.—One of the most extensive, most select, and perhaps the most thriving stock of young plants in the country.
Special LIST, now being prepared, will be sent gratis and post-free to applicants.
EWING AND CO., Eaton, near Norwich.

To the Trade.
ROSES.—Marechal Niel, Gloire de Dijon, Madam Berard, on Seedling Brier, in 5-inch pots, good stuff, all last year's working, 75s. per 100.
GEORGE COOLING, Nurseryman, Bath.

Now is the Best Time to Transplant Hollies.
HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d to 31s. 6d. each. Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

New Lilies.
TWELVE LILIUM SPECIES, good bulbs, 12s. This is a fine, new, and as yet unnamed species from the Rocky Mountains. The flowers are large, brilliant red, with yellow stamens; a grand addition to its class. Only a few have been imported by J. H. L. Carriage free on receipt of Post-office Order. LIST of other choice Lilies free.
J. H. LEY, Royal Nursery, Croydon.

1880—Hardy Perennials—Illustrated.
THE ABOVE CATALOGUE, containing Lists of Hardy Orchids, Bamboos, and Ornamental Grasses, Carnivorous Plants, Bulbs, Climbing and Trailing Plants, and a fine selection of Choice New and Rare Hardy Perennials. Post-free on application.
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

G. FISCHER, Rose Nursery, 30, High Street, Clapham, London, S.W., begs to offer BEDDING PANSIES, Cliveden Purple and Blue Bell (true), at 7s. 6d. per 100.
CHRYSANTHEMUM, Fair Maid of Guernsey, best late white, strong plants in 60-pots, at 12s. per 100; also other good varieties.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HEREFORD. (Established 1785.)
Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

VARIEGATED GERANIUMS.—Flower of Spring and Bijou Geraniums, good strong Autumn-struck Plants, 12s. per 100, for cash, to,
S. BIDE, Alma Nursery, Farnham, Surrey.

NICOTIANA LONGIFLORA.—A delicicusly fragrant plant with pure white flowers; one will scent a whole house; easily cultivated, almost perpetual bloomer. Healthy plants, 7d. each, carefully packed. Packet of seeds, with cultural directions, price 7d. Stamps with order.
W. J. MARSH, Woodbridge, Suffolk.

To the Trade.
DAHLIAS—40,000, in 400 varieties, now ready. CATALOGUE and Price on application to KELWAY AND SON, Langport, Somerset.

One Hundred Thousand
BEDDING PLANTS, from 2s. per dozen. The above are strong healthy Plants, and guaranteed to give satisfaction. Full descriptive CATALOGUE free on application to
J. GEO. HILL (late Scott), The Royal Nurseries, Merriott, or the Royal Seed Stores, Yeovil.

Orchids.
THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.
Lion Walk, Colchester.

ALTERNANTHERAS.—Amœna, amœna spectablis, magnifica, amabilis latifolia, paronychiodes, versicolor, and grandis. Strong plants, 5s. per 100, package free. Money with order payable at Sleaford.
RICHARD NISBET, Aswarby Park, Folkingham.

Vines—Vines—Vines.
JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, has still on hand a fine Stock of Fruiting and Planting CANES of Muscat of Alexandria, Bowood Muscat, Mrs. Pince, Gros Guillaume, Burchardt's Prince, and Madresfield Court. Also Planting Canes of several other varieties. CATALOGUE free. The Trade supplied.

SALES BY AUCTION.

Anthurium Andreanum.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W C., on WEDNESDAY, May 5, at half-past 12 o'Clock precisely, a splendid Importation of

ANTHURIUM ANDREANUM,

collected and brought home by Mr. F. C. Lehmann. The plants are in splendid growing condition, with healthy leaves and growths. This grand species far surpasses in beauty the well known Anthurium Scherzerianum, its colours being more vivid, and the size of the flowers immense. The plant was described in the *Gardeners' Chronicle* of April 10, p. 464, and it says:—"This time a plant which attracted all eyes was Anthurium Andreanum;" and again it is fully described and figured in the *Gardeners' Chronicle*, April 17, p. 490, which states:—"This is the very striking plant which we noticed last week as having been exhibited at Ghent, where it attracted much interest; a similar feeling was experienced here when the plant was shown before the Floral Committee of the Royal Horticultural Society. The plant is an Aroid of tufted habit, with oblong, cordate, glabrous, leathery leaves, dark green above, paler beneath, and marked by comparatively few but prominent nerves; the leaf-stalks are ascending cylindrically, slender and thickened at the top, the blade being attached, as it were, hinge-wise, so as to allow of varying positions, deflexed or spreading. The flower-stalk is double the length of the leaf-stalk."

Undoubtedly the plant is one of the most brilliant and remarkable discoveries of recent times. Those who remember what Anthurium Scherzerianum was on its first introduction and what it is now, are justified in looking forward to the career of the present plant as of quite exceptional importance. This is fully borne out by the statements of Mr. Lehmann. The flower lasts in beauty four months, its colour is most brilliant, and the plant is of easy cultivation. It grows at an elevation of from 3500 to 4200 feet, and in a temperature of from 60° to 70° would suit it best.

At the same time will be Sold a splendid importation of the rose-coloured variety of ODONTOGLOSSUM VEXILLARIUM, the grand new blue-flowering PESCATOREI LEHMANNI, and ODONTOGLOSSUM ALEXANDRÆ LEHMANNI. Also various other ORCHIDS, together with a splendid lot of the Burmah variety of VANDA CŒRULEA, collected by Mr. Freeman. Flowers and Drawings on day of Sale.

May be viewed the morning of Sale, and Catalogues had.

Vanda cœrulea, Burmah Variety.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 5, at half-past 12 o'clock precisely, a splendid Importation of VANDA CŒRULEA, collected by Mr. W. B. Freeman. The variety offered has immense flower-spikes and very broad leaves, and is of sturdy growth. Collector says flowers are much larger and darker than the Kasia Hill variety. The plants are in a healthy state of growth and in altogether splendid condition, and among the importations will be found extra large masses. See flower-spikes on plants.

May be viewed the morning of Sale, and Catalogues had.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 10, at half-past 12 o'Clock precisely, several small collections of ESTABLISHED ORCHIDS, consisting of Odontoglossum vexillarium, O. crispum, O. triumphans, and others; Angræcum sesquipedale, Masdevallias, Cypripediums, Dendrobiums, &c., in variety; also several importations of Dendrobium formosum giganteum, D. tortile roseum, Cattleya citrina, C. Mendelii, Saccolabium guttatum, Cypripedium Stonei, Hookeræ, Dayanum, &c., in fine condition.

May be viewed the morning of Sale, and Catalogues had.

Dendrobium Jamesianum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 10, at half-past 12 o'Clock precisely, a quantity of plants of this beautiful and rare DENDROBIUM, just received from Burmah, where it grows at an altitude of 4000 feet in a cool temperature; added to the beauty of its flowers, the length of time they last makes it a desirable species in every collection.

May be viewed the morning of Sale, and Catalogues had.

Dendrobium lituiflorum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 10, at half-past 12 o'Clock precisely, a quantity of plants of DENDROBIUM LITUIFLORUM. This is the beautiful Burmese variety, just received from Burmah in good condition.

May be viewed the morning of Sale, and Catalogues had.

Important Collection of Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, May 11, at half-past 12 o'Clock precisely, a COLLECTION of ESTABLISHED ORCHIDS, the property of W. S. Gore Langton, Esq., M.P., of Newton Park, Bristol, comprising many of the finest plants and varieties in existence. Amongst them will be found Saccolabium guttatum, Loddige's var., which plant gained the Veitch's Memorial Medal, June 24, 1873, at the Horticultural Exhibition at Bath; other fine specimens, such as Dendrochilum filiforme; Aerides Lindleyana, fine specimen and splendid variety; Angræcum sesquipedale superbum; Cattleya Skinneri, five new growths; Dendrobium densiflorum; Aerides Fieldingii and Lobbii, Cattleya gigas, Odontoglossum Roezlii, Vanda suavis, Veitch's var.; Vanda tricolor, a splendid large variety; Vanda insignis, Camarotis purpurea, Aerides affine majus, Phalænopsis amabilis and Schilleriana, and many other valuable sorts.

May be viewed the morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS has received instructions from W. Turner, Esq., Over Hall, Winsford, Cheshire, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 2, and following days (instead of the days previously announced), at half-past 12 o'Clock precisely each day, without the least reserve, the entire COLLECTION of ESTABLISHED ORCHIDS. Amongst other grand things will be found Lælia Warneri, Saccolabium Turneri (spikes nearly 2 feet long), Cattleya Skinneri alba, C. Morgani, C. Wagneri, Lælia Williamsi, and many other rare and valuable plants.

May be viewed the morning of Sale, and Catalogues had.

Established and Imported Orchids.
MONDAY NEXT.

MESSRS. PROTHEROE AND MORRIS will SELL at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at half-past 11 o'Clock, a collection of about 400 lots of ESTABLISHED ORCHIDS, in the best possible condition, many of them showing flower, including Cattleya Warneri, C. exoniensis, Masdevallia Chimæra, M. Harryana, M. ignea, Odontoglossum vexillarium, O. Pescatorei, O. Alexandræ, Cypripedium niveum, C. caudata, Cymbidium eburneum, C. Lowii, Dendrobium Griffithianum, D. Farmeri, D. Wardianum, Oncidium curtum, &c.; a variety of STOVE and GREENHOUSE PLANTS, IMPORTED ORCHIDS, and a Consignment of CYCAS MEDIA, from Australia.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Established Orchids.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, E.C., on MONDAY, May 10, 400 lots of ESTABLISHED ORCHIDS. Further particulars next week.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

The Beech Nurseries, Southend.

MESSRS. PROTHEROE AND MORRIS beg to announce that this Property was NOT SOLD at the AUCTION on MONDAY LAST, and may be treated for privately.

Particulars and price at the Auctioneers' Office, 98, Gracechurch Street, E.C.

Wiltshire, 5½ miles from Swindon Junction,
whence the Metropolis is reached in 2 hours, and within about a mile of the Purton Station on the Great Western Railway.

An extremely choice FREEHOLD RESIDENTIAL PROPERTY, of remarkable beauty, distinguished as Purton House, in the parish of Purton, situate near the pleasant village of Purton, and close to the interesting church. The residence is solidly constructed of stone, and presents an agreeable elevation in the classic style. It is most conveniently arranged, and briefly comprises 4 Reception Rooms and 16 Best, Secondary, and Servants' Bedchambers, Bath-room, and ample Domestic Accommodation; Stabling for 6 horses, Carriage-house, and Dwelling-rooms over, and every appurtenance essential to a well-ordered English country residence. The Pleasure Grounds are singularly beautiful, and are adorned with a large lake fed by a perennial spring, affording bathing, boating, excellent fishing, and skating. There are Croquet and Archery Grounds, Lawn Tennis Court, walled Kitchen and Fruit Gardens, Orchard, Vinery, and Forcing-houses, and other accessories. The grounds are encircled by finely-timbered and most luxuriant pasture land, bounded on the south by a woodland walk. The estate adjoins the lands of the Earl of Shaftesbury, and there is a good frontage to the road. The whole demesne a little exceeds 30 acres in extent. Immediate possession may be had on completion of the purchase.

MR. ROBINS (of 5, Waterloo Place, Pall Mall, London) is honoured with directions from H.H. the Rajah Brooke, who is returning to Sarawak, to offer the above RESIDENTIAL PROPERTY to PUBLIC COMPETITION (unless an acceptable offer should be previously received), at the Mart, Tokenhouse Yard, Lothbury, E.C., on FRIDAY, May 21, at 1 for 2 o'Clock precisely, in one lot.

The Property may be viewed by orders only, obtainable of the Auctioneer.

Particulars, Plans, and Views, may be had of Messrs. BOOTY AND BAYLIFFE, Solicitors, 1, Raymond Buildings, Gray's Inn, W.C.; at the Mart; and of Mr. ROBINS.

FOR SALE, a Small, Old-established NURSERY, cheap, with Houses and Frames complete. Apply on the Premises, 22, Jeffrey's Road, Clapham, S.W.

FOR IMMEDIATE DISPOSAL, in consequence of the death of Proprietor, an old-established NURSERY and SEED BUSINESS in Warwickshire, in full working order, with every facility for doing a large trade.—For particulars address M. W., 3, Dungannon Terrace, North End Road, Walham Green, London, W.

Grange Nursery, Heaton Mersey, near Manchester.

TO BE DISPOSED OF, by Private Treaty, Grange Villa, Heaton Mersey, with the site thereof and adjoining Land used as a Nursery, and containing together by admeasurement 14,520 square yards or thereabouts. The house comprises Dining, Drawing and Breakfast-rooms, with Kitchen, Scullery, Six Bed-rooms, Dressing-room, Water-closet, and Store-room, and is Cellared throughout. The Outbuildings consist of Stabling for Three Horses, Coach-house and Harness-room, with large Loft and Store-cupboard, Cow-house, Piggeries, Pigeon-house, and Hen-house. There is a Greenhouse attached to the house. On the land there is erected a range of Glass 225 feet long, consisting of Vineries, Fernery, Greenhouse, and Propagating Pit. There are materials on the ground requisite for Erecting another Range of Glass, the foundations for which are already laid. There is a good Stock of Rose Trees, Shrubs, Fruit Trees, and other Plants, Flowers, &c. The Premises have for some time been used as a Nursery by the late proprietor, Mr. Thomas Studd deceased, and are replete with every convenience for carrying on the Business of a Nurseryman. The situation is healthy, and the premises command an extensive view of the Derbyshire Hills, Alderley Edge and Bowdon.

The Premises can be inspected on application at the House, and any further information can be obtained from Mr. W. R. MINOR, Solicitor, 26, Brown Street, Manchester.

Fifty Nurseries, Market Gardens, Florist and Seed
BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS, HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained gratis at 98, Gracechurch Street, E.C.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

PANSIES. The best varieties only. Price 6d., 1s., and 2s. 6d. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

THE GENERAL HORTICULTURAL CO. (JOHN WILLS), Limited, Warwick House, 142, Regent Street, W.

On MONDAY, May 3, the General Horticultural Company will OPEN their CENTRAL DEPOT, at Warwick House, 142, Regent Street, where a grand display of Plants, Flowers, and Fruits will be on exhibition. Shareholders of the Company are invited to visit the building between 12 and 2 o'Clock. The general public will be admitted to the Exhibition from 2 to 5 o'Clock on payment of 2s. 6d. Some magnificent Standard specimens of WISTARIA SINENSIS will be found amongst the collection of plants on show that day, and it is believed that no such specimens have ever before been seen in Europe.

THE GENERAL HORTICULTURAL CO. (JOHN WILLS), Limited.

WANTED, at Warwick House, 142, Regent Street, W., on MONDAY and TUESDAY NEXT, 4000 ROSE BLOOMS, suitable for making bouquets and coat flowers. Also large quantities of STEPHANOTIS and other CHOICE FLOWERS. Send full particulars at once to General Manager.

RICHARD DEAN, Secretary.

H. CANNELL begs to announce that his NEW PLANTS for 1880 are now fast coming into Flower, and their merits can at once be seen to be superior to all older existing kinds. A CATALOGUE, free for 12 stamps, with full descriptions of probably the most valuable collection of New Florist Flowers ever offered. H. C.'s ten New Zonal Pelargoniums:—

RIGHT AHEAD (Windsor)	5s. 0d.	each.
MRS. MOORE (Windsor)	10s. 6d.	,,
WHEEL OF FORTUNE (Windsor)	3s. 6d.	,,
TIP-TOP (Windsor)	3s. 6d.	,,
ECLIPSE (Windsor)	3s. 6d.	,,
STRAIGHT AWAY (Windsor)	3s. 6d.	,,
JOYFUL (Windsor, H. N.)	5s. 0d.	,,
MRS. WINDSOR (Windsor)	5s. 0d.	,,
SALMON RIENZI (Noakes)	3s. 6d.	,,
NEW GUINEA (Parker)	7s. 6d.	,,

Are beyond all question the finest ever sent out.

The Set, in strong plants, for 4os. Cuttings, by post, 20s.

The Home for Flowers, Swanley, Kent.

GLOBE ARTICHOKES.—Good healthy plants, 6s. per dozen, 45s. per 100; wholesale price on application.
HOOPER AND CO., Covent Garden, London, W.C.

STRAWBERRY PLANTS in POTS.—If planted out now will produce fruit this season.—Apply to JAMES DICKSON AND SONS, Newton Nurseries, Chester.

To the Trade.

HOLLIES, Green, transplanted, 6 to 12 inches, 8s. per 100. 70s. per 1000.
THOMAS PERKINS AND SONS, 34, Drapery, Northampton.

Pelargoniums in Flower.

F. AND A. SMITH offer the above in extra well-grown plants, finely flowered, and of the best sorts. Also splendid SPIRÆAS and a few CYTISUS. Prices on application.

The Nurseries, West Dulwich, S.E.

MENTHA PULEGIUM GIBRALTARICUM.—Good stuff, being grown outside. Plants about the size of a shilling, 5s. per 100, 40s. per 1000.
GEORGE RANDALL, Skegness, Lincolnshire.

STOCKS. The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Verbenas—Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other good Bedding and Exhibition varieties, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, for cash with order.

Queen's Road Nursery, Markhouse Common, Walthamstow.

LOBELIAS from Cuttings.—Splendid plants of Brighton and pumila magnifica, 3s. per 100, 500 for 12s. 6d., 1000 for 21s. Ebor and St. Martin's Blue, 4s. per 100. DARK WALLFLOWERS, 2s. 6d. per 100, 500 for 10s.
J. J. MARRIOTT, Littleton Street, Walsall.

To the Trade.

SWEDES.—150 bushels of Champion Purple-top Swedes, and 60 bushels of Green-top Yellow Scotch TURNIPS. Prices and samples on application to
H. JOYCE, Seedsman, Boston.

PRIMULA NIVALIS TURKESTANICA, by far the handsomest Primrose of Central Asia. This will be hailed with delight as a long-desired addition to our hardy alpine plants. Flowers an inch in diameter, finely shaped, and of a bright violet colour. 1s. 7d. per packet, with directions. Cash with order.—W. J. MARSH, Woodbridge, Suffolk.

VIOLAS, 20,000 fine strong plants:—
,, cornuta, white } 5s. per 100, 45s. per 1000.
,, ,, Queen of Blues, }
LOBELIA, Emperor William, strong autumn-struck, from stores, 2s. 6d. per 100, 20s. per 1000; from single pots 5s. per 100, 45s. per 1000.
Cash only. Carriage and package free.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to
Mr. JEAN NUYTENS-VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium.
London Agents: Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

Palms.

TWELVE, Graceful, 21s.; strong healthy plants, fit to pot on at once into 5-inch pots, of Cocos Weddelliana, Euterpe, Areca lutescens, A. rubra, Corypha, Latania, Seaforthia, Chamærops, &c., usually sold at 3s. 6d. and 5s. each. Double size, for immediate decoration, 1½ to 2 feet high, 42s. and 63s. per dozen. Package gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

Bennett's Pedigree Roses.
Should be in every Collection.

GEORGE COOLING has pleasure in offering fine plants coming into bloom of these desirable varieties, viz. :—

Beauty of Stapleford	Jean Sisley
Duke of Connaught	Michael Saunders
Duchess of Connaught	Nancy Lee
Duchess of Westminster	Pearl
Honourable George Bancroft	Vicountess Falmouth

The complete Set, 25s., basket and packing free for cash with order.
New LIST of Roses in pots, Clematis, &c., post-free.
The Nurseries, Bath.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.
Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

CINERARIA.
The best varieties only. Price 2s. 6d. and 5s. per packet, post-free.
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C. WHITEHOUSE, Brereton Nurseries, Rugeley, has to offer fine first-class Plants, extra good rooted, having been several times transplanted, are very stout and healthy—12 to 18 inches, 18 inches to 2 feet, 2 to 2½ feet, 2½ to 3 feet, 3 to 3½ feet and upwards; also fine specimen SILVER HOLLIES, 4 to 5 feet: every one will move safely, quality unsurpassed. Also AUCUBA JAPONICA, 12 to 18 inches and upwards. Price per 100 and dozen, moderate for the quality, on application.

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ALFRED FRYER offers the following, in Autumn-struck Plants, at per dozen for cash:—Golden Tricolors: Isle of Beauty, 4s. 6d.; Peter Grieve, 6s.; S. Dumaresque, 3s. 6d. Silver Tricolors: Lass o' Gowrie, 3s. 6d.; Mrs. John Clutton, 3s.; Prince Silverwings, 3s.; Queen of Hearts, 3s. 6d.; A Happy Thought, 3s. Gold and Bronze: Bronze Beauty, 3s. 6d.; Endymion, 3s. 6d.; Gilt with Gold, 3s. 6d.; Roi de Siam, 4s. 6d; Packing free for cash with order; post-free for 6d. per dozen extra. Priced LISTS on application to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

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R. AND G. NEAL beg to call the attention of Gentlemen, Builders, and the Trade to their large and varied Stock of HARDY ORNAMENTAL, FOREST, FRUIT TREES, ROSES, SHRUBS, &c., grown at their Nurseries, which comprise 70 Acres of a remarkable collection of those Plants and Trees most suitable for growing in or near large towns. An early inspection is solicited.
All goods delivered free on rail in London or at own residence within six miles of the Nurseries.
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TWELVE GLOXINIAS (new and beautiful), 12s., selected from sixty of the finest novelties of the last three years. Fine bulbs to produce plenty of flowers in two months if potted at once. A few extra strong, 21s. per dozen. One-year-old small bulbs, 6s. per dozen. All carriage paid.
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Valuable Plants, Carriage Paid.
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The above are all first-class varieties and true to name, for cash with order to
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B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.
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VERBENAS.—Strong, healthy, well-rooted Cuttings, free from disease, guaranteed to give satisfaction, at 6s. per 100, 50s. per 1000, of Purple, White, Crimson, and Pink, or Rose. Package free. Cash with orders. Sample dozens, post-free, 1s. 2d. per dozen.
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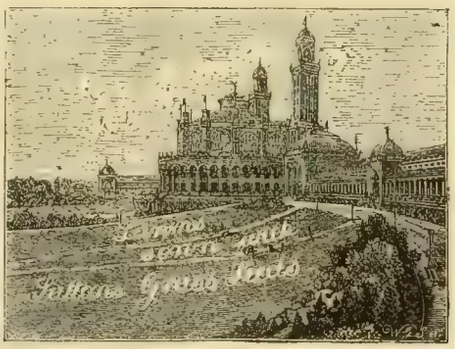

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VERBENAS and CALCEOLARIAS.—Strong, well-rooted Cuttings of White Verbenas, Boule de Neige, Eclipse Scarlet, and Purple King, the best purple, 6s. per 100, free for cash, safely packed. LOBELIA Bluestone, intense blue.—WILLIAM FIELD, Tarvin Road Nurseries, Chester.

CATALOGUES free on application of splendid New Double and Zonal Geraniums; New Fuchsias and Coleus; Thirteen of the choicest Lobelias, including the New Yellow; Heliotropes, Verbenas, and Violas; a rare collection of Chrysanthemums, large-flowered, Japanese, Anemone-flowered, and Pompons; Ageratums, Calceolarias, Double Petunias, Dahlias, and a good variety of Plants for Carpet Bedding.
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Dr. Denny's Zonal Pelargoniums.
TO THE TRADE.

JOHN BALAAM can now supply Dr. Denny's "Sixth Set" at 10s. 6d. per set, and the magnificent variety, "Commander-in-Chief," at 10s. 6d. per half dozen. Cash (without any deduction) to acompany order.
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Descriptive CATALOGUES forwarded, post-free, on application.
Vine Nursery, Downs Road, Lower Clapton, N.E.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer his splendid Standard and Pyramidal SWEET BAYS, of different sizes, at from 4s. to 560s. the couple. Details in full of these magnificent Trees will be found in his letter CATALOGUE, to be had gratis on application. 100 couples of these Sweet Bays will figure throughout this summer at the National Exhibition at Brussels.

Verbenas—Verbenas—Verbenas.

STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6s. per 100; 50s. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8s. Terms cash.
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FUCHSIAS, 100 nice young plants, in 12 splendid varieties, 8s.
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The best varieties only. Price 6d. and 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers to the Trade, PALMS, per 100, in store pots:—Areca rubra, 30s.; Bactris Binotii, 60s.; Chamærops excelsa and humilis, 8s.; Cocos insignis, 40s.; Cocos Weddelliana, 100s.; Corypha australis, 12s.; Geonoma Schottiana, 80s.; Latania borbonica, 10s.; Pandanus utilis, 20s.; Phœnix reclinata, 10s.; Phœnix tenuis, 10s.; Seaforthia elegans, 25s.; and Aralia Sieboldii, 6s. FERNS, in small pots:—Adiantum cuneatum, 30s.; Cibotium regale, 80s.; Lomaria gibba, 30s.; Nephrodium cristatum, 40s.; Pteris serrulata and cristata, 30s. PRIMULA, acaulis alba plena, luteo plena, lilacina plena, and Arthur Dumoulin, 100 strong plants, twenty-five of each sort, at 50s. ARUNDO DONAX, arg. var., twenty-five for 15s.

ADIANTUM FARLEYENSE.—Six beautiful large plants for 21s., very fine strong fronds from single crowns. Grown this way the pinnæ are double the size usually seen. All fine for immediate decoration, in 5-inch pots, £10 10s. per 100. Package gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

FERNS.—100 Rare and Beautiful, 42s., or fifty at the same rate—pretty plants in small pots, to grow on for Winter Decoration or Cutting. Many varieties rarely to be met with except at 3s. 6d. or 5s. each, including Adiantum Farleyense, Pteris Leyii, &c. Packages gratis for cash with order.
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To the Trade.
MAGNUM BONUM POTATOS.

H. AND F. SHARPE can supply the Trade with a very true stock of the above-named POTATO, grown from carefully selected tubers. It is one of the best disease-resisting varieties in cultivation. Further particulars as to price, &c., may be had on application.
Seed Growing Establishment, Wisbech.

PHLOX DRUMMONDI GRANDIFLORA.
The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

ALTERNANTHERAS and other CARPET BEDDING PLANTS.
ALTERNANTHERA, amœna, 8s. per 100, 70s. per 1000.
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IRESINE, Lindeni, 8s. per 100, 70s. per 1000.
LEUCOPHYTON, Brownii, 8s. per 100, 70s. per 1000.
HERNIARIA, glabra, 5s. per 100, 40s. per 1000.
LOBELIA, Brighton Gem, 5s. per 100, 40s. per 1000.
MENTHA, Pulegium gibraltaricum, 5s. per 100, 40s. per 1000.
All the above are well established plants. LIST of other kinds free on application. Liberal allowance to the Trade.
WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

CAMELLIA - FLOWERED BALSAM
The best varieties only. Price 6d., 1s., and 1s. 6d. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy: Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in 12 choice sorts, 8s.; or in 25 sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius and New Life, 20s. per 100; Dr. Denny, nearest to blue, fine, 5s. per doz. Pelargoniums, in 12 best varieties, 5s. per doz., 30s. per 100.
" TRICOLORS—Mrs. Pollock, 2s. 6d. per doz., 18s. per 100; Sir R. Napier and Sophie Dumaresque, 3s. per doz., 20s. per 100.
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" BRONZE—Maréchal McMahon, the best for bedding, 18s. per 100.
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COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

NEW PLANTS FOR 1880.

B. S. WILLIAMS

Has much pleasure in intimating that he is now sending out the following New Plants, for the first time, all of which will be found great improvements upon any hitherto offered :—

ALPINIA ALBO-LINEATA.

A very striking and beautifully variegated Stove Plant, 3 to 4 feet high when fully developed. The leaves are 9 to 12 inches long, elliptic-lanceolate, pale green, marked divergently with broad bands of white and pale green. This is a grand addition to our ornamental Stove Plants, and makes a fine contrast intermixed with other Foliage Plants.

Native of New Guinea. *Price* 10*s.* 6*d.* *to* 21*s.* *each.*

ALSOPHILA LUNULATA (R. Brown).

A Polynesian Tree Fern, called "Balabula" in the Fijian vernacular. It is a common plant throughout the group, its stems attaining a height of about 25 feet, and a thickness of 8 to 10 inches, with a magnificent crown of fronds, which renders it a noble feature in the landscape. The fronds are large, tripinnate, with a muricated stramineous rachis; the pinnæ are from 1½ to 2 feet long, furnished with close sessile pinnules, 4 to 5 inches long, and divided into close-set ligulate falcate blunt segments an inch long, with crenulated margins. The fronds are green and glabrous on both surfaces, and of a subcoriaceous texture; the midrib below being sometimes furnished with a few scales. The sori are minute, and placed near the midrib. In the Fijis, according to Dr. Seemann, the trunks are used as posts, and are very durable; while the abundant scales which cover the stipes are used by the white settlers as a luxury for stuffing pillows, since they do not become so much heated as feathers. As an ornamental Tree Fern for a house of intermediate temperature no finer object could be desired.

Price 21*s.* *each.*

ARALIA MONSTROSA.

This is a very elegant and distinct Aralia, admirably adapted for table decoration and ornamental purposes generally, where variegated plants are required. The leaves are pendent, pinnate, having three to seven oblong elliptic leaflets deeply and irregularly serrated; sometimes the serration takes most fantastic forms, and gives the leaves an altogether unique appearance. The leaflets are broadly margined with creamy-white, the surface blotched with grey.

Native of the South Sea Islands. *Price* 21*s.* *each.*

ASPLENIUM NOVÆ-CALEDONIÆ (Hooker).

This strikingly distinct Fern belongs to the groups of Dareas, a section of Asplenium, in which the veins are simple in the ultimate divisions of the frond, and in which the sori are consequently solitary in each segment. The fronds are remarkable for the coriaceous character of the long narrow divisions, which are not much wider than the rachises to which they are attached. The frond itself is somewhat triangular in outline, tripinnately divided, both the lower pinnæ and the pinnules being deltoid, while the rigid segments are half an inch long or more, and distant from each other, the pinnules being also distant from the main rachis, so that the centre of the frond is peculiarly open, while the long interlacing segments of the adjacent pinnæ give a crowded appearance to the circumference. The sorus occupies one side of the segment, and nearly equals it in length. The plant, which, as its name indicates, comes from New Caledonia, is an evergreen, and will be a useful acquisition amongst those of well-marked character, cultivated in our warm ferneries.

Introduced by us from New Caledonia.

Price 21*s.* *each.*

ASPLENIUM SANDERSONI (Hooker).

A charming dwarf-growing tufted evergreen Fern, with spreading fronds, which are proliferous at the tips, and bear a solitary proliferous bud on each of the small peculiar-formed pinnæ. The fronds are 8 to 10 inches long, narrow-linear in form, pinnate in division, the rachis slightly winged, the pinnæ shortly stalked, set on obliquely, somewhat deflexed, about half-an-inch long, eccentric, the posterior side straight or entire, curved backwards, the anterior side divided into a few blunt rounded teeth. On the upper side towards the apex is a small black dot, which on examination is seen to be a bud; the rachis also runs out beyond the upper diminished pinnæ, and terminates in a bud. The small size and well marked form of the pinnæ give it a very elegant aspect, and recommend it as a useful basket Fern of small size. The membranaceous edge of the indusium is pectinately fringed. It is a native of Natal, and therefore may be grown in a greenhouse. *Price* 21*s.* *each.*

AZALEA "MRS. GERARD LEIGH."

This Azalea is of the same parentage as the six varieties we had the pleasure of offering in 1878, and which have now become so generally popular. This variety has, however, the advantage of producing much larger trusses, several of which on a plant we flowered this year contained as many as fourteen or sixteen flowers, quite Rhododendron-like. The colour of the flowers is bright rose. It is well adapted for cut-flower work, and is very effective as a decorative plant, and like A. amœna requires but little forcing; it may be had in bloom from November till Spring, by having a succession of plants to come in at different times. This is, without doubt, the grandest variety of this new type of Azalea.

Price 21*s.* *each.*

BAMBUSA MAXIMOWICZII VITTATA.

The Bamboo has long been a great favourite as a decorative plant for conservatories and lawns, on account of its graceful and delicate foliage. The plant before us will therefore be welcome on account of its variegation, as producing a fine contrast with the many green varieties already in cultivation; the leaves of this variety are distinctly longitudinally variegated with pure white and light green. *Price* 10*s.* 6*d.* *each.*

BEGONIA "BRILLIANT."

The name of the new Begonias is legion now-a-days, and many growers are somewhat shy in taking up with new varieties. There need be no fear, however, with the one now before us, as it is totally distinct both in habit and profuseness from anything we have yet seen. The habit is dwarf and robust, the flowers produced in profusion, several together, from the axils of the leaves, bright scarlet vermilion in colour. This plant is well adapted for either bedding purposes or pot culture.

Awarded a First-class Certificate by the Royal Horticultural Society.

Price 10*s.* 6*d.* *each.*

COLEUS "MRS. GEORGE SIMPSON."

This is undoubtedly the most distinct and attractive Coleus we have yet seen, and is the commencement of quite a new type. The leaves are 7 inches long by 5 inches broad, ground colour bright crimson, suffused with rich dark velvety crimson, in some cases almost black. It is of free branching habit, and makes a splendid pot plant.

Awarded a First-class Certificate by the Royal Horticultural Society.

Price 10*s.* 6*d.* *each.*

CŒLOGYNE OCELLATA MAXIMA (Rchb. f.).

This is a great beauty, and flowers in March and April, the flowers lasting a long time in perfection; pure white, with rich orange spots on the lip, encircled with light brown.

Professor Reichenbach says of this beautiful Orchid—"According to my taste it is a great beauty, it is far stronger than the common plant, having a rich flowered raceme of expanded blossoms coming near those of C. cristata; the colour is a usual one, the lateral yellow blotches spread widely apart, the anterior central is confluent and overrun by side keels, these, quite outside, being the adventitious ones urged by Dr. Lindley. I am told that the bulbs are a good deal larger than those of the genuine species, being 3 inches in circumference. The inferior sheath under the inflorescence usually persistent in this species is very much developed." This plant has received a First-class Certificate.

Price 105*s.* *to* 147*s.* *each.*

CROTON STEWARTII.

One of the most distinct Crotons ever offered of the broad-leaved kinds, the habit is dwarf and bushy, and this variety colours when in a very small state. The leaves are obovate, tailed, rounded at the base, shortly stalked, dark olive-green, irregularly banded and margined with rich orange; the midrib and petioles are bright magenta, which produces a striking contrast to the carmine markings on the remaining portion of the leaf. This variety is named after A. B. Stewart, Esq., of Glasgow, an ardent admirer of this popular class of plants.

Introduced by us from New Guinea.

Price 31*s.* 6*d.* *each.*

CROTON WARRENI.

This is truly a grand Croton, of free-growing bold habit, producing spiral linear-lanceolate leaves, from 25 to 30 inches long, by 1 to 1½ inch broad, pendent, arching, dark green irregularly mottled and suffused with orange-yellow and carmine, which in the old leaves changes to rich crimson. This is the most graceful rich coloured Croton we have yet introduced, and has been pronounced by all who have seen it to be the king of the narrow-leaved varieties of this popular genus. It is suitable either as an exhibition or decorative plant, and as an object for the dinner-table is unsurpassed. It is named after G. Warren, Esq., Handcross Park, Crawley, a great admirer of this fine class of plants.

Introduced by us from the South Sea Islands.

Price 31*s.* 6*d.* *each.*

CROTON WILSONI.

An elegant bright-coloured variety of the narrow-leaved type, of free branching habit, with leaves 18 to 20 inches long, and 1 to 1½ inch broad, linear-lanceolate, pendent, arching, bright green, irregularly suffused with rich yellow. This will make a grand table plant, and form a fine contrast with the above described variety.

Introduced by us from New Guinea.

Price 31*s.* 6*d.* *each.*

DIPLADENIA PROFUSA.

This grand species will prove invaluable as an exhibition plant, being very floriferous in character, blooming when very small, and lasting a long time in perfection. The flowers are 5 inches in diameter, rich carmine, of fine substance, produced abundantly in bunches from the axils of the leaves. This species has the best constitution of any Dipladenia we have grown, keeping its foliage nearly all the season. There is no plant more beautiful than the Dipladenia, lasting as it does four to five months in flower. It is very useful for cut-flower work, and lasts a long time in water; its flowers may be taken from the plant without cutting the stem, as many flowers are produced from the same spike. For training along the roof of a stove, as a climber, the Dipladenia is unsurpassed. *Price* 21*s.* *to* 42*s.* *each.*

DRACÆNA "EARL OF DERBY."

This is a highly coloured and most effective variety, with recurved oblong leaves 14 to 18 in. long, by 4 to 5 inches broad; bright green, broadly margined with rosy-crimson, which in the young leaves become partly suffused over the remaining portion of the surface. The leaf-stalks are also well coloured. It is a good ornamental variety, somewhat after the style of D. Cooperii, but superior to it on account of its robustness and the brighter colouring of its leaves. It also colours in much smaller plants.

Introduced by us from the South Sea Islands. This plant has received a First-class Certificate.

Price 21*s.* *each.*

DRACÆNA MIRABILE.

A very pretty variety, with leaves 18 to 20 inches long, by 3 to 4 inches broad, of dwarf, stocky habit; pale green, with various shades of creamy white and bright rose colour. This will make a fine distinct variety in a collection for exhibition.

Introduced by us from the South Sea Islands.

Price 21*s.* *each.*

ERANTHEMUM ALBO-MARGINATUM.

A very pretty ornamental plant, with oblong elliptic leaves, 4 to 6 inches long, by 2 to 3 inches broad, broadly margined with white, and irregularly suffused with grey.

Native of the South Sea Islands. *Price* 7*s.* 6*d.* *each.*

HIBISCUS BAPTISTII.

A very handsome species, with brilliant crimson-scarlet double flowers, of which the petals are of good substance, crimson-scarlet, flaked with cream colour at the base. This is one of the finest of the double-flowered kinds, and is quite distinct from anything hitherto sent out.

Native of the South Sea Islands. *Price* 10*s.* 6*d.* *each.*

LASTREA MEMBRANIFOLIA (Presl).

This is a recent introduction to our gardens from the Islands of the Pacific, and is a neat-growing species, with a short erect stem or crown, from which the moderate-sized but broadish-lobed fronds arch out gracefully on all sides. The fronds have a pubescent scaly stipes 6 or 8 inches long, and an ovate caudately-acuminate lamina of a foot or more in length: they are pinnately divided, the pair of lower pinnæ being similar in form, and divided at the base into a few crenately toothed falcate lobes. The upper pinnæ are narrower, the uppermost adnately decurrent, so as to become confluent into a pinnatifid apex, the divisions of which are coarsely toothed, and the sori are numerous. The long caudate apices of the frond and of each of the pinnæ give it a peculiar and elegant character. The colour of the frond is an opaque green.

Price 10*s.* 6*d.* *each.*

B. S. WILLIAMS' NEW PLANTS, 1880—(*Continued*).

IXORA PICTURATA.

A very beautiful and distinct hybrid between I. Williamsii and I. coccinea, having leaves and growth after the style of I. Williamsii, and flowers intermediate between the two, with the fine compact truss of I. coccinea, and the size of flower of I. Williamsii. This is a great acquisition, as I. coccinea is always a bad grower, and becomes spotted on the leaves when exposed to the least cold; it will, therefore, be in great demand as an exhibition plant.

Price 21*s. each.*

LYCOPODIUM ULCIFOLIUM.

This beautiful Indian Lycopod, called also L. Hookerii and L. pulcherrimum, has been lately imported by us from Khasya, and will be a welcome introduction to all collections of ornamental plants. It is of pendulous habit, producing dichotomously branched stems 2 feet long, which are densely clothed with linear-lanceolate very sharply pointed leaves, giving to the leafy portion of the stems the thickness of one's little finger. Towards the ends, the branches change into drooping fertile spikes, 6 inches long or more; these, in many cases, but not always, being dichotomously forked. The spikes, like the branches, are thickly clothed with leaves, each containing a spore-case in its axil; but they have a peculiar appearance from being distinctly smaller in bulb, not much exceeding the thickness of a stout goose-quill. The pendulous habit and bright green colour give it a very elegant appearance, and will make it a desirable acquisition wherever drooping plants can be appropriately introduced.

Price 10*s.* 6*d. each.*

NEPENTHES LAWRENCIANA.

A very distinct hybrid between N. phyllamphora and N. Hookerii, with pitchers 4 inches long, ground colour pale green, spotted profusely with dark crimson. The plant is very compact in its habit of growth, and produces its pitchers very freely; the edges of the leaves are slightly serrated.

Price 105*s. each.*

NEPENTHES OUTRAMIANA.

This is a grand Pitcher-plant, with pitchers 5 inches long, of fine form, ground colour pale yellowish-green, densely spotted with dark blood-red; in some instances the markings coalesce and nearly cover the entire surface. The interior and mouth are also well marked in this species. This is a very free grower, and produces its pitchers abundantly.

Awarded a First-class Certificate by the Royal Horticultural Society.

Price 105*s. each.*

NEPENTHES ROBUSTA.

A very free-growing hybrid, the result of a cross between N. Hookerii and N. phyllamphora, with pitchers intermediate between the two, with the colour and markings of N. Hookerii. This is a very distinct-shaped pitcher, the lower portion being much wider than the upper, having somewhat the appearance of a Pear.

This has been awarded a First-class Certificate by the Royal Horticultural Society.

Price 105*s. each.*

NEPENTHES "WILLIAMSII."

This is indeed a gem, and with the exception of N. sanguinea has the brightest red "pitcher" we have seen. It is the result of a cross between N. Sedeni and N. Hookerii, having a pitcher in shape intermediate between the two parents, 4 to 5 inches long, densely spotted with blood-red, the red in many cases predominating. The interior is also marked with the same colour; the under side of the lid with reddish-brown. It is a very compact grower, and pitchers very freely in a small state.

Price 105*s. each.*

OLEOBACHIA PALUSTRIS.

This is a very elegant plant, having the general appearance of Aralia Veitchii, with green leaves; it has, however, an advantage over that plant, inasmuch as it succeeds well in a greenhouse temperature. The leaves are digitate, with five to seven filiform leaflets, produced upon a simple stem, dark green, with pale green midrib. This is a great acquisition as a table plant, and one that will become universally popular.

Price 21*s. each.*

PANAX ELEGANS.

This is a great improvement on the old P. excelsa, and is of dense habit, the leaves are very finely divided, and it has the advantage of keeping its leaves during exposure to a cold atmosphere. This will prove a valuable exhibition plant, as it attains large dimensions.

Price 10*s.* 6*d. each.*

PTERIS INTERNATA (Moore).

A pretty evergreen hothouse Fern, of dwarf habit, which, without the central fertile fronds, bears a close resemblance to P. heterophylla; these lower fronds are, however, equally fructiferous with the taller ones, and are ovate in outline, tripinnately divided, with oblong bluntish segments, soriferous along both sides nearly to the apex. The taller fronds are a foot high or more, twice the height of the others just described, with a long thickish angular stipes, the lamina bipinnately cut into narrow linear distant decurrent fertile lobes, soriferous throughout. The segments are from 1 to 1½ inch long, and about an inch apart, the terminal one longer, and those at the top of the frond simple; these fronds therefore have quite a different aspect from the shorter ones. It was found growing on Orchids imported from the West Indies, and has been raised from spores of the plant thus obtained. It has the appearance of a possible hybrid between P. heterophylla and P. mutilata; the shorter fronds, however, are constantly fertile in all the plants we have seen, and in this respect, coupled with the production of taller dissimilar fertile fronds, differs from either of the species just named, and from all other known Ferns.

Price 10*s.* 6*d. each.*

PYRETHRUM AUREUM SELAGINOIDES.

This is an entirely new and distinct form of Pyrethrum, of an exceedingly dwarf and compact habit, the flat foliage resembling the fronds of Selaginella Mertensii overlying each other, which gives the plant a wonderfully pleasing and level appearance.

Its chief attraction, however, will be found in the fact that it does not flower the first year, thus saving the vast amount of time which, in consequence of the constant attention required in pinching back, &c., the old variety consumes—a great object where bedding is carried out on an extensive scale.

Price 3*s.* 6*d. each;* 30*s. per dozen.*

VALLOTA MAXIMA OCULATA.

This is a grand improvement on the old well-known Vallota purpurea; being much stronger in growth, the flowers are much larger, and of greater substance, of a rich crimson-scarlet colour, with a large white eye.

Price 10*s.* 6*d. each.*

DOUBLE-FLOWERED GOLDEN TRICOLOR PELARGONIUM.

MRS. STRANG.—Although we have had some beautiful colours and forms of this fine decorative class of Pelargoniums, this is the first variety with double flowers; the foliage of this is the richest we have seen, and, having fine scarlet flowers, very double, forms a desideratum long wished for, and cannot fail to please.

Price 10*s.* 6*d. each.*

NEW ABUTILONS.

The following seven varieties have been selected from a large number of seedlings; and B. S. W. can confidently recommend them as being superior to anything yet sent out, both in colour, habit, and profuseness.

The Abutilon is one of the most useful decorative plants we have, and can be had in flower all the year round; for cutting purposes there is nothing better.

CHARMER.—A grand acquisition, with bright rosy-crimson flowers of fine shape, dwarf and profuse.

CRIMSON BANNER.—Habit dwarf, compact, very profuse, deep crimson, of fine form.

GOLDEN NUGGET.—Flowers roundish, of fine form and substance, rich orange inside, outside rich orange veined with crimson.

PURITY.—Flowers pure white, an improvement on Boule de Neige both as regards size and substance, very profuse.

PURPLE EMPEROR.—Large flowers, good substance, rosy-purple, distinct and pretty.

QUEEN OF THE YELLOWS.—This variety has very large flowers, of fine form and substance, lemon-yellow, very distinct.

VIOLET QUEEN.—Flowers of fine form and substance, of a bright violet colour, very distinct, and quite a new colour amongst Abutilons.

Price 7*s.* 6*d. each.*

NEW CALADIUMS.

The following Caladiums are quite distinct in character to any hitherto offered, and may be considered the origin of a new type. The leaves are generally long and narrow, not so arrow-shaped as the ordinary forms, having a peculiar grotesque appearance.

ADNESCENS.—Leaves from 12 to 15 inches long by 3 to 4 inches broad, bronzy-red veined with crimson, margin pale green, very distinct and fine.

FULGIDUM.—The leaves of this variety are from 6 to 9 inches long by 4 to 6 inches broad, rather oval in shape, centre salmony-rose with rich metallic hue with bright veins, broad margin of pale green.

METALLICUM.—The leaves of this very distinct variety are from 9 to 12 inches long by 3 to 4 inches broad, the centre rose with a bronzy metallic band on each side, the margin pale green and wavy.

PULCHERRIMUM.—Leaves from 9 to 12 inches long by 4 to 6 inches broad, the centre transparent white with a broad margin of green, beautifully spotted; very distinct.

Price 10*s.* 6*d. each.*

NEW GLOXINIAS.

The following set of Gloxinias have been selected from the finest collection that we have ever had the good fortune of choosing from, and will be sure to give general satisfaction. As a Spring decorative plant the Gloxinia stands unsurpassed.

ADMIRATION.—The flowers of this variety are drooping, throat deep violet; mouth rich purple shaded with crimson, lobes lavender-purple; extra fine.

AMŒNA.—Flowers semi-erect, throat pure white, mouth deep lavender-blue, lobes same colour; fine shape.

BERKSHIRE.—The flowers of this variety are drooping, throat pure white, mouth bright rosy-pink, large white lobes. First-class Certificate.

BESSIE.—The flowers of this variety are drooping, throat pure white, mouth slightly shaded with lavender, lobes white; fine form and distinct.

COUNTESS AMELIA.—Flowers semi-erect, upper lobes and throat pure white, the lower lobes faintly marked with rosy-salmon; extra fine. First-class Certificate.

EVATINA.—Semi-erect, throat and mouth pure white, lobes pale lavender-blue, flowers fine substance and very profuse.

INCOMPARABLE.—The flowers of this variety are erect, large, and of fine shape, throat deep crimson-scarlet, spotted at the base, mouth crimson, and white lobes.

MAGPIE.—Flowers semi-erect, throat and lobes white, mouth lavender, running into the lobes; a distinct handsome variety.

MIRABILE.—Flowers semi-erect, deep rosy-purple throat, violet mouth and lobes, margin pale lilac, splendid shape, and large.

PICTURATA.—Flowers drooping, throat light shaded with blue, lower part of the throat rosy-purple; a fine distinct flower.

PULCHERRIMA.—Semi-erect tube, pure white, with pale lavender mouth, lobes round and smooth, splendid shaped flowers.

SELECTA.—Flowers erect, tube, throat, and mouth bright salmon-red, with a broad margin of white, large, and good shape.

Price 7*s.* 6*d. each.*

NEW PELARGONIUMS.

GENERAL ROBERTS.—This is a very distinct variety; flowers pale salmon, fine shape and free-flowering. A splendid pot plant.

LORD MIDDLETON.—This variety has not been tried for bedding, but its free-branching habit is a pretty safe guarantee; but for pots as a winter decorative plant it has no equal. Flowers bright purplish-crimson, and fine majestic trusses.

MR. WADDS.—This is named after the best grower of this class of plants that we have met with. Any one going to Birdsall during the autumn and winter months will have a treat. It is of medium growth, very free flowering, colour bright orange-scarlet, fine shape.

MRS. BURNS.—The flowers of this variety are bright pink, with a white eye, good shape, and compact free-branching habit, profuse blooming. This will become a general bedding plant.

MRS. INGRAM.—This charming variety is of medium growth, producing an abundance of well-formed trusses of deep rosy-pink flowers, shaded violet, white buds in the upper petals.

MRS. TAYLOR.—Close compact habit of growth, and dark mottled leaves, producing fine trusses of flowers well above the foliage, pure white, with a salmon centre.

Price 7*s.* 6*d. each.*

NEW ILLUSTRATED PLANT CATALOGUE NOW READY, POST-FREE TO ALL APPLICANTS.

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All for Exhibition or Garden Decoration, and fine named varieties of our selection.

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F. AND A. SMITH'S BALSAMS.—Seed of the above can be had from most Seedsmen throughout the world, in 1s and 2s. packets mixed, and in 2s. 6d. collections of nine colours. Also Cineraria, Primula, and Calceolaria, in 1s., 2s. 6d., and 5s. packets, or direct from
F. AND A. SMITH, West Dulwich, S.E.

New Japanese Azalea.
AZALEA ROSÆFLORA.—This beautiful species, which is now offered for the first time, differs from every other Azalea in cultivation. The flowers in the bud resemble those of a miniature Tea Rose, whilst as they expand they regularly imbricate like those of a Camellia. These qualities, combined with the fact that it does not fall off, render it invaluable for coat flowers, bouquets, as well as for exhibition and general decorative purposes. It is compact and free in growth, and much branched; colour deep rosy-red.
First size, 6 inches high, some in flower, 10s. 6d.
Second size, 6 to 9 inches high, some in flower, 21s.
Third size, 1 foot high, many in flower, 31s. 6d.
WM. HUGH GOWER (Manager to the late Wm. Rollisson & Son), The Nurseries, Tooting, S.W.

New Catalogue for 1880.
WM. CLIBRAN AND SON, The Oldfield Nurseries, Altrincham, Cheshire, will have great pleasure in sending their DESCRIPTIVE PRICED LIST on application. Their stock of Florists' Flowers, Bedding and Soft-wooded Plants generally, is surpassed by none either in extent or quality, all the newest and best varieties being constantly added to the various classes, and the greatest care is taken to keep the varieties true to name. Another great advantage to purchasers is that none of the Plants offered are taken from a warm propagating-house and sent off immediately, but are all carefully hardened, and most of them potted off singly, and are thereby fitted for transit by post or rail without the slightest injury. A great proportion of the under-mentioned are autumn-struck plants, and can be had in pots if required, and all in a variety of sorts and colours, all good for exhibition or home decoration:—

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Abutilons, in variety ..	3	0
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Other sorts	3	0
Bouvardias, 4s. to ..	6	0
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Carnations and Picotees, 12 plants	7	0
12 pairs	12	0
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Clematis, to name ..	9	0
Coleus	3	0
Dactylis elegantissima, per 100, 6s.	1	0
Dahlias, per 100, 20s. ..	3	6
Delphiniums	6	0
Epiphyllum	9	0
Ferns, Stove and Greenhouse, 6s. to	9	0
Fuchsias, per 100, 18s.	3	0
Gardenia florida ..	6	0
Greenhouse Plants ..	9	0
Geranium bicolor ..	3	0
Geranium, Silver-edged	3	6
Geranium, Double ..	3	0
Geraniums for Bedding	3	0
Geraniums, for pot culture, 3s. to	6	0
Gladiolus, splendid seedlings, per 100, 20s. ..	3	0
Gladiolus Brenchleyensis, per 100, 6s. ..	1	0
Gloxinias, 6s. and ..	9	0
Hardy Climbing Plants, in great variety, 6s. ..	9	0
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Helianthemums	2	6
Herbaceous Plants, per 100, 20s.	3	0
Heliotropes	2	6
Hepaticas	4	0
Iresine Lindeni, per 100, 15s.	2	0
Iris, German	3	0
Ivies, in variety.. ..	6	0
Ivies, Irish	3	0
Lantanas	2	6
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Lobelias, small, per 100, 4s.	1	0
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Our Selection. Per doz.—	s.	d.
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Pæonies, white, blush, crimson, and other shades	6	0
Pansies, show, per 100, 25s.	3	6
Pansies, Bedding, about 20,000 to select from, per 100, 12s.	2	0
Pentstemons, per 100, 25s.	3	6
Phloxes, per 100, 25s. ..	3	6
Pelargoniums, Show, Fancy, and French, 6s. to	9	0
Pinks, per 100, 25s. ..	3	6
Potentillas, Double ..	6	0
Polyanthus, Seedlings, per 100, 5s.	1	0
Polyanthus, named sorts (see Catalogue)		
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Primroses, old Double Velvet, 1s. 6d. each.		
Primroses, Single, assorted colours ..	2	0
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Saxifrages	3	0
Sedums	3	0
Sedum acre aurea, elegans, and glaucum, per 100, 8s.	1	6
Stove Plants	9	0
Succulents, 4s. to ..	6	0
Tropæolums	3	0
Violas (immense stock of best sorts), per 100, 8s. to 12s.	2	0
Verbenas, stock plants, in pots	3	0
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Cuttings of any of the above varieties of the Soft-wooded Plants at half above prices, our selection.

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CHRYSANTHEMUM ETOILE D'OR.

Awarded a First-class Certificate by the Floral Committee of the Royal Horticultural Society on the 13th inst.

A splendid Conservatory Plant, blooming profusely all the year; flowers excellent for cutting.

Equally adapted for Bedding in the Flower Garden in Summer.

Now being sent out, 24s. and 36s. per dozen.

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Orders to be accompanied by a Cheque or Post-office Order.

CHOICE PELARGONIUMS

FOR SPRING, 1880.

PELARGONIUM VOLUNTE NATIONAL.

I have great pleasure in recommending this beautiful decorative Pelargonium, as being one of the most distinct, free flowering, and best habited plants ever sent out. As a Decorative Plant, or for Cut Flowers, it is invaluable.
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Price, 3s. 6d. each, Strong Flowering Plants.
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Coloured Plates free to Customers when one dozen and upwards are ordered.

Pelargonium Lucie Lemoine. Pelargonium Madame Charles Konig.
Both of these varieties are pure white, of great substance, free and continuous bloomers.
Will be very valuable for Cut Flowers.
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ALBA PERFECTA.—Pure white flowers, very dwarf and free flowering. Will prove one of the very best white bedders, as the flowers have no shade of pink in them.
EMILE DE GERARDIN.—Soft bright rose-pink, very dwarf and free flowering.
LA NUBIEN.—Deep fiery crimson, very free flowering.
The above three semi-doubles are very distinct, and quite new in colour, and will be invaluable to cut from—in fact, would make a lovely bouquet by themselves.
Plants 2s. 6d. each. Usual Trade Price.

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MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 5, at half-past 12 o'Clock precisely, a splendid importation of

ANTHURIUM ANDREANUM,

Collected and brought home by Mr. F. C. Lehmann.

The plants are in splendid growing condition, with healthy leaves and growths. This grand species far surpasses in beauty the well-known Anthurium Scherzerianum, its colours being more vivid, and the size of the flowers immense. The plant was described in the *Gardeners' Chronicle*, April 10, p. 464, and it says, "This time a plant which attracted all eyes was Anthurium Andreanum." And again it is fully described and figured in the *Gardeners' Chronicle*, April 17, p. 490, which states :—"This is the very striking plant which we noticed last week as having been exhibited at Ghent, where it attracted much interest; a similar feeling was experienced here when the plant was shown before the Floral Committee of the Royal Horticultural Society. The plant is an Aroid of tufted habit, with oblong, cordate, glabrous, leathery leaves, dark green above, paler beneath, and marked by comparatively few but prominent nerves; the leaf-stalks are ascending, cylindrically slender, and thickened at the top, the blade being attached, as it were, hinge-wise, so as to allow of varying positions, deflexed or spreading. The flower-stalk is double the length of the leaf-stalk."

Undoubtedly the plant is one of the most brilliant and remarkable discoveries of recent times. Those who remember what Anthurium Scherzerianum was on its first introduction, and what it is now, are justified in looking forward to the career of the present plant as of quite exceptional importance. This is fully borne out by the statements of Mr. Lehmann. The flower lasts in beauty four months, its colour is most brilliant, and the plant is of easy cultivation. It grows at an elevation of from 3500 to 4200 feet, and a temperature of from 60° to 70° would suit it best.

At the same time will be sold a splendid importation of the rose-coloured variety of ODONTOGLOSSUM VEXILLARIUM, the grand new blue-flowering PESCATOREI LEHMANNI, and ODONTOGLOSSUM ALEXANDRÆ LEHMANNI; also various other ORCHIDS, together with a splendid lot of the Burmah variety of VANDA CŒRULEA, collected by Mr. Freeman.

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Either Short or Long Grass, Bents, &c., Wet or Dry.

These advantages no other Lawn Mowers possess.

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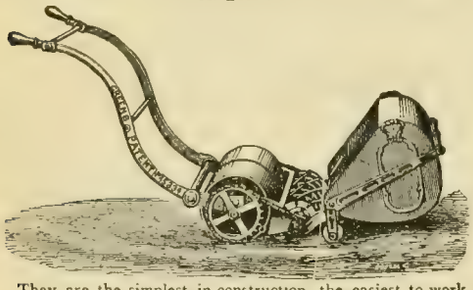
And in most of the Principal Parks and Squares in the United Kingdom.



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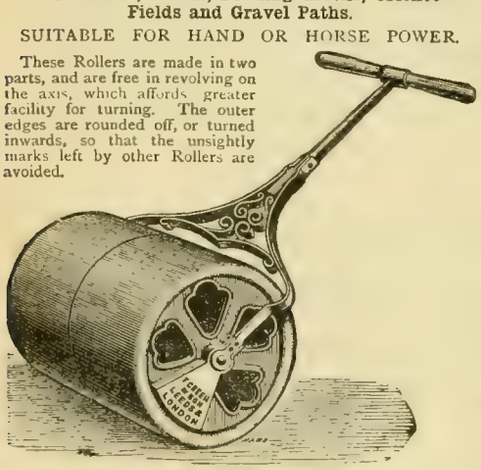

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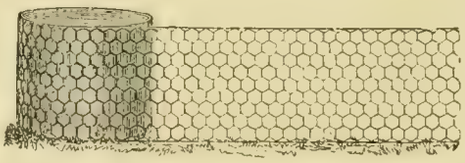

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Mr. B. MALLER, *Burnt Ash Nursery, Lee, London, S.E., on Feb.* 21, 1880, *writes* :—

"I have given your Nicotine Soap a fair trial, and I must now say it is very satisfactory. I am now having it used freely for syringing, ½ pint to 4 gallons of water, without the least injury to the foliage."

Mr. J. C. SPYERS, *Orchid Grower to Sir Trevor Lawrence, Bt., Burford Lodge, Dorking, on Nov.* 24, 1879, *writes* :—

"I have now tried in many ways your Nicotine Soap as an insecticide for Orchids, and it has given me great satisfaction," &c.

Messrs. BARNWELL & TILBURY, *Nurserymen, Worthing, on March* 19, 1880, *write* :—

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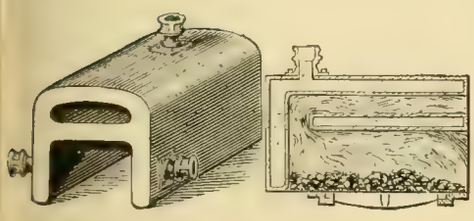

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THE

Gardeners' Chronicle.

SATURDAY, MAY 1, 1880.

KIDNEY BEANS: DWARFS AND RUNNERS.

WHAT we term French Beans—the Haricot Bean of the French—are not of French extraction, but come from Phaseolus vulgaris, a native of India, which is mentioned as being in common cultivation in England in the year 1597. Phillip Miller, of Chelsea, in the edition of his *Gardeners' Dictionary* published in 1731, devotes a good space to the genus Phaseolus, and states that it takes its name from a Greek word meaning "a long swift ship," because the husk of the fruit or pod resembles such a ship. His description of the general characteristics of Phaseolus is well worthy of being reproduced. "It is a plant with a papilionaceous flower, out of whose empalement rises the pointal, which afterwards becomes a long pod pregnant with seeds, for the most part shaped like a kidney, or oval; to these notes may be added leaves growing by threes on each pedicel, and the plant for the most part climbing." Miller enumerates several species as cultivated for their flowers or as curiosities, and then mentions three sorts of Kidney Beans cultivated for the table in England, viz., the common white or Dutch Kidney Bean—the White Case-knife, or White Dutch Runners of the seed lists of the present day; the lesser garden Kidney Bean, commonly called the Battersea Bean, answering to our dwarf French varieties; and the Upright, or Tree Kidney Bean, which would appear to be the same as our modern Scarlet Runner. Concerning the Dutch Bean, Miller states it was formerly more cultivated in England than at the time he was writing (150 years ago), but it was the chief sort grown in Holland, from whence, probably, it had the name of Dutch Kidney Bean. He alludes to it as a tall-growing variety, rising "to a very great height," requiring to be supported by tall stakes, which trouble rendered it difficult to cultivate the sort in plenty; "and the Beans being much broader than the small sort renders them less valuable in the London markets, which, I suppose, occasioned their being neglected in England." The dwarf type was preferred in many gardens then as now, because "the plant never rambles too far, but is always of moderate growth, so that the air can pass between the rows and keep them from rotting; it is also a plentiful bearer, and the best Bean of all the rest for eating." In these days the Scarlet Runner is generally regarded as the best flavoured Bean, though Miller thought they did not eat so firm and crisp as the commonly cultivated dwarf Beans.

The Scarlet Runner was introduced from South America in the year 1633, at a time when the question of the royal privilege in England was shaping itself into that form which eventually brought Charles I. to the scaffold. It is supposed that the scarlet variety, which grows

so tall and is so prolific, was first cultivated about that time by Tradescant, the celebrated gardener at Lambeth. It was then, we are told, in so great repute for its flowers that they formed the leading ornament in the nosegays of the ladies; and it seems to have kept its place only as an ornamental plant for nearly a hundred years, as its legumes were seldom used as an edible substance until brought into notice by Miller of Chelsea in the eighteenth century.

It is difficult to discover any reliable information as to the origin of and the times when the leading varieties of the dwarf French or Kidney Beans were introduced to commerce. The earliest seed catalogue I can put my hand on—that of James Carter, 238, High Holborn, published in 1842—simply states, "Kidney Beans, dwarfs and runners, in sets;" and this practice of cataloguing appears to have been common at that time. In Messrs. Peter Lawson & Sons' seed list published in 1852 there is a list of varieties of dwarf Kidney Beans, and the Dun, Negro, Canterbury, Fulmer's Early, and Wilmot's Early, appear in this list. As far back as 1836 I find that the light or Early Dun, and the dark or liver-coloured Dun, were mentioned as early varieties, very hardy and productive; the dwarf Negro, or Black Kidney Bean, "as much esteemed both in this country and the Continent for its green pods," an opinion quite as freely held at this distance of time—nearly half a century; and the Negro was at that time very much used for food by the black population in the Brazils. The dwarf Canterbury, with its small clear white seed, was then as now a well-known dwarf early sort, but rather unproductive in some cases; still it is an esteemed sort for an early crop, the young pods being very tender. Fulmer's Early was also in cultivation then, but Wilmot's Early appears to have been a later introduction; and both these are little grown in our days, except by some of the older school of gardeners.

There are now a great many varieties of dwarf French Beans. The Royal Horticultural Society's trial of dwarf Beans at Chiswick in 1877 included forty-two distinct varieties, many of which were received under almost innumerable synonyms. It is worthy of notice that Kidney Beans are in increased demand every year; and it is believed that the increase, though owing to a great extent to the growth of the population, is also occasioned in part by a greater appreciation of Beans as an article of food.

One of our leading wholesale seed houses states that they get through from 2000 to 3000 bushels of Kidney Beans every year; the demand rising higher as the years roll round. The two most esteemed market Beans are the Early Dun and the Negro, with the Canadian Wonder, Williams' Early Prolific, and Osborn's Forcing also in good demand. The two last-named are improved speckled varieties, and they have proved to be of excellent quality and improved value over many other new introductions during the past few years. Market gardeners are found sticking to the Dun and Negro, because early reliable croppers, quick to turn in, and the earliest to be put in the market. Both the dwarf and long-podded Negro Beans are in great demand; the long-podded Bean of one of the large seed houses is of a peculiar small-seeded stock. The Long-pod Negro is a selection from the old dwarf type. Messrs. Hurst & Son have this season put into commerce a monster Negro Kidney Bean, which is a greatly improved variety, said to rival the Canadian Wonder in length of pod and good quality: it is said to be very early and extremely prolific, and was considered by the Royal Horticultural Society worthy of its First-class Certificate of Merit. The Canadian Wonder French Bean is now grown by almost every gardener, and it is, in consequence, in great demand. A leading wholesale house requires at least 500 bushels every year. Good judges of dwarf Beans assert that the Canadian Wonder is distinct from the Crimson or Scarlet Flageolet of the French, and an older type, viz., Cutbush's Giant Dwarf Bean, though much like it in the dry state, but has a more erect rather than a spreading growth, and the pods more obtuse at the points. How it originated Mr. Cutbush is unable to say; a few seeds were given to him nearly thirty years ago, and he has grown the stock continuously up to this time.

It may interest some to know that the White Advancer Bean is identical with the White Flageolet; that Best of All is simply a good stock of the old Sion House Forcing and that the old round-seeded China Kidney Bean, which is marked in a very handsome manner, is still a favourite variety: it is also known as the Robin's Egg. It may be stated that the pale Dun and the dwarf Negro are still standard varieties; and that the following may be regarded as acceptable improvements on the sorts generally cultivated, viz., Williams' Dwarf Prolific, Osborn's Forcing, Canadian Wonder, and the Monster Negro.

The wax-podded Beans, both dwarf and runner, introduced a few years ago, with their singular looking yellow pods, though awarded First-class Certificates of Merit, were never better than garden toys in this country. There was a kind of un-English look about them, and they are now in but small demand; while their table quality was no doubt a little overrated. *R. D.*

(*To be continued.*)

New Garden Plants.

MASDEVALLIA ROSEA, *Lindl.*

"What is Masdevallia rosea?" some of our readers may ask. Well, it is a peculiar type of Masdevallia, quite distinct from any species we have, bearing flowers of a length of 11 centimetres. The even sepals are 3 centimetres broad, of the most lovely rich rose-purple, the long tube of an exquisite purple-scarlet. Dr. Lindley sketches it: "flowers pink, 2 inches long, very showy." This glorious thing, so long desired, was saved from the wrecked ship, *Para*, at St. Michael's, Azores, by our friend F. C. Lehmann. The very few plants will appear at Mr. Stevens' rooms, to make their European *début*. We hope to give very soon further details and a woodcut of the queen of Masdevallias. *H. G. Rchb. f.*

MASDEVALLIA CHELSONI (VEITCHIANA × AMABILIS).

This is a mule between Masdevallia amabilis and Veitchiana, just intermediate between the two. The scarlet outer perigone is covered inside with beautiful mauve papillæ, as in the glorious M. Veitchiana, but the shape of this part is far nearer to that of M. amabilis. The petals are white, with a falcate, much developed process at the base on the anterior side, and a mauve spot at the top. Lip pandurate, mauve at the border, brown at the blunt apex, white on the disk of the inner side, with a mauve line through the middle line beneath. Column white, with an entire border to the androclinium, and a very short mauve streak on each side of the middle border. Leaves with a very long petiolar part.

It is, as far as I know, the first Masdevallia raised from seed in Europe, and, moreover, the first mule produced in Europe. This sounds very glorious for the Veitchian establishment. So far it is all bright and shining; but as to myself, I do not delight so much in it. The new thing is very very near Masdevallia splendida, and chiefly distinct in the nature of the petals, lip, and column, and by ratiocination. Mr. Davis, who appears to have looked with sharp eyes for Masdevallias, gathered Masdevallia Barlæana, Davisii, Veitchiana, spectabilis, but, as far as I know of, no amabilis. Hence M. spectabilis cannot be the same, but they are very much like one another at all events, as occurs in the case of the mules of Gymnadenia nigra, and Gymnadenia conopsea and odoratissima. *H. G. Rchb. f.*

HARDY FLOWERS AT THE ROYAL HORTICULTURAL SOCIETY.

LOVERS of hardy flowers owe their thanks to Mr. Elwes for his numerous contributions to the meetings of the Royal Horticultural Society. Many of the flowers cultivated by him are new to English gardens, or at least are but imperfectly known. Others were favourites a quarter of a century or more ago, but are now seldom seen in cultivation. It was by the persistent devotion of a few old florists that many of the choicest varieties of Auriculas and laced Polyanthuses were preserved through a long period of comparative neglect. Many beautiful herbaceous and alpine plants have been preserved in the same way, and they will probably be heard of as the demand for them increases. A large proportion of the flowers grown by Mr. Elwes are cultivated in the open garden; but it is convenient to plant some specimens out in frames, or to grow them in pots, so that they may be sheltered by glass to preserve them from damage by wind or rain. Many such flowers are rather fragile, and the month of April in England seldom passes without dashing rains, or even snow and hail storms, which make sad work with beautiful flowers. Still it is very astonishing how much rough weather many of our hardy spring plants will endure, especially such as succeed well in sheltered nooks of rockwork.

One of the fine old-fashioned flowers which might have been seen years ago in cottage gardens in Scotland, is Pulmonaria virginica (Mertensia). It grows freely in any garden soil, and the drooping racemes of bright blue flowers are very beautiful at this season.

Helleborus guttatus (?) from the Caucasus had eight flowers on a spike; these were 3 inches across, reddish-purple in colour, and densely spotted with purple. It grows 3 feet high, and lasts in flower three months.

Corydalis bracteata, a Siberian species of singular beauty, was much admired. It has glaucous green leaves, and the whole plant is not more than 1 foot high, and half the length of the stem is clothed with a dense spike of primrose flowers. It was honoured with a First-class Certificate.

Streptopus roseus, though introduced from North America in 1806, is seldom seen. It is not a showy plant, but its numerous small rosy-pink flowers which droop from large branched stems are pretty; the beauty and interest of the plant is continued by a profusion of red berries.

Arnebia echioides, introduced from the Caucasus, was honoured with a Certificate, and described last year. Its dense corymbs of bright yellow flowers, marked with five distinct maroon spots each, are very striking; these spots die off as the flowers get older. This should be grown in every garden if it can be obtained.

Dielytra cucullaria, grown in English gardens for more than a century, attracted considerable notice for its finely divided glaucous green leaves and remarkable white flowers, which have gained for it the name of Dutchman's Breeches. Then we were shown many different species of Tulips, the irregularity of outline of which would cause their rejection by the florist; but they are beautiful exceedingly, as free-born children of Nature, from the small Indian Tulipa stellata to the noble T. Greigii. I much admired a small unnamed species, with pink flowers, from Teheran. In size and form the flowers are like T. stellata; but the base of the flower is rich yellow, more faintly marked outside.

T. Kolpakowskyana, under cultivation, had improved immensely in two years; the cultivated flowers were three times as large as those that flowered from the wild bulbs in one year. The flowers are a rich deep crimson-vermilion. It is Siberian, and was received by Mr. Elwes from St. Petersburg.

In the collection were several species of Fritillaria, and one of the most useful for open-air culture in English gardens is F. latifolia; the original species had been received from the Caucasus, but it has been introduced to this country since 1604. In Mr. Ware's nursery at Tottenham several varieties of the species are now in flower. F. recurva was shown for the first time at South Kensington probably, but I was disappointed with it. The flowers, five or six on a stem 18 inches high, are scarlet, yellow internally, but densely spotted with reddish-scarlet; the petals reflex, hence its name. There are probably more highly-coloured varieties than this: I hope so.

Erythronium grandiflorum had five very beautiful bright primrose flowers on a stem. This is a very distinct hardy plant. Introduced from North America in 1826, it was lost to cultivation until the last few years, but it is well worth looking after for its interest and beauty.

The hardy Cypripediums are my favourites amongst hardy plants. There was a beautiful flower of the pretty C. candidum. The pure white lip, from which it derives its name, is like polished ivory. C. pubescens is well known, and it is one of the easiest to cultivate; the lip of some of the varieties is quite golden.

The above are not half the fine flowers shown by Mr. Elwes—indeed, many of them had to be sent to Kew to be named; but they show the rich variety that can be had in our gardens at this season without the aid of artificial heat. What a wealth of instruction and

pleasure could be derived from cultivating a collection of hardy plants in pots, and placing them in a greenhouse or in a pit reserved for the purpose all through the spring months. We grow numbers of such plants for this purpose at Loxford. To the greater number of our visitors nearly all of them are marvels unknown before; and fresh interest is excited when they are told that all of them are quite hardy in cold frames or in the open ground. *J. Douglas.*

GYPSUM FOR POTATOS.

The value of gypsum as a deodoriser and fertiliser appears to have dropped nearly out of sight in this country for many years past. In America, however, it has been, and still is, largely used, particularly for crops of Potatos. Since Benjamin Franklin sprinkled the letters of his name on a field of red Clover by a roadside near Washington, which caused the Clover to grow so much stronger that his name could be read a long distance off, gypsum has been in great favour in America. So much was this the case that many years ago nearly every corn-mill in New York State had a detached shed, or outhouse, in which there was one or more pairs of stones for grinding gypsum. On the Hudson, too, we are informed, there was a large mill built fifty years or so ago for the express purpose of this trade. The source whence gypsum was then obtained was the mines in France, and it used to be shipped in its raw state as ballast in vessels trading between New York and the northern French ports. It was then taken up the Hudson, and in other directions, for grinding for horticultural and agricultural purposes. This foreign trade in gypsum has, however, been greatly reduced, we are informed, by the discovery of gypsum in America.

In England this subject has been recently revived by the discovery of large and valuable seams of gypsum in Sussex. This occurred in 1872, during, or subsequent to, the meeting of the British Association at Brighton in that year. It happened in this wise. An enthusiastic geologist, Professor G. A. Ramsay, held a theory that the Belgian coal bed extended across the Straits of Dover and the English Channel, and was within workable depth from the surface of South Sussex. After the Professor had read a paper on the subject, a subscription was raised for the purpose of boring, with a view to testing the Professor's conclusions. This experiment was carried out in a valley at Netherfield, near Battle; but although a depth of upwards of 1900 feet was reached, no coal seam was struck, and as the size of the boring tools was not adapted for going deeper, the subscription fund at the same time having been exhausted, the project was abandoned. In the interval, however, at a depth of 125 feet, a seam of gypsum of very fine quality, and 7 feet in thickness, was passed through by the boring tools.

The reports of this discovery, as they appeared in the London papers, attracted the attention of Messrs. Bosworth & Ison, of Ashby-de-la-Zouch, who had had much experience in mining for gypsum in Derbyshire, and they went down to Netherfield on an exploring expedition. From what they saw they were satisfied in regard to the great value of the discovery. Whereupon they laid the matter before Mr. J. C. Baxter, of Reigate, a gentleman with large resources and great commercial experience, particularly in organising companies, and in a few days a landowner was treated with, and a private company formed under the title of "The Sub-Wealden Gypsum Company." Of the works we need only say that the best engineering skill has been employed, while every modern appliance of the most approved kind has been adopted. When we visited the works last year, soon after they were in full working order, we found that the company had obtained a siding on the South-Eastern Railway at Robertsbridge; that they had a private railway winding up a valley in a beautiful wood of Oak and Hazel; and when we turned the last curve that there was a chimney-shaft and blocks of buildings which reminded us of the large coal-mines of Durham and Northumberland. As a further proof that much enterprise has been displayed in this business, we may say that the items of the first outlay amounted to upwards of £40,000.

These introductory remarks will, we think, lend an additional interest to this subject.

The manner of applying gypsum to Potatos in America is to drop as much as can be held between the thumb and finger on the "set" after it has been deposited in a dibbled hole, or on the bottom of a furrow before it is covered up. Then, before it is "hilled" or moulded up, another similar pinch is dropped around the stem or stems of the plant. This dressing is looked upon as acting beneficially in two ways—(1) in assuring the health of the plant, and (2) in increasing, as a natural result, the quantity, quality, and flavour of the tubers.

Potatos generally may be benefited in this country by the same means. Early, or new Potatos, however, are not of so much consequence, as they are eaten in their waxy stage, and at a season before the well-known disease, which has been more or less prevalent since 1846, generally makes its appearance; but for late Potatos, which are liable to the disease above referred to, an experiment with gypsum in all parts of the kingdom may be advisedly carried out. What we would recommend is, that a number of alternate rows of late sorts of Potatos should be dressed with gypsum at the time of planting, after the American plan, as above described. This would be a conclusive experiment to prove whether the rows so dressed were freer from disease, larger in size, and better in quality, than the rows which had only an application of ordinary stable, farmyard, or other manure. We have before us some letters from some well-known growers of seed Potatos, and they say that where gypsum was applied in addition to ordinary manure, the difference in the crop was very marked and highly satisfactory. This cheap experiment is certainly worth an extensive trial.

But there are other uses in horticulture to which it seems gypsum may be put with advantage. It is a well-known fact that vegetables—that is, Cabbages, Broccoli, Savoys, Potatos, and so on—cannot be grown with safety and profit on the same land for more than three or four years at the most. This is because these plants when heavily manured, as they are in the market gardens around London and other large towns, deposit so much free acid by means of their numerous decaying roots, that the soil becomes poisonous to a new crop of similar plants. The result is "anbury," or "fingers-and-toes." The preventive adopted is to grow a crop of some cereal, such as Wheat or Rye. This crop alters the character of the soil in the required way, when vegetables may be again planted with safety for the following three or four years. But as the crop of vegetables and Potatos that can be grown in one year is worth five or six times as much as a cereal crop is at the present time, it is worth while to further experiment with gypsum, to prove whether ten shillings' worth per annum will not keep land cropped with vegetables perfectly healthy for any number of years. From observations we have made, we believe it will. Carbonate of lime, or quicklime, will not do it, as we know, but sulphate of lime, or gypsum, is a very different chemical combination, and we have every reason to believe that its value is almost entirely overlooked by horticulturists and market gardeners.

As to the deodorising capacity of gypsum, it is remarkable that this well-known quality should be so generally neglected. This view applies particularly to suburban market gardeners, with whom straw is always scarce, and the quantity of town manure they use is very expensive, if the carriage be reckoned. If a few tons of gypsum were used per annum for absorbing or fixing the ammonia of their stables and piggeries, the value of tons of the best Peruvian guano might be secured. We now have to pay £14 per ton for guano which contains about the highest known amount of ammonia, yet men's eyes and noses are irritated with the volatile salts in stables, while horses are sometimes blinded by its effect, and this, too, at the same time that gypsum can be obtained in abundance, and at a low price per ton.

The sulphate of gypsum is an essential element of all plants which come under the head of vegetables. To prove this no analysis is required; for when they have been carried long distances, or otherwise been kept a few days till decomposition has partially set in before they are cooked, the nose can readily detect their sulphurous character by the disagreeable odour they emit at the dinner-table. If all these points be taken into account together, too much cannot, in our opinion, be said in favour of gypsum as a deodoriser and fertiliser.

The quality of the Sussex gypsum, which led to the above views, is, as we have intimated, of the finest quality. French and Derbyshire gypsum is ingrained with a red or rusty substance. This is oxide of iron, which is generally superabundant, and often to an injurious amount, in soils. In gravelly soils it is always superabundant, and often noxious to plants, unless its effect is neutralised by a large deposit of vegetable substances. But, on the contrary, the ingraining of the Sussex gypsum is of a bluish-grey colour. This is carbonate of lime in the form of limestone. Therefore, if the small quantity found in the Sussex gypsum be slowly soluble in soils, it is perfectly harmless when applied, and when it has been made soluble by the action of the roots of plants, it is as valuable a fertiliser as the more soluble carbonate of lime, which is known as chalk. *W. W. G.*

FLORISTS' FLOWERS

New Auriculas.—The National Auricula Society has been the means of bringing before the public numerous seedling Auriculas which they would not otherwise have seen, and many fanciers who were not able to be present at the exhibition will be pleased to learn that many of those exhibited were of the highest order of merit. Indeed it seems evident that in a very few years the new sorts will displace the old varieties that we have so long clung to so fondly.

First in order is the green-edged class, but any really good varieties contained in it are either difficult to grow, difficult to obtain, or are so inconstant that they are scarcely worth growing at all. For instance, Freedom (Booth) and Champion (Page) have become so debilitated in their constitution that it is almost impossible to get them to grow with sufficient freedom to produce a satisfactory bloom. Colonel Taylor (Leigh) is another celebrated flower, and first-rate when it can be had, but I grow about a dozen plants of it, and had not one good truss this year; Mr. Horner and Mr. Simonite both grow it, but it is seldom exhibited by either of them. Imperator (Litton) is a first-class flower when it can be had at its best, but I have grown it for years and have had nothing but the most wretched flowers. Mr. Pohlman, of Halifax, had it very fine on the 20th, and once before I saw it good. Prince of Greens (Trail) has a pale tube, which sometimes dies off inky; but it has a most beautiful green edge. Anna (Trail) has a bad constitution. As far as one can judge at present Mr. Horner stands highest for *bonâ fide* seedlings of his own raising in this class. Like the rest of us, he was not able to show what may probably be the best flowers, owing to their not being in good condition. Cyclops (Horner) is certainly a very fine flower, and it has what many in this class lack—a rich yellow tube; the paste is good, the ground colour dark maroon, the edge a good green. Rob Roy (Smith), exhibited by Mr. Richard Dean, was not fully developed, being only a small plant, but it promises well; the tube is yellow, the paste circular and dense, the ground colour black, and the edge rich green. Orion (Horner) is a good flower, but the tube is rather pale, paste good, ground colour almost black, with a rich deep green edge.

In the grey-edged class it cannot be said that any of the flowers exhibited came near George Lightbody (Headly), although some of them are distinct and in advance of most of the others in the class. Rev. F. Tymons (Dean) promises well; it has a rich yellow tube, with almost black ground colour, but rather too much of it, and a pleasing silvery-grey edge. Next in order came a seedling of Mr. Llewelyn's, which was too young to judge fairly of its merits; the paste was rather thin, yet it has a good grey edge, and maroon ground colour; the flowers are also of large size. Thetis (Horner) is a neat flower, rather like George Levick, with a good yellow tube, dark maroon ground colour, and silvery-grey edge.

In the white-edged class there is, I think, as much room for improvement as in the green, and the general public will probably be of the same opinion while a variety like Catherina (Summerscales) stands 1st in its class. Conservative (Douglas) promises well; it has a rich orange tube, which improves with age, the ground colour is black, and the edge not very pure, but broad and well defined. Mrs. Dodwell (Simonite), has a pale yellow tube, the ground colour purplish-red; the edge is rather narrow, white, good, and the flowers very distinct. Neither of these

flowers have the pure white edge of John Simonite, nor the rich black and striking ground of Smiling Beauty.

In the class for selfs some very striking flowers were exhibited, and although we possess some good flowers already, some of the new ones will be sterling acquisitions. Last year Ringdove (Horner) was the best seedling self; it was again exhibited, but not in such good form. Heroine (Horner) must stand highest on the list this year, indeed the judges had to decide between this and Champion for the prize for the best Auricula in the exhibition. All the parts are well balanced, the tube is a good yellow, paste pure and circular, the edge reddish-maroon, and quite round. Mrs. Douglas (Simonite) is probably the best violet self: the flowers are of great substance, segments quite flat, tube rich yellow, paste white, circular, and contrasting well with the rich colour of the edge; as shown it is deeper in colour than Chas. J. Perry, and a better flower. Lord Salisbury (Mellor) is a red or reddish-crimson self, with a good orange tube, the paste is good; we are short of good crimson flowers, and this may be worth growing for its colour, but I was not particularly struck with it.

All the above received prizes in the seedling classes in the order of their names, and First-class Certificates were awarded to all of them except Mr. Llewelyn's seedling, the flowers of which were not sufficiently developed.

In the class for alpines a few good seedlings were exhibited, and two First-class Certificates were awarded. Unique is a very smooth flower, the centre is yellow and quite circular, the edge shaded purplish-maroon. Titian is a very bright flower with gold centre; the edge is reddish-crimson shading to maroon; the whole plant is of a dwarf, neat habit. On the following day Mrs. Ball, alpine, was shown very fine at the Royal Botanic Society's exhibition, and received a First-class Certificate. It is a good shaded edged flower with a gold centre. The above were raised in the Royal Nurseries, Slough.

Before closing I must beg a little space for the Polyanthuses. These were exhibited in very fine condition. It is but seldom that any striking new flowers are exhibited, but on this occasion S. Barlow, Esq., of Stakehill House, Castleton, had a very fine red-ground seedling, far in advance of any variety now in cultivation; indeed there is but one, and that is Lancer (Bullock), a fairly good flower, but Sunrise is quite a crimson flower. The centre is round and, like the edge and division lines, a rich yellow. The pips were not large, but under other circumstances they will probably be as large as Lancer at its best. *J. Douglas.*

THE BUCKLAND YEW.

This venerable relic, certainly over 1000 years old, has lately been removed from its former resting-place to a quiet home in Buckland Churchyard [a distance of 60 yards]. This "act of of vandalism" is not such a serious matter after all, when one considers that a final place of rest more appropriate could not be found for the old Yew tree, than to be with all due reverence deposited in its own burial ground. This was most satisfactorily accomplished on March 1, 1880. This Samson of Yew trees, which has weathered so many wintry storms, and is yet in luxuriant health, has been doomed to speedy and certain death on the authority of no less than two of our leading professors of tree lore! Poor old tree. In accordance with this view, the coroner of Dover kindly offered his services to hold an inquest over the tree; but I could not conscientiously employ him, knowing that in all probability this grandfather of the forest will outlive some generations yet unborn. I am charitable towards a doubting public when I find men who, notwithstanding their high position as public teachers, are so far behind the times as to give proof of their ignorance by speaking or writing with authority on a subject of which they have little or no practical knowledge. In justification of these remarks, which I make with no intention of giving offence, I give a quotation from a letter received by the Vicar of Buckland, in answer to an application for advice about removing this tree: "I thank you for your very interesting letter, and for the opportunity it gives me of protesting against any attempt to injure, much more to transplant, the old Yew, which latter will result in its death. There is no precedent for the successful transplantation of any tree of considerable age or bulk, and to experiment on such a specimen as that at Buckland Church would be an act of vandalism that would surely be reprobated for as long as the memory of the tree, and the history of Dover lasted." Another eminent professor in dendrology said to me on my return from Dover that I was "a real Vandal among trees." To this charge I suppose I must plead guilty, seeing that my knowledge both of the tops and roots of trees, and of their requirements for successful culture, and in several instances for their identification, have caused me to be called upon to use my grub-axe to uproot the prejudices and opinions of those who have been opposed to my rough practice. It would be more to the credit of scientific men when asked their advice on practical matters to say, "Really I do not feel competent to advise you on this question; you had better apply to —— to do so," than to dogmatically assert what they do not understand.

For the benefit of such as are troubled with short memories, or wanting in practical information, allow me to say that, instead of there being "no precedent for the successful transplantation of any tree of considerable age or bulk," as aforesaid asserted, the gentlemen who recently obtained the City of London appointment as Superintendent of the Epping Forest, and who carried out the planting of the Thames Embankment, gave his evidence on oath in the Court of Queen's Bench some years ago, that he had examined two large Cedars of Lebanon which I transplanted in Surrey, one in the third week of July and the other in the first week of August, both then in active growth, and that two years after they were transplanted, he found them both growing and in perfect health. One was over 50 tons, and the other over 60 tons in weight. Both trees were about 50 feet high; the largest was removed with a mass of soil undisturbed which measured 18 feet long, 15 feet 6 inches wide, and 3 feet 7½ inches deep. The circumference of the trunk was 11 feet 6 inches, and the branches measured across 59 feet. Large old Yew trees, from 300 to 800 years old, have been removed many miles on my transplanting machines to Elvaston Castle and other places more than thirty years ago.

The Buckland Yew had originally a double trunk, which divided a few feet above-ground; the larger of the two had been thrown down (not struck by lightning, as erroneously stated, but) by an "act of vandalism," which was allowed to be perpetrated some 150 or 200 years ago, as follows:—A brick vault had been built close to the trunk of the old tree on the south side, and in excavating for this vault all the roots on that side had been cut for a distance of 8 feet. As soon as I saw the vault I told the Vicar at once the sole cause of the main trunk being laid horizontal, viz., that we should find that large roots which had been the mainstay to support and keep the stem upright had been sawn off. This I found to be the case as soon as the brickwork was removed.

The removal of the large block of soil, the massive and weighty trunk, and heavy branches of this gigantic tree, was, with the great experience which I have had in former years, comparatively an easy task compared with the great difficulty of supporting and carrying in their horizontal position the main trunk and the two enormous limbs, extending south and west, with their extended branches, over 33 feet, as seen in fig. 97. Fig. 98 shows the tree supported in its horizontal position on a large timber-dray on four long balks of timber. This dray, with its heavy load of limbs and branches, was made to move simultaneously with the main trunk, with its upright limb, and mass of soil containing the brick vault and the whole of the roots. The entire block of soil and roots removed measured as follows:—Length, 16 feet 5 inches by 15 feet 8 inches, by 3 feet 6½ inches deep, together with eight large balks of timber. Many planks were used to hold the soil together, it being very friable—a mixture of chalk and sand. The circumference of the main trunk is 22 feet; do., upright trunk, 6 feet 10 inches; do., second horizontal trunk, 10 feet 10 inches; do., south limb, forking off at 9 feet from main trunk, 7 feet 10 inches; do., west limb, forking off at 9 feet from main trunk, 8 feet 8 inches; extent of branches from centre of main trunk southwards, 30 feet 10 inches; and from north to south, 48 feet; they extend from main trunk westward 33 feet. The entire mass removed was 56 tons.

Fig. 97.—The Buckland Yew before its removal.

In placing the tree in its present position, by preparing the ground on a slope two ways and by leaving one balk of timber under, I was enabled to cant the horizontal trunk and limbs to nearly the same angle as the limb, which was formerly upright; and by so doing the fine mass of foliage now presents a uniformity of outline which could never have been accomplished by any other means. The Vicar has written me as follows:—"The tree, by universal consent, looks far grander than it has ever done before, and when the grass grows will be a beautiful object."

This remarkable tree is of the male sex, with a most extraordinary exception, viz., a small solitary female branch. In the whole course of my experience I only know one other example of a similar kind,

which still exists in the original Golden Yew which I planted at Elvaston Castle more than forty years ago. When I mentioned this singular freak of Nature to the late Sir William Jackson Hooker, then in charge of the Kew Gardens, and whom I knew when Professor of Botany at the Glasgow University, he told me that he had never known another instance of the kind. From this branch, several years ago, I obtained a very superior breed to the elegantissima var., that being only a cross with a green and golden variety.

Before concluding, I take this opportunity of thanking most cordially the Vicar and his lady for their extreme kindness, and also my other Dover friends, who seemed to vie with each other in rendering us every help in their power in supplying us with such necessary appliances as were requisite to be obtained on the spot. The motive-power used was obtained by the aid of crabs, pulley-blocks, and powerful screw-jacks. *William Barron, Elvaston.*

[We have laid ourselves open to Mr. Barron's rebuke by our comment on this proceeding at p. 305 of our present volume, where we spoke of it as an "act of sacrilege;" and even after Mr. Barron's explanation we are not disposed to alter our opinion as to that point. That Mr. Barron could, given the proper appliances, move Westminster Abbey itself we do not doubt, but it would be none the less an act of sacrilege to attempt it. Nevertheless, the feat, in the case of this celebrated Yew, has been accomplished with all the skill and care that Mr. Barron's previous work in this department would lead us to expect. But Mr. Barron will not, we presume, deny the risk he has run, and we now await the result, in earnest hope that our fears may prove to have been vain. It would be interesting to have a record of successes and failures in the removal and transplantation of trees of over 50 tons in weight.

We supplement Mr. Barron's account with a few notes on this now doubly famous Yew. There is a tradition that the tree is mentioned in *Domesday Book*, but after diligent search in Hasted's "Kent" and in the Rev. L. B. Larking's magnificent fac-simile and translation of that portion of our national record pertaining to Chent (or Kent), we find no reference to the Yew in question, though Bocheland is frequently mentioned. It may be of interest to some of our readers to see the plan upon which this famous record is drawn up. We therefore cite the following passage, relating to the manor in question:—"Osbern holds of the Bishop, Bocheland. [The Bishop was Odo of Baieux.] It answers for three yokes. There is the arable land of one team. In demesne there is one. And three villans [tenant-farmers] with two bordars [labourers], have half a team. Eight slaves there. In the time of King Edward, it was worth four pounds. And afterwards three pounds. And now seventy shillings." It will be a matter of surprise to hear of slaves in the time of the Conqueror, but, as the Editor points out, the condition of these *servi* was not worse than that of many an agricultural labourer in our own times. In another entry relating to "Bocheland" the church is specifically mentioned, but not the Yew. Hasted relates, that "in the reign of Edward III. Agnes Barrie was seized of this manor and 42 acres of pasture of the King, by the service of paying one red Rose yearly to the King." We should like to know what that Rose was like! Reverting to the Yew which has led to these remarks, we may mention that, in 1833, the Rev. W. T. Bree published in *Loudon's Magazine of Natural History* an account of this Yew, to which he applies the quotation—

"A noble wreck in ruinous perfection."

Mr. Bree's paper is accompanied by a woodcut illustration, so different from those we now publish, that it is difficult to understand how they could have been taken from the same tree. Mr. Bree, however, admits that the woodcut he gives is not a faithful portrait. Mr. Bree alludes to the story of the tree being struck by lightning upwards of sixty years ago—he wrote in 1833. This information he obtained from an old inhabitant, who told him that the steeple of the church was demolished at the same time.

It is worth citing Mr. Bree's account of the appearance of the tree nearly fifty years ago, and comparing it with that given by Mr. Barron. "To this catastrophe [the stroke of lightning] no doubt is to be attributed in great measure much of the rude and grotesque appearance which it now presents. At a yard from the ground the butt, which is hollow and on one side extremely tortuous and irregular, protruding its knotted fangs like knees at the height of some feet from the surface, measures 24 feet in circumference. It is split from the bottom into two portions; one of which at the height of about 6 feet again divides naturally into two parts; so that the tree consists of a short squat butt, branching out into three main arms, the whole not exceeding in height, to the extreme top of the branches, more than about 25 or 30 feet. Of what may be regarded as the original branch and arms, but little I conceive now remains alive: two considerable portions, however, are still conspicuous in the state of dead wood, viz., one on the inner part of the northern limb, hollow and forming a sort of tunnel or chimney; the other on the western limb more solid and exhibiting the grain of the wood, singularly gnarled and contorted. These, which I have ventured to call portions of the original trunk and arms, are partly encased, as it were, on the outside by living wood of more recent growth. . . . The trunk is decayed and hollow at the bottom, but from within the shell there arise two or more vigorous detached portions of small diameter, which soon unite to the main wood, and run up to a considerable height, lapping into one another, twisting and interlacing in a very striking manner, so as to suggest the idea that the trunk has been ripped open, and is now exposing to view its very entrails." Mr. Bree goes on to reprobate the wanton spoliation and injury to which the tree was subjected in his day. "Many considerable boughs, which must have trailed almost on the ground, have lately, it seems, been lopped off in the fine spirit of modern vandalism." Eds.]

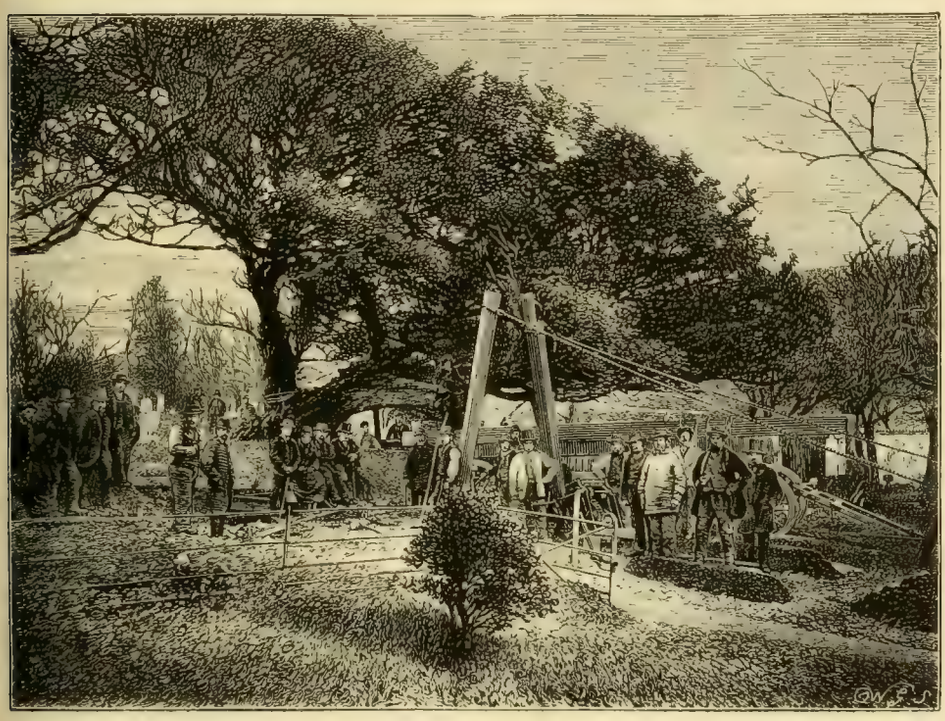

Fig. 98.—On the Journey.

Foreign Correspondence.

From Naples to Malta.—The steamer which took me from Naples to Malta stopped the greater part of a day at Messina, but owing to heavy rain I had hardly three hours for botanising.

The hills rise immediately from the beach, and the town is built on their lower slopes. Being formed of very loose material, irregularly stratified sand and gravel, they are scored by the rains into deep ravines, whose steeply sloping banks meet in sharp ridges above. Following the dry torrent bed at the bottom of one of these ravines, I left the town behind, and found myself among Orange groves mixed with Olives and Peach trees, the latter just coming into blossom. The prevalent flowers were Fedia cornucopiæ and Linaria reflexa upon walls and banks, Silene colorata and Senecio leucanthemifolia covering more level spots, mixed with a variety of small Leguminosæ—Medicago, Ornithopus, Lotus, &c., of common South Italian species. Bellis annua was usual in sunny places, B. sylvestris in more shady ones. Parietaria lusitanica, already in flower, grew among the larger masses of the common species. Of shrubs Anagyris fœtida hung over the damp bed of the stream in full flower, Calycotome spinosa was common on dry banks; Cytisus triflorus, Erica mediterranea and Arbutus Unedo formed a thicket in the lower parts of the valley; while higher up stunted Stone Pines and dwarf Rosemary clung to the gravelly conglomerate. The only Anemone was hortensis, the only Orchid, Orchis Morio. Cyclamen vernum grew among the latest Violets on the shady side of the valley, and a single flower of Romulea Bulbocodium represented the whole bulbous flora.

Next day, February 29, during the stay of the steamer at Catania, I found on the north side of the town a very fertile tract of ground covered with gardens and Olive yards. Waste corners were full of Asphodelus ramosus and the smaller A. fistulosus, both just beginning to flower. Silene colorata dyed the ground as at Messina, but its companion there, Senecio leucanthemifolia, was absent here, in fact, replaced by the much less common S. squalida, so well known as growing far away from its natural habitat, at Oxford and in Devonshire.

As I advanced, this luxuriant vegetation stopped abruptly. On one side of a wall were the vigorous spring green Lupines in flower under the Olives and Peach trees hanging their clouds of pink in the air, on the other side a rugged waste of black cinders. The lava stream, for such it was, though here and there spotted with grey lichens, seemed as bare of everything green as on the day when it flowed down from Etna, almost exactly 500 years ago, in 1381. On closer examination a few patches of vegetable life could be made out, a stunted bush or two of Spartium, a few grasses and Spurges, and a single flower, Arabis Thaliana; but the general aspect of the lava was one of utter desolation, even heightened by the bright sunshine which had no power over it, while inspiring life in everything else. Cactus Opuntia had here and there established itself on the edge of the lava, and its dull masses of uncouthly jointed branches formed, as it were, a natural transition from the barrenness of the lava to the fertility of the adjoining fields.

On the following morning at daybreak we entered

the harbour of Valetta. No scene could be more picturesquely beautiful. The massive houses of the town rise in rows above rocky points crowned with bastions and batteries, while the harbour winding far into the land is diversified by side creeks opening into it from various directions. Here there is ample room for all the varied shipping, sail and steam, commercial and warlike, which, even packed in the closest order, would more than fill most other ports. Having landed, I was not long in leaving the town, but soon made the discovery that Malta is no paradise for the botanist. The population is so dense and the cultivation so thorough, that there is very little waste ground, while the white sandstone of which the whole island is composed is too uniform in structure to promise much variety in the vegetation which it supports. The glacis, indeed, which opens out on the land side of the town, was brilliant with great masses of Chrysanthemum coronarium, Silene colorata, Diplotaxis ericoides, &c., but there was nothing that was not quite familiar to an eye accustomed to the South Italian flora. The great enemy of vegetation in Malta is the violence of the winds which blow over the island; consequently, to protect the crops as far as possible, the fields are made small and all surrounded by high walls, often rising to 7 or 8 feet, so that from a distance nothing green can be seen, and the whole island looks like a huge stone quarry. And yet it is really very fertile: enormous crops of Wheat are raised, Maltese Potatos are famous, and I saw fields of Hedysarum coronarium, with the plants over a yard high, and having stems almost stout enough for walking-sticks. Many Oranges and Lemons are also grown, but as the trees are all carefully protected by walls, one may pass from one end of the island to the other without becoming aware of their existence. The only tree, if tree it can be called, is the Carob, Ceratonia Siliqua; this forms round masses 10 to 15 feet high with twice that diameter, the branches twisting in every direction and touching the ground all round. Many of these overgrown bushes seem to be of great age, and they are said to bear large crops of the Bean, which is valuable as food for cattle. The feature in the Maltese flora which first strikes the attention is the extraordinary abundance of Oxalis cernua, which is found everywhere by the roadside and even as a troublesome weed in the fields. And it is remarkable that the double flowered variety is almost as common as the single. The numerous minute bulbils have so many opportunities of spreading that propagation by seed is superfluous. Among the old quarries I found a tolerably luxuriant spring vegetation, Lathyrus Aphaca and articulatus, Lotus purpureus, edulis, and ornithopodioides; Trifolium stellatum and nigrescens, Arthrolobium scorpioides, Astragalus hamosus and several Medicagos, but almost the only plant which could not be reckoned among the common ones of Central and Southern Italy, was Hippocrepis multisiliquosa—not as I had previously seen it, a slender weed of 4 or 5 inches, but a stout fodder-plant reaching 1 foot or 1½ foot in height. The Botanical Garden was in a state of the most pitiable poverty and neglect. A recent change however in the holder of the University chair will, it is expected, not be long in making its influence felt here. In the meantime, I could form some idea of the difficulties of gardening in Malta, by seeing small plants of Magnolia, Aucuba, Retinospora, &c., protected from the wind by tall cylinders of basketwork, and even so presenting anything but a thriving appearance. The Governor's garden at Sant Antonio, 3 miles inland, is famous for its Oranges and Lemons. Though it is of no great size, its produce fetches annually from £250 to £300, the average wholesale price of the fruit being about 2*d.* a dozen. A small garden attached to the house was interesting from the size and luxuriance of some of the exotic plants which it contained. Ficus elastica, 20 or 25 feet high, with a trunk 8 or 10 inches across; equally large Erythrinas; fine plants of Cycas; bearing fruit, Sparmannia africana and Polygala capensis, very luxuriant, and covered with flowers; Bignonia capensis, never out of flower; Bougainvillea, with its masses of bracts of the most intense purple; above all Stephanotis floribunda, covering one side of the house and, as I was assured by the intelligent gardener, Mr. Bonavia, flowering profusely every autumn. And yet the past winter has even at Malta been unusually severe. I noticed that in many situations Schinus Molle had suffered almost as much as at Rome, more, however, in all probability, from the wind than from the actual cold.

During my four days' stay in Malta I collected rather more than 100 species, but there was not one among them which is not also found in Italy. A more remarkable point is that I did not find a single bulb of any kind. After the abounding bulb vegetation of an Italian spring—Crocus, Bulbocodium, Scilla, Muscari, Ornithogalum, &c.—this seems surprising. Neither were there any Orchids. In fact, with the exception of Asphodelus ramosus and Arisarum, with half a dozen grasses, I found no Monocotyledons at all. It is of course impossible from such a mere glance to form a judgment of a flora, particularly so early in the spring, still the fact remains that out of more than 100 plants only eight were monocotyledonous. *Visitor.*

Notices of Books.

Pathologie des Poissons; *traité des Maladies des Monstruosités et des Anomalies des Œufs et des Embryons.* Par Michel Girdwoyn. Paris: Rothschild. London: Dulau. (*Diseases of Fish.*)

This is a valuable treatise, handsomely got up and illustrated with eleven large folio plates. The various diseases which attack the egg, the embryo, and the adult fish are briefly described, their causes explained, and the appropriate remedies detailed. So far as we are concerned, the section of most interest is that relating to vegetable parasites. The Achlya prolifera is a fungus which attacks only diseased eggs. The only means of preventing the access of this fungus is to keep the water scrupulously pure by removing all diseased fish or dead eggs. The water should be kept in motion, at a temperature of 4° C. above zero, and well aërated.

The Saprolegnia, which attacks the young fish, is probably the same fungus as that which attacks the eggs, and its history is well expounded in these columns, together with some excellent woodcuts, by Mr. Worthington Smith, in 1878 (May 4). The section relating to monstrous conditions is treated very meagrely considering how great is the interest of such phenonema. From a practical point of view, however, such monsters are anything but desirable, and hence probably the brevity of the chaper on this subject—a chapter supplemented by numerous valuable illustrations. We recommend the book to those interested in fish culture as an unpretending but valuable treatise, the illustrations to which are especially useful.

La Pisciculture, par M. Jules Pizzetta, et **l'Ostreiculture en France**, par M. de Bon. (*Fish and Oyster Culture.*) Paris: Rothschild. London: Dulau.

This is one of a series of useful little manuals which we owe to the same publisher. The subject is not one which we can treat in detail in these columns, so that we must confine ourselves to the mention of the principal subjects handled in this volume, viz., the history of the subject, the structure of fishes in general, practical fish culture, the collection and fertilisation of eggs, incubation, hatching, treatment of the young fry, dissemination of fish, industrial fish culture, fishing, description of various sea and fresh-water fish, crayfish, and leeches. Oysters are treated in the same manner, and the work ends with an account of the laws made to regulate the fisheries in France. We recommend the book to the attention of those interested in this source of wealth and pleasure.

—— *On the Frost of December*, 1879, *over the British Isles.* By Wm. Marriott.—It is evident that the weather of 1879 will not lack for historians. The tale they have to tell is, for the most part, uniform, though as to plants there seems to be considerable variation. In Berwickshire, at Blackadder, the thermometer on December 4 fell to −23°, 23° below zero, a statement almost incredible, but one that is sufficiently verified. Peach trees were killed to the roots, Cherry Laurels, Portugal Laurels, Rhododendrons, many Hollies, Wellingtonias, Araucarias, Deodars all killed. At Portpatrick —20° were registered. The only comparatively mild districts were the West and South of Ireland and the extreme South-west of England. The documents we have cited will be studied with interest in connection with the records of the effects on plants which will not be fully visible till summer is well advanced.

Garden Operations.

FLOWER GARDEN, ETC.

Flowering Trees and Shrubs. — Whether it be the long dreary winter through which we have passed that has given one a keener relish for the beautiful in the vegetable world, or whether it be attributable to previous *nonchalance* in the matter, certain it is that to me these have never appeared so beautiful as they are this season, and the enjoyment of them has led to the determination to increase their number as soon as the planting season again comes round. I have made especial note of the double-flowered Gorse (Ulex europæa flore-pleno), the Almond (Amygdalus sibirica), the flowering Currant (Ribes sanguineum), the wild Cherry (Cerasus Avium), and Berberis dulcis. These are all now in fine flower, and will very shortly be succeeded by Laburnums, Lilacs, Hawthorns, and several other species, which, if planted in large numbers, either in clumps by themselves or singly on the lawn, or as standards in beds of Rhododendrons and other evergreens, might appropriately be designated as but the development of spring flower gardening, unaccompanied with any of the anxiety and labour of spring flower gardening in the ordinary acceptation of that term. At any rate, it will be generally conceded that of recent years the planting of such kinds of shrubs and other deciduous trees has been neglected by reason of the many new introductions amongst evergreens and Conifers—fashion, unfortunately, having domination in gardening as in most other matters.

Hardy Fernery and Rock Garden. — Remove all dead fronds and the winter's mulching; give additional soil to all that require that assistance; and any that have yet to be planted should be done forthwith. In planting well consolidate the soil about the roots, and, till they are established, artificial watering will be necessary. If the soil has been brought from ground in which the common Bracken (Pteris aquilina) has been growing, care will be requisite to pick out every particle of root, or it will soon smother the weaker-growing Ferns; and the same remark will apply to Couch-grass, which usually abounds in such soils. In the rock garden some of the earlier flowering plants, such as Arabis albida and Saxifraga crassifolia, should, for neatness' sake, have their old flower-stems cut off, and seedling weeds be checked in growth by breaking the bare spaces of soil with a handfork. As a rule, formal edgings to walks in such gardens are undesirable and out of place, but where such must be had, Sedum glaucum is about the most appropriate plant for the purpose I have ever seen used. It looks best planted about 4 inches wide. Aubrietia Campbellii, Omphalodes verna, Myosotis dissitiflora, Anemone apennina, and Alyssum saxatile, are among the most showy of the plants now in bloom, and are of the easiest culture.

Annuals and Biennials. — Thin out seedlings of these that were sown in the open ground, and guard them from slugs by dustings of fresh lime, or by laying down small patches of bran, which they soon find out, and late at night, or in early morning, may be caught in the act of purloining the same. Prick out in frames, or sheltered spots in the garden, Wallflowers, Asters, Stocks, Everlastings, Sweet Williams, Sweet Sultan, &c. Make another sowing of Mignonette and Sweet Peas; stake those that were first sown, and also stick Carnations, Pyrethrums, Dielytras, Pæonies, and all similar plants that require such supports. The pressure of work is now so great that such little jobs as these are apt to get put off till too late, and so the plants suffer.

Bedding Plants.—Where spring bedding is not practised, the beds being vacant, several of the hardier kinds of summer bedding plants may be at once planted. Pansies, Violas, Gnaphalium lanatum, Calceolarias, and Verbenas, may all be safely transferred to permanent quarters. A slight protection for the three last mentioned kinds may be requisite, such as that afforded by Yew, or other evergreen spray. Lobelias, Petunias, and Ageratums may be planted out in turf-pits, and covered up nightly. This plan sets pots and boxes at liberty, and saves an immensity of labour in watering. Pelargoniums, too, ought now to be got out, and be placed in a convenient sheltered spot, where if needed some slight protection may be applied. The space thus afforded will admit of Iresine, Coleus, and other tender kinds being potted off, and grown on as rapidly as possible consistent with sturdiness; for growth is so slow when first planted that to obtain immediate effect they should be planted closely together. Propagation of these may still go on, such late struck plants being the best for working out geometrical designs, for which purpose also there should be plenty of Pyrethrum Golden Feather—one of the most accommodating of plants—which, if sown thinly in hand-lights, or even on a warm border in the open, gives no further trouble. One is sometimes

apt to wish that it was more difficult to raise, seeing that in so many gardens it is the supreme plant, imparting to the garden, when used in such profusion, an air of vulgarity, and effectually proving that it is possible to have "too much of a good thing." *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

So far as can be seen into the future at present, the prospects of a crop of hardy fruit remain unchanged from what they were a fortnight ago. Upon the whole, however, growth has been slow—not vigorous, but hardy looking and healthy. This satisfactory condition is entirely owing to the steady dry atmosphere of the past month. A few warm showers accompanied by bright sunshine would have excited the trees into full action, and propelled the rising sap to flow in streams into the perpendicular branches. A period of cold and drought succeeding such conditions would then have brought black and greenfly in shoals, which, owing to the softness of the growth, would have been difficult to checkmate effectually. All these troubles are so far saved, and the sap in the trees having been set in motion slowly and regularly, and the young growths being unusually hardy, the prevention of the attacks of insects will be all the more easily accomplished.

Cherries occupying south situations have set abundantly, but there are already symptoms that large quantities will turn yellow and drop. The protection is now reduced to a very scanty covering of fishing-net, which will be kept on a little longer until the young leaves outgrow the softness which was rendered unavoidable by covering. It is quite as important to shield the young shoots of fruit trees, especially those that have been lately basking under cover of thick fir-boughs and other similar materials, as it is to shelter the blossoms. The latter are fed by the former, and the young fruits can only progress according to the health in which the vital power of supply is kept up. Standard Cherries, Pears, Plums, and Apples now in full flower should be well provided for by having an abundance of netting, tiffany, or branches ready should a sudden change occur.

The pinching and disbudding of Apricots, Peaches, and Nectarines will have to be undertaken vigorously before the shoots grow too long or get overcrowded. Apricots are likely to be very scarce upon open walls, and when growth gets into full swing there will be some difficulty in keeping the trees in a state of fertility for next year. When trees are bearing a full crop of fruit the young growths are usually of moderate size and regular; lacking this timely pinching and disbudding is the best remedy. Allowing shoots to grow 1 foot long or more and then removing them is not the way to conserve strength or infuse vigour into weakly branches. In order therefore to retain an equal proportion of vigour in all parts of a tree the base must always be kept right by encouraging clean healthy shoots from the very base of the branches produced from the leader and another from the extremity of the same shoot. Any number of intervening shoots may be pinched and made into fruiting spurs, but anything approaching overcrowding is but a useless waste of vigour that by timely attention may be diverted into weaker channels by which a fair equilibrium is struck in the motion of the sap, and shoots of moderate and equal size are distributed all over the tree. When green or black fly are discovered no effort should be spared to dislodge them upon their first appearance, by using any of the insecticides so frequently recommended. A solution of soft-soap diluted in water, at the rate of 4 oz. to the gallon, is the only insecticide except paraffin that is used here. Choose a fine afternoon for the operation, and do it sufficiently early to allow the foliage to get dry before dark if the nights are at all cold. *W. Hinds, Canford.*

FRUIT HOUSES.

Melons. — For the flowering, setting, swelling off and maturation of early Melons the seasonable weather with which we have been favoured during the past couple of months has been everything that could be desired. Owing, therefore, to these favourable circumstances, the fruits are ripening somewhat earlier than usual (we cut our first fruit on the 22d ult.) this season—an event of no small importance in a dessert-forming point of view at a time of year when other choice hothouse fruits are comparatively scarce. Under these circumstances—reiterating my remarks in last Melon Calendar—it will be necessary, absolutely necessary, to maintain a drier and more airy atmosphere in houses in which the fruits are ripe and ripening, in order to ensure good-flavoured fruit. Hence the advisability of leaving a little air on at night, inasmuch as pent-up air is antagonistic to the high flavouring and colouring of fruit in general—a fact well-known to all practical gardeners. Maintain a night temperature of 70°, and put a little air on at 75° in successional houses, and add thereto as the temperature increases and until it has reached 85° or 90°, reducing it as the decline of the sun's power or other circumstances require it, finally shutting up at from 3 to half-past 3 on bright afternoons, with plenty of atmospheric moisture in the houses. Add some more soil to the hillocks as the roots push through the sides of the mounds, which must be repeated at intervals, *i.e.*, as the roots push through the soil, until the allotted space is filled. In no case allow young plants intended for planting to become pot-bound before being so planted, for by so doing they become stunted and rarely make a kindly growth afterwards. Therefore, under these circumstances, should young plants be likely to get pot-bound before the pits and frames for which they are intended are ready, they should be shifted into pots a couple of sizes larger than those in which they are at present growing. *H. W. Ward, Longford Castle.*

Figs.

The fruit in the early house, which is as a rule furnished from trees in large pots, is now ripening very fast, and on this account the supply of moisture will have to be reduced, while ventilation may be increased. Great care and judgment will have to be exercised in the management of the trees, as, owing to the fact that they are laden with fruit in every stage of growth, the daily routine must meet the wants of the succession as well as the ripening crop. In our own early house the pots, which are now surrounded with a mass of new roots embedded in virgin soil, receive plentiful supplies of warm water, the surface of the plunging material and the lower parts of the trees are regularly syringed, and the whole of the trees are well washed overhead immediately after the ripe fruit has been closely gathered. This occasional washing assists in restoring the exhausted energies of the trees, keeps them free from red-spider, and at the same time keeps the succession crop moving forward. Fire-heat is of course necessary, and a few of the strongest lateral growths require stopping and tying aside, as good Figs cannot be obtained without a free circulation of warm air, and exposure of the fruit to sun and light. Although the nights have been very cold throughout the past month, the days have been bright and bracing, and under these favourable conditions succession crops have made rapid progress. If not already stopped and tied down, no time should be lost in getting this done, as the fruit will soon begin to show signs of swelling for ripening, and if, as is often the case in succession houses, the trees have set a very heavy crop, a general thinning should be made as the work proceeds. To suppose that a tree, be it Fig, Peach, or any other kind of fruit, is more likely to mature a crop, by being oppressed with a load that would suffice for two is a great mistake, and yet we often see the Fig above all other fruits treated in this way, the result being certain loss of quality, and very often the loss of the entire crop of fruit. The general routine in the succession houses is good root feeding with tepid liquid, or clear water, through a heavy mulching, plenty of heat, air, and a good syringing twice a day—the first time when the temperature is beginning to rise, and again in the afternoon after closing with sun-heat that will raise it to 85° or 90°. Get pot trees intended for next year's forcing well advanced, in order that they may have a long and complete rest before they are wanted. By constant stopping and feeding young plants may be kept growing for a considerable time, and they soon make large trees; but size is gained at the expense of fruitfulness, and on this account a small tree thoroughly ripened and rested is more portable, prolific, and profitable. *W. Coleman, Eastnor Castle Gardens.*

Ridge Cucumbers.

For these we make a trench as long as may be required, 5 feet wide and 18 inches deep, which we fill with long stable dung and leaves—principally the latter—mixed together, and raised about 2 feet higher than the surface, the whole being well trodden as the work proceeds, after which it is covered with the ordinary garden soil. Then we make mounds at 5 feet apart upon the centre of the ridge of prepared soil, on which we place handlights, they having been previously washed, into which our Cucumber vines are planted, and the soil pressed firmly about them. After which they are shaded for a few days during bright sunshine until they have established themselves, and are covered up at night with mats. On bright afternoons the plants should be damped with tepid water and the lights put on. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

Stoves.—Except in extensive gardening establishments, it often occurs that the whole collection of stove plants has to be grown in one house without any compartments or divisions, and where this is the case it is a difficult matter to treat the several subjects according to their requirements, for although the heat and atmospheric conditions may suit very well, shade is a necessity to some, while others need the greater part of the sunlight we get at this season. Among those that enjoy, or are improved in the colour of their foliage by the solar rays, are the Crotons and Dracænas, the leaves of which are brightened by more exposure than they generally get, and the same may be said of Caladiums, which are much stiffened and strengthened in the same way, and when of thicker texture they stand better, and are consequently far more useful for table and other decorative purposes to which they may be put. In arranging these plants and others of a like character, they should therefore be so placed as to have as favoured a position as possible, and if elevated on inverted pots with their heads above others, they will do much to break up and relieve the uniformity of the surface, and be a great attraction to the eye by affording something pleasing for it to rest on. Now that growth is active, it is an important matter, when closing for the afternoon, to see that the pathways are well damped down, and a thorough syringing with clear tepid-water given, and the same again early in the morning of bright days, which, with a proper amount of root moisture, will go far to ward off thrips, red spider, and other insects.

What aids to generate these pests more than anything else is the allowing the pipes to be hot during the day, which brings about such a rapid displacement of the air within as to cause it to become parched, a state that is highly inimical to the tender foliage, as may readily be seen by its flagged and distressed appearance under such circumstances. The fires should therefore be stopped dead back till 2 o'clock or so, and then started briskly, to assist in raising the temperature, which, as night closes, ought to be allowed to fall again gradually till in the morning it stands at something like 70°, a degree of heat quite enough for the present. Young stock for winter blooming will soon do best in pits that are deep enough to hold a little fermenting material, in which plunged they may be kept much more uniform in regard to moisture at the roots, and the vapour arising from the dung, leaves, or tan is very congenial to the plants, which always luxuriate when it is present. Gardenias are particularly fond of it, and as these are generally troublesome among others where they cannot be repeatedly seen to and got at to arrest the progress of mealy-bug, I would advise their being at once put into quarters of this kind by themselves, where, with an occasional application of paraffin, in the proportion of a wineglassful to 4 gallons of water, and heavy syringings daily, these pests may be eradicated. By growing Gardenias in this way during the summer, with little or no shade, and resting them in the autumn by cool treatment, the young wood ripens up well, and produces flowers in great quantities at a time when they are of most value for cutting.

There are few stoves that do not contain at least one or two of that most useful and quaint-looking of all plants, Anthurium Scherzerianum, which from the exceedingly thick texture of its leaves and great substance of its flowers, is quite capable just now of withstanding a lower temperature than it gets in those structures, and although it may suffer in an ordinary greenhouse with air playing on it, it will be quite safe in a room, where, stood in a window recess with a Spiræa on each side its scarlet blooms show up to the greatest advantage, and last a long time in perfection. Scarcely, if at all inferior to the above-named for similar work and for general decorative purposes during the summer, is the Scutellaria Mocinana, the flower-heads of which are most striking in the rich contrast of colour they afford, and any one not having plants of this Skullcap should get it and start cuttings, which in moist heat root quickly, and if potted on soon make neat little specimens. Being very subject to red-spider it is necessary to syringe the leaves freely to keep then clean, but if grown in a moist frame, with the aid of fermenting material, along with Balsams and such-like things, the marauders alluded to seldom infest them. Light soil, such as a mixture of peat and loam, or the latter and leaf-mould, suits this Scutellaria best, which, when it begins to bloom, is much benefited by liquid manure.

It is high time that Poinsettias were cut back and gently started by placing them where they can be damped overhead, which will cause the buds to swell, when a little water may be given to plump them up previous to shaking them out of the old earth and repotting in fresh soil. The tops pruned off may be used for propagating, as, made into lengths with a couple of eyes, and inserted in sharp sand in strong heat under a bell-glass or other cover to keep them close, they strike readily, and make strong shoots, that bear finer bracts than the old plants, as do also those that are taken off with a heel after they start, and get about 2 or 3 inches long. Many growers prefer these, but in the hands of amateurs less skilled the others will be found to give the least trouble. Gesneras, too, so useful for the winter, ought now to, be set to work by picking out all the strongest tubers and laying them in pans of moist leaf-mould, to be placed in a Melon frame; by-and-by they can be potted singly, and brought on as required. Should the stock of Achimenes be short, the tops of any taken off and inserted thinly will root soon and flower well in the autumn, as will also Gloxinias raised now from seed. *J. Sheppard, Woolverstone Park.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	May 3	Sale of Established and Imported Orchids, at the Auction Mart, by Protheroe & Morris.
Tuesday,	May 4	Sale at the Mart of a Freehold Estate at Walton-on-Thames, by Debenham & Tewson.
		Sale at the Mart of a House and Garden at Ventnor, by Debenham & Tewson.
Wednesday,	May 5	Sale of Imported Orchids, at Stevens' Rooms.
Thursday,	May 6	Meeting of the Linnean Society, at 8 P.M.
		Sale of 400 lots of Natural History Specimens, at Stevens' Rooms.
Friday,	May 7	Sale of the valuable Library of the late Mr. Waterhouse, at Stevens' Rooms.

It is quite time that our horticulturists followed the example of their Belgian friends, and bestirred themselves to protest against the stupid and futile regulations enacted by some foreign Governments, and, we regret to add, some British colonies, in reference to the Phylloxera. The object is, of course, praiseworthy, but in seeking to avoid one evil the Governments in question are quite gratuitously inflicting others. It may be quite necessary to enact stringent regulations in the case of Vines, and of plants coming from districts known to be infested with Phylloxera; but, on the other hand, it is quite certain that in those countries where Phylloxera has already got a footing—as in France, Switzerland, Italy—no fiscal enactments will prevent its spread. Again, it is well known that the insect will live only on Vines. What greater absurdity can be perpetrated than that of the Italian Government, which prohibited the introduction from Borneo of tubers of the gigantic Aroid mentioned in our columns last year, or than that which quite recently prevented Professor Balfour from landing at Brindisi a case full of succulents, Stapelias, &c., from Socotra!

We have already published the text of the Convention so far as regards Portugal, Germany, France, Servia, and Switzerland; Italy, Spain, and Austria have not ratified the Convention, because, as it appears, its terms are not strong enough to satisfy their exigencies. It is clear that these measures may prove the absolute ruin of some traders and some branches of horticulture, as well as most detrimental to science. If this were necessary we could only acquiesce, but it is, as we have often pointed out, not only unnecessary but futile; and therefore it is incumbent on those concerned to take action in the matter without delay, unless they wish to be stricken with paralysis. Of course no one would complain of any reasonable precautions, it is only of those whose absurdity has been again and again pointed out that we have any ground of complaint.

Representations have been made to our Horticultural Society through its Scientific Committee, who in this matter are discharging a duty which their knowledge and position impose on them, but they must be backed up by all those interested in the transit and introduction of plants.

It may be well to add that those States abovementioned which have ratified the Convention, permit the introduction of cut flowers (such as botanical specimens), kitchen-garden produce, seeds, and fruits; but plants, trees, and other products of gardens, conservatories, &c., can only be admitted under certain irksome regulations, through certain appointed channels, and under conditions fatal to the life of many plants, if not of all. In the case of those States which have not ratified the Convention, of which Italy and Spain may be mentioned as the most important, it would seem that living plants, or parts of plants, may be arbitrarily prevented from access or transit. The necessity for action is great, and it is immediate.

—— Chrysanthemum frutescens Etoile d'Or (fig. 99). — Mr. Howard, of Southgate, has recently shown some nice plants of this new variety, showing how effective it is for conservatory decoration or for bedding purposes in summer. It blooms freely when of a small size, so that it promises to be one of our most useuseful decorative plants for general purposes. The plant is a seedling from the well-known Chrysanthemum (Pyrethrum) frutescens, so much in favour with the French, but the flowers are as a rule considerably larger and of a pale sulphur-yellow. It is said to have been raised by the late M. Nicholas Desgeorges, a gardener at Golfe Juan, near Cannes. His widow disposed of the plant to M. Nabonnaud, nurseryman, of Golfe Juan, by whom it was "sent out" (see *Gardeners' Chronicle*, vol. xii., 1879, p. 594, and vol. xiii., 1880, pp. 242 and 308). The species from which it is supposed to have originated, C. frutescens, is a native of the Canary Islands, and was introduced as long ago as 1699.

—— Herbaceous Calceolarias.—Mr. Cannell sends us a quantity of cut flowers of a remarkably good strain of herbaceous Calceolaria, in which the flowers are not only very varied in colour, the majority being prettily spotted; but they are also large in size and well rounded in form, and thus represent a strain that may be highly commended for its quality. With them came huge bunches of his winter crop of Zonal Pelargonium flowers, as brilliant and effective as they have been throughout the winter shows and meetings at South Kensington.

—— Herbarium, Kew.—We are requested by the Civil Service Commission to notify that an open competitive examination for the situation of second assistant in the Herbarium, Royal Gardens, Kew, will be held on May 25 and following days. The examination will include handwriting, orthography, elementary arithmetic, elements of systematic and structural botany, naming of plants by the British Flora. Further particulars may be obtained on application to the Secretary, Civil Service Commission, London, S.W.

—— The Aroids, as a group, have not hitherto had many special workers in this country, though abroad several important and finely illustrated monographs have appeared relating to them. It is with the more pleasure, then, that we record the first instalment of the labours of Mr. N. E. Brown, of the Kew Herbarium, in a valuable contribution on some new Aroideæ, with observations on other known forms, read at the last meeting of the Linnean Society (April 15). Of new species several interesting Bornean forms collected by Mr. Burbidge and others are described. While in general following Professor Engler, Mr. Brown has nevertheless given preference to the classification of Schott as being the most natural arrangement. Mr. Brown's drawings and dissections show most accurate painstaking work, and it is to be hoped by its continuance the riches of our Kew collection may elucidate many points in the history of the Aroids which have escaped the notice of our less favourably circumstanced Continental botanists.

—— Fruit Prizes.—At the last Court of the Worshipful Company of Fruiterers a prize of £10 10s., to be awarded for fruit, was placed at the disposal of the Royal Botanic Society. This prize will be competed for at the exhibition in the Society's garden, Regent's Park, on June 16.

—— Baillon's "Histoire des Plantes."—This ambitious publication has recently been advanced a step, by the issue of a part containing monographs of the genera of Rubiaceæ (including Cinchonaceæ and Caprifoliaceæ), Valerianaceæ, and Dipsaceæ. Whatever may be said as to M. Baillon's conclusions, there can be but one feeling of astonishment at his patient labour—one feeling of gratitude for the information he has brought together. The typography is good, and the woodcuts excellent as ever. The curious arrest of development, in consequence of which the ovaries of two adjacent flowers remain coherent, is shown to exist in Rubiaceæ, *e.g.*, Morinda, Opercularia, Mitchella, as well as in the more familiarly-known Honeysuckle, Lonicera. The exalted development of the calyx familiar to gardeners in Mussænda occurs even more markedly in Cruckshanksia. Again, while in Carphalea and Phyllomelia we have a large development of calyx, in Valerians and in some Rubiaceæ it is reduced to a minimum. Canephora is remarkable for its flattened flower-stalks, within whose cup-like apex the flowers seem to be imbedded. Adoxa is placed with hesitation in Rubiaceæ next to the Elders and Caprifoils. From a practical point of view the plants mentioned in the present part are of peculiar importance, including, as they do, the Coffee, the Ipecacuanha, here referred to Uragoga, the Cinchonas, the Madders, the Valerians, and many others. As garden plants we have among many others the Ixoras, the Gardenias, the Diervillas, the Honeysuckles, the Luculias, the Bouvardias. With the present part the seventh volume is completed—the first appeared in 1868 — comprising the history of nearly seventy families. The history of the gigantic group of Composites is in preparation.

—— Bougainvillea speciosa. — The grand plant of this splendid Brazilian climber that for years made Swyncombe famous among the Oxford demesnes, has lost much of its original glory, probably owing to age, or some cause over which Mr. Daniels was unable to exercise control. But the species is still glorious in the neighbourhood, for sixteen years ago Mr. W. H. Good, the gardener at Greenlands, Henley-on-Thames, then the residence of Mr. E. Majoribanks, but now that of the Right Hon. W. H. Smith, M.P., brought from Swyncombe a young plant from the parent, then in the full height of its glory, and planted it out in a rather lofty lean-to house now used for growing Ferns, &c. It was planted in the ground against the inside of the house in one of the warmest spots, and here it flourished and threw out two main stems, which in a few years filled the interior of the roof, and during spring and early summer yielded a rich supply of its exquisitely coloured bracts. So dense was the foliage that it was found necessary to cut away one of the two main stems; the remaining one is like that of a young tree, measuring some 15 or 16 inches in circumference. Mr. Good is of opinion that the roots are confined within the house, but the plant flourishes bravely, and though at the present time getting past its best, is yet an object of great and surprising beauty. It deserves a house to itself, for from such a plant as that at Greenlands barrowfuls of the mauve-coloured branches could be cut at one time, so generous is the disposition of this truly magnificent subject.

—— Forest Trees of North America.—We have received from Professor Sargent a preliminary catalogue of the extraordinarily rich tree flora of the United States, which is issued with the object of securing a more complete detailed report on the geographical distribution, botanical characteristics, and economical uses of these plants.

—— Cytisus.—Several specimens of this favourite genus are now in bloom in the Temperate-house at Kew, including C. affinis, with oblong-obovate, nearly glabrous leaflets, and long racemes of flowers; C. Atleeanus, a garden variety, with very small obovate, emarginate, hoary leaflets, and close racemes; C. canariensis, with small obovate, slightly downy leaflets, and close racemes; and C. racemosus, with long narrow, oblong-obovate, emarginate, slightly hoary leaflets, and long racemes of yellow flowers.

—— Galtonia (Hyacinthus) candicans. — When the two noble plants known generally as Hyacinthus candicans and H. princeps were first introduced and were figured and described as Hyacinths most people experienced a kind of shock, and though unwilling to express dissent from so experienced a botanist as Mr. Baker, yet felt that some day or other these two un-Hyacinth-like plants would be turned out of the genus and placed in some other or in a new one founded for their reception. The latter course has been followed by M. Decaisne, who in the last number of the *Flore des Serres* has established the genus Galtonia in honour of Mr. Francis Galton, author of *The Narrative of an Explorer in South Africa*. The species of Galtonia differ from those of Hyacinthus in habit, the form of the flower, and of the ovary, as well as by the seeds in which the cylindrical embryo occupies the whole length of the perisperm.

—— ANTHURIUM ANDREANUM.—We learn from M. ANDRÉ that this striking plant was discovered in the State of Cauca, Colombia (not Choco). In May, 1876, M. ANDRÉ saw the first living specimens, and sent home over forty of them, together with twenty-six other Aroids, a Tillandsia, with blood-red leaves, a Masdevallia with black filiform flower-stems and yellow flowers, some creeping Gesneraceæ with large violet flowers and a red hairy calyx, a Bamboo with silvery pubescence, and many specimens of a gigantic Bromeliad, called provisionally Puya gigantea, the flower-stems of which measured 10 metres in height, and which had at a distance the aspect of telegraph posts. These plants filled ten large cases, but arrived in Europe in such bad condition that M. ANDRÉ, hearing of their low state, had no peace till he could revisit the locality where he had obtained such treasures, and make another effort to secure them. This second attempt, made by the Indians who had accompanied M. ANDRÉ on his first excursion, succeeded better than the first, so that M. ANDRÉ had the satisfaction to receive in Paris in May, 1878, three small cases containing the Anthurium, and which, by arrangement with M. LINDEN, were placed in the hands of the latter for distribution. It is desirable to put these facts on record, as many false and exaggerated statements have been made on the subject. Anthurium Andreanum, as we learn from its discoverer, grows as an epiphyte, or on the soil in the midst of mosses and Selaginellas. Its slender reddish brown rhizomes are creeping, and at the node from which the leaves spring the flower-stalks are developed, erect, thrown well up above the leaves, and each bearing a curious and beautiful corrugated brilliant scarlet spathe. The specimen exhibited in London shows that the plant will also assume a tufted habit like that of A. Scherzerianum. No doubt cultivation will reveal other peculiarities. In the meantime it may be said that the plant grows in a very rainy district in a warm soil, and that its flowers are of long duration. The largest spathe measured by M. ANDRÉ had a length of 12 centimetres, and although the spadix bore ripe fruits, the colour of the spathe was still brilliant. If hybridisation be attempted, the best chances of success would seem to be to cross the plant with others of the Cardiophyllum section, such as A. regale, magnificum, crystallinum, leuconeurum, &c.; but on this point nothing can be advanced with certainty, and a cross is even possible with A. Scherzerianum, which belongs to a different section.

FIG. 99.—PYRETHRUM ETOILE D'OR, FLOWER, PRIMROSE-YELLOW. (SEE P. 560.)

—— ROYAL GARDENS, KEW.—It is pleasant to see the activity displayed in the conduct of this national establishment. A new garden has been laid out expressly for the use of students near the main entrance on Kew Green. As the garden has only been constructed within the last few weeks comparatively little can be done this season, nevertheless a satisfactory beginning has been made. A new staircase

to the principal museum is in course of construction, which will not only afford increased accommodation for access, but additional space for the exhibition of objects. The wood museum has been re-arranged, the more important and instructive objects being brought to the front, while matters of detail are relegated to quarters where they will be available for the use of students. In the T-range great advance has been made in securing small well grown specimens of characteristic plants. There is no reason why botanical specimens should not be well grown as well as others of a more conspicuous character. The old botanic garden style of "leggy" plants of little general interest is gradually being superseded by well grown characteristic plants. The scientific value of the collections is not in the least liable to suffer, as the necessary arrangement for the cultivation and preservation of plants of interest can be made quite consistently with the demands of decorative horticulture. The Palm-stove, with its occupants showing grandeur of form, elegance of outline, and stateliness of aspect, has been improved by the introduction, so to speak, of an undergrowth of noble Aroids and graceful Ferns, while judicious thinning and cutting in has enabled many of the nobler plants to be comparatively isolated. In the Orchid-house the plants are in good health and development. In the Temperate-house the somewhat sombre and massive aspect of the Araucarias, &c., is relieved by brilliant Acacias and lovely Rhododendrons, not to speak of the superb Tree Ferns. A striking effect is produced by the introduction of tall Aralias with tall single stems and long narrow deflexed leaves. In one of the octagons Mr. PEACOCK's Agaves look well. A. Regeli macrodonta is throwing up a noble spike of flowers. Coprosma lucidum, a New Zealand shrub, is laden with its orange berries and young flowers.

—— ORCHIDS AT MESSRS. VEITCH'S.—The following Orchids are now in flower at Messrs. JAMES VEITCH & SONS, Royal Exotic Nursery, King's Road, Chelsea. In the Odontoglossum-house 150 spikes of bloom may be seen.

Aerides Fieldingi
,, rubrum
,, virens
Anguloa Clowesii
Calanthe Dominii ×
,, veratrifolia
Cattleya amethystina
,, Mendelii
,, Mossiæ
,, Regnellii
,, Skinneri
Cymbidium Lowianum
Cypripedium Argus
,, barbatum grandiflorum
,, caudatum
,, concolor
,, Crossianum
,, Harrisianum ×
,, hirsutissimum
,, Lawrenceanum
,, Lowii
,, marmorophyllum ×
,, Sedeni ×
,, selligerum ×
,, spectabile
,, Stonei
,, vernixium ×
,, villosum
Dendrobium Bensoniæ
,, crystallinum
,, Devonianum
,, infundibulum
,, Jamesianum
,, japonicum
,, lasioglossum
,, transparens
,, tortile
Epidendrum cochleatum
,, erectum
,, macrochilum album
,, syringothyrsus
,, vitellinum majus
Huntleya meleagris
Lælia Wolstenholmiæ
Lycaste Skinneri
Masdevallia Backhousiana
,, Harryana
,, ignea
,, ionocharis
Masdevallia Lindeni
,, ochthodes
,, peristeria
,, psittacina
,, Veitchiana
,, xanthina
Odontoglossum Alexandræ
,, Andersonianum
,, Cervantesii
,, cirrosum
,, citrosmum
,, cordatum
,, Hallii
,, hystrix
,, luteo-purpureum
,, maculatum
,, nævium
,, ,, majus
,, nebulosum
,, Pescatorei
,, Phalænopsis
,, pulchellum
,, Roezlii
,, ,, album
,, roseum
,, triumphans
,, vexillarium
Oncidium ampliatum
,, concolor
,, cucullatum maculatum
,, fuscatum
Oncidium leucochilum
,, macranthum
,, Marshalli
,, prætextum
Phalænopsis amabilis
,, grandiflora
,, Luddemanniana
,, Parishii
,, rosea
Restrepia antennifera
,, elegans
,, muscifera
Saccolabium guttatum
,, retusum
Sophronites grandiflora
Trichopilia lepida
Vanda suavis
,, tricolor

—— EPIMEDIUM.—Among herbaceous flowers blooming at this season few are more attractive than the species of this genus. Their foliage is at once singular and elegant, the flowers showy, and of a very curious structure, forming apparent, if not real, exceptions to the normal symmetry. Their geographical distribution is interesting, and their relationship to Berberis and Vines, which no one would guess at first sight, is very close. Among species now in bloom at Kew are E. macranthum, a Japanese species, with purplish sepals, and long white-spurred petals like those of a Columbine, but spreading horizontally; E. alpinum, with orange-yellow flowers; E. pinnatum, with racemes of bright yellow flowers; E. Musschianum, with white flowers with small spurs; E. Perraldianum, with bright yellow flowers; and E. erectum, with white flowers, very like those of E. Musschianum, if it be not the same: the names given are those on the tallies. Close by are their near allies, Podophyllum Emodi, with its speckled, lobed, peltate leaves and white flowers; Jeffersonia diphylla, with its glaucous leaves and flowers of many narrow petals; Sanguinaria canadensis and Podophyllum peltatum—all flowers which should be cultivated by the lover of spring flowers.

—— PEARS.—It is too plainly evident that we shall not have an abundant crop of Pears this year. The moisture and sunlessness of last summer have told more largely and disastrously upon the Pear trees than upon any other standard fruits; there was plenty of wood made, far too much of it to be beneficial, but it was soft and unripened. As a consequence throughout market orchards dead growth of this kind is abundant, and the trees have received a shock that it will take two or three favourable seasons to recover from. Even had this result not followed, the bloom would have been none the less scanty. Fruit-buds were universally lacking, and bloom now is so thin that it is but a mere sprinkling, whilst that which is expanded must be viewed with much distrust, having regard to the nature of the preceding season and the generally lacking maturing power. Of all market Pears the Hessle is one of the hardiest and makes the least wood, but this kind is little better than its neighbours and exhibits but a poverty of blossom. At the best we cannot look for better results than about a one-third average crop. Perhaps that estimate is a sanguine one. Looking at the weakening the trees have received during the past severe winter it is no doubt well that the fruit crop should be a thin one. To carry a full crop and at the same time to recuperate their weakened energies would be too much for the trees, and if a warm summer should enable even the latter need to be accomplished, great good will be done and a solid foundation be laid for the production of valuable crops in years to come.

—— ODONTOGLOSSUM VEXILLARIUM.—Hundreds of flowers of this lovely Orchid (including the rose-coloured variety) are now expanded and in full beauty at Mr. WILLIAM BULL's establishment, King's Road, Chelsea. Several very rare Orchids are also in bloom there at present, such as Odontoglossum hebraicum, O. Andersonianum, O. crispum violaceum, Masdevallia Backhousiana, Masdevallia bella, and many others.

—— THE OTTO GAS ENGINE.—A short time since when inspecting the working of the apparatus for producing the electric light at Dr. SIEMENS' garden we were so struck with the utility of this engine for garden or estate purposes where gas can be procured that we deem it a duty to call the attention of those of our readers to whom such a machine may be of service to this very serviceable engine. It may be used for any purpose for which a steam engine is required—for pumping water, sawing, chaff-cutting, and any of the numerous operations carried on in a country establishment. The great advantages it possesses over a steam engine are these:—It can be set to work immediately, it does not require the services of a skilled workman, but can be managed by a garden labourer, after very short instruction; there is no stoking, it is clean, smokeless and comparatively noiseless. What the relative cost of working may be as compared with that of a steam-engine of the same power we do not know, but from the fact of its being adopted by a large number of business firms all over the country we may assume that financially, as well as on other grounds, these engines possess substantial advantages. In case of fire these engines possess a great advantage over others, inasmuch as they can be set to work at any time without a moment's delay. In general external appearance the engine resembles a small horizontal engine, but the resemblance is only superficial. The cylinder is single acting, open at the front end, and is so arranged that it only completes its cycle of operations once in two complete double strokes. Its method of working is as follows:—The piston in moving forward draws into the cylinder a mixture of air and coal gas, the latter in measured quantity; returning, it compresses this mixture into little more than one-third of its volume, as drawn in at atmospheric pressure; these two operations take up one complete double stroke. As the piston is ready to commence the next stroke the compressed mixture is ignited, and expanding drives the piston before it, while in the second return stroke the burnt gases are expelled from the cylinder, and the whole made ready to start afresh. Work is actually being done on the piston, therefore, only during one quarter of the time it is in motion, the gearing, as well as the work driven, being carried forward by the fly-wheel during the rest of the time." The engine we saw at work was made by Messrs. CROSSLEY BROTHERS, 116, Queen Victoria Street, E.C.

—— BULBOUS PLANTS, &C., AT KEW.—Among others the following species of Tulips may be mentioned as being now in bloom at Kew:—T. præcox, T. elegans, T. suaveolens, T. altaica, T. silvestris, and T. Eichleri. Of Fritillaries, F. Meleagris, our common wild species, and its white variety, F. tenella, tall and graceful in habit; F. ruthenica, F. messinensis, F. involucrata, a very handsome species; F. latifolia, and especially F. pallidiflora, with its stout stem and crowded inflorescence of yellowish angular-cylindric bell-shaped flowers. Helonias bullata, with its stout stem of pink flowers, reminds one of an Orchis, but its flowers are more like those of a Squill. It is an old friend, as is also the Uvularia grandiflora, with its nodding clusters of clear yellow flowers. Trillium grandiflorum, with its noble white flowers, is very beautiful. Of Muscaris there are several in bloom, including Heldreichii, with globose, indigo-coloured flowers; Szovitzianum, with cobalt-blue cylindric flowers; pallens, with very small whitish flowers; botryoides, with turbinate flowers of a bright cobalt-blue, and of which there is a white variety. M. neglectus is a very handsome species, the lower flowers oblong ventricose, contracted at the throat, black-blue, the upper ones paler; the leaves are narrow, linear, and channelled.

—— PUBLICATIONS RECEIVED.—*Transactions of the Scottish Arboricultural Society.—Science Gossip.—Cape Argus.—Catalogue of Forest Trees of North America.—Time.—Mats and Floor Coverings.—Agricultural Students' Gazette.—The Potato Disease, and How to Prevent it*, by FREDERICK BRAVENDER.—*The Cobham Journals*, edited by E. A. ORMEROD (Stanford).

—— THE WEATHER.—General remarks on the weather during the week ending April 26, issued by the Meteorological Office, London:—The weather during this period has been generally fine and bright; thunderstorms, however, were experienced at some of our inland stations either on the 21st or 25th, and very heavy rains occurred in Ireland and Scotland on the 21st. The temperature was equal to the mean in "Scotland, E.," "England, N.E.," and "England, E.," but a little below it in all other districts. The highest of the maxima (66° at Oxford and Nottingham) were registered on the 20th, and the lowest of the maxima either on the 23d or 26th. The rainfall was considerably more than the mean in Ireland and Scotland, equal to the mean in the north-west and north-east of England, and less than the mean value in all other places. "Bright sunshine" shows a marked increase, and the number of hours shows considerable uniformity over the kingdom. The sun was observed the least in "England, S.W.," and most in "Scotland, E.," where the number of hours during which it could be seen was only about a third of the time it was above the horizon. The wind was south-westerly during the first two days, westerly or west-north-westerly on the 22d, 23d, and 24th, and northerly during the remainder of the period. In force it was generally moderate or fresh, but on the 21st the south-westerly wind blew strongly, or with the force of a gale, on all except our south-east coasts.

—— GARDENING APPOINTMENTS.—Mr. BRANDER, late principal foreman to Mr. JAMIESON, gardener to the Earl of CRAWFORD at Haigh Hall, Wigan, and for the last twelvemonths gardener at Skene House, has been appointed gardener to the Earl of FYFE, Duff House, Aberdeenshire, in room of the deceased Mr. MACKIE.—Mr. JOSEPH MOIR, late foreman at Dunecht, Aberdeenshire, has been appointed gardener to Mrs. CHRISTER, Brooklands, Bromfield, Essex.—Mr. JAMES SMITH, of the Gardens, Highfield, near Leek, has been appointed head gardener to Mrs. RICHARDSON, King's Standing, Burton-on-Trent.

Home Correspondence.

The Grape Louse.—The Phylloxera of the Vine (for there are other species) lives only on the Vine, either on the roots, or (as a form) in galls on the leaves. To prohibit the importation, or exportation, as the case may be, of all living plants, is, to my mind, simply giving way to panic without judgment, and judgment is generally at a discount when panic arises. As to the earth about living plants, it could be suspicious only if taken from an infected vineyard or vinery. A far more serious matter, especially concerning inter-European infection, and I think overlooked in all restrictive or prohibitive enactions, is that of the earth-ballast commonly carried by ships. This is discharged at some loading port. Supposing —for the sake of argument—a vessel in ballast from Marseilles to an Italian port obtained that ballast from some infected district, there would be more danger of direct importation of Phylloxera than in any amount of plants sent out by horticulturists. *R. McLachlan, F.R.S.*

—— British horticulturists will have learned from the editorial article in the *Gardeners' Chronicle* for April 24, that a Convention has been signed by the representatives of Germany, Austria, Switzerland, Italy, France, Spain, and Portugal, having for its object the prevention of the spread of the Phylloxera in their respective States. Of these States, the Governments of Italy and Spain prohibit absolutely the introduction of any plants whatever into those countries. An equally rigorous exclusion is in force in Austria. Among the restrictive conditions included in the articles agreed upon by the other high contracting parties are some that cannot fail to act, when enforced, most injurously against the interest of horticulture in this and other countries, and the note of alarm given by the *Gardeners' Chronicle* has not been sounded a moment too soon. We would particularly direct attention to Article 3, which enacts that "Plants, shrubs, products of gardens, nurseries, conservatories, &c., shall be solidly packed; the roots shall be completely divested of soil." It is evident that this amounts to a virtual prohibition of the entry of all stove and greenhouse plants, as well as hardy evergreen trees and shrubs, &c., coming from countries not included in the Convention. The futility and even the absurdity of such a repressive measure are forcibly set forth in the article above referred to. As regards the interests of horticulture it is wantonly supplementing one tremendous evil with another. Our horticultural bretheren in Ghent have already formed a committee charged to watch over and protect by every constitutional means the interests thus seriously threatened. They have memorialised the Belgian Government to avert, or at least to attempt to obtain a modification of those articles of the Convention that menace the most important industry of their ancient town. They appeal to British horticulturists for co-operation. The cause is ours as well as theirs, and no time should be lost in giving a response to the call. Let a committee be formed without delay, and let all willing to support so just a cause send in their names to the Editors of the *Gardeners' Chronicle* at once. Unity is strength; a vigorous and united effort in so urgent a case cannot fail to produce good effects. *James Veitch & Son, Royal Exotic Nursery, Chelsea, April 29.*

—— Horticulturists, not only in this country but in all those affected by the Convention entered into by Germany, France, Italy, Austria, Spain, and Portugal, excluding the introduction of plants into their countries, owe you a debt of gratitude for bringing the subject before the horticultural public, in your leader of last week—a subject of no slight importance, because its effect will be to paralyse an important industry. One naturally feels regret that wine-growing countries should have been devastated with the Phylloxera, but the regulations adopted, instead of preventing or remedying that evil, unnecessarily create another, for, as you plainly state, the obnoxious regulation can have no effect on the introduction or otherwise of Phylloxera, for the simple reason that that pest will absolutely not live on any other plant than the Vine. You probably have seen that a meeting has been held in Belgium, and a petition presented to the Minister there of Foreign Affairs, with the object of getting the Convention modified or rescinded, and that the Ghent deputies are going to bring the subject before the Belgian Parliament; but my principal object in writing is to ask if, while other countries are protecting their industries, nothing can be done in this? Cannot the Royal Horticultural Society, that has pioneered horticulture in times past, do something in such an emergency? Will not the Royal Botanic Society come to the aid of a branch of commerce, it in other ways is nourishing? Cannot a petition be prepared and presented to our Secretary of State for Foreign Affairs, setting forth the gravity of the case? For a regulation, and one, too, that must be futile in its object, that will paralyse an industry not only in this country but in all countries where it flourishes, should be a subject that concerns any Government. How such a Convention as that alluded to can have been signed without consulting authorities capable of advising on the subject is an enigma; professional horticulturists have a considerable grievance against the powers that have so interfered with their occupation, for nothing was known of this Convention until it suddenly burst upon us, and we cannot now at so short a notice withdraw from the Cordilleras of South America, the jungles of India, or the Valley of the Amazon, our collectors who are exploring and seeking for plants, not for one country, but for all countries; indeed the enterprise in scientific horticulture absolutely requires international commerce for its existence. I do therefore hope that something will be done to avert the calamity that at present threatens horticulture, and shall be glad to see the subject discussed in your columns. If not possible for the Convention to be annulled, the best course to prevent the injury I have named would be to add to the usual form required by the Customs a declaration that the plants exported have not been grown in or near any place where Phylloxera exists. *William Bull, F.L.S., Chelsea.*

The Winter and the Plants.—This part of the country is about 100 feet above sea level, with a gently sloping south aspect. Owing to the influence of the sea air we seldom get such low temperatures as recorded by some of your correspondents more inland and further north. This may account for things being less injured here than in other localities; the place being well drained and the soil kindly, all tells in favour of the various things in the grounds here. To begin with Camellias in open border with west aspect, there are four large plants of Double White (plena alba) which have this spring shed all their buds, not retaining one; the leaves are a little browned, but not to such an extent as I expected, and they seem now to be pushing their wood-buds stronger than usual, no doubt owing to their not having bloomed. The largest of the four white ones has a circumference of 30 inches at 6 inches above the ground, is 15 feet high, and as much through; the other three are nearly as large. A plant of the old double red, mottled, in the same border, is nearly or quite as large, has stood the winter without any injury; the leaves are as healthy and dark green as usual; it has bloomed fairly, but the flowers are small, and the sun and wind seem to dry and shrivel them up very quickly. There is in the same border a Lady Hume's Blush, which has suffered more than any of the rest, losing more than half its leaves, and setting no buds. In good seasons it flowers profusely, the blooms being as fine as any under glass. There is a fact worth noticing about two large Camellias a little way from the others, which have been planted seventeen years under the drip of a Silver Fir 80 feet high, which killed the Box edging, planted several times. The Camellias have thriven as well here as elsewhere; the leaves look the picture of health. One of the two is Bealii, the other a large red Anemone-flowered variety. On a south aspect is one, Rosa Mundi, which has not flowered as usual, but it is not much injured; concinna, on same aspect but more shaded, has no bloom, but is not in the least injured. Single plants in the pleasure-ground are a little browned, with no bloom on them. The covered way, which is merely a span glazed coping to the wall, on cast-iron front uprights, with south-east aspect: first is a Double White, with no flowers; next is a large plant of single red, with very few flowers; then there is a fine plant of Lady Hume's Blush, which has not been the least injured: it has flowered well, the blooms cut from it being as fine as usual. Donkelaari, close to the last, is profusely covered with bloom, the flowers being nearly as fine as they were in other seasons. Dunlop's americana has a fair amount of good blooms; Hendersoni is also well-flowered and in good health; Bruceana, a fine plant, with fine healthy foliage and some fine flowers; delicatissima, with a quantity of beautifully imbricated white flowers, which have opened better this spring than usual. The various things injured are Aloysia citriodora, Mandevilla suaveolens, Passiflora cœrulea: these three are killed to the ground; Buddleia globosa has stood with only the points of the shoots killed; Arundo Donax is breaking from the bottom; Bambusa Metake and Pampas-grass are uninjured; a large plant of Chimonanthus fragrans has had no flowers this season, though usually well flowered; Magnolia grandiflora is very much browned on walls—of two standards one has the points of the shoots killed; large and small plants of Araucaria imbricata have escaped with no injury; Myrtles are not injured so much as in 1867, when they were killed to the ground, as they were again in 1871. The lowest temperature registered here was in January, 1871, 25°; January, 1879, 20°; January, 1880, 18°. *James Menzies, Gr. to W. R. Fryer, Esq., South Lytchett, Poole.*

Primula Sieboldii.—Both Mr. Llewelyn and Mr. Douglas amply demonstrated at the recent Auricula show by the admirable examples of these Japan Primulas staged by them that there is in them, beyond all other hardy imported Primroses, the making of very effective and pleasing exhibition plants. The comparative failure to produce examples of other species at a given time that could in any way compare with the Primula Sieboldii may perhaps stimulate the committee of the Auricula Society next year to substitute for the class for species, one for this fine Primrose only, as it is evident that it may be relied upon to produce a really showy and well-filled class at the Auricula season. The comparative abundance of varieties, and the ease with which they can be increased and grown, makes this Primula practically everbody's flower, and another year, no doubt, such a class would produce a large competition. There are one or two things connected with Primula Sieboldii that may be worth stating. First, to ensure good and plenty of blooming crowns, the plants must be kept in a cool shady place during the summer, and a robust leaf-growth encouraged. Poor foliage this summer means small crowns and poor flowers next spring. A little weak manure-water may be given occasionally during the growing season, as, after the bloom is past, the pots are, or should be, very full of roots, and these will freely take up moisture. Second, the best heads of bloom are got from plants that have stood two years in the same pots; for, although feeding in the summer is well, there is an evident liking in the roots for the sides of the pot, and to be crowded suits better than too much room. Seven-inch or 24-sized pots are large enough for all useful purposes, whether for exhibition or the decoration of the conservatory. To keep a stock of plants in pots for two years it is desirable to have duplicate stocks of each, because the plants should be broken up and be repotted after the second year, or otherwise the excessive crowding of the crowns will result in starvation. My own rule is to break up the strong pots in the autumn, pick out and pot up singly into small 60's all the very strongest crowns, and repot the weaker ones in bulk in 24's. In the spring some half-dozen of these single plants blocked into a 24 make a nice head of bloom, and these stand unbroken for a second year, when the bloom is abundant, the heads being all that could be expected in a 7-inch pot. Where this arrangement is continued yearly there is alway one-year or two-year pots of plants in bloom. The third thing essential to the production of exhibition specimens is that there should be plenty of light and air to keep the stems firm and erect, and where this is the case little or no support is needed for the blooms. Further, the denser and more robust the foliage, the better is the pot hidden and the ideal of the plant realised. Some very hypercritical persons have charged upon many of these newer Primroses that the colours are too pale or "washy." It is just in the delicacy and refinement of the various tints that so many find their special reasons for liking them; deep and glaring colours are abundant enough in other plants, but these Primulas give tints that are neutral and delicate yet beautiful. Some need more stiffness in the stem, but culture on the one hand, and selection from seedlings of kinds that bear erect flowers will soon remedy those defects. As spring hardy pot plants these Japan Primroses must rank amongst the most charming introductions of recent years. *A. D.*

Mackaya bella.—I am glad to see a notice or two in the *Gardeners' Chronicle* again of Mackaya bella; it is a plant which certainly deserves to be better known and more extensively grown. I scarcely know a plant more lovely than it when in full flower planted in a warm greenhouse, or even as a pot plant. The plant here, from which your illustration was taken in May last, has at the present time about a hundred sprays in flower, and more to come, thus showing that it is a very desirable plant. *Charles Green, The Gardens, Pendell Court, Bletchingly.*

Molinia cœrulea for Paper-making.—My experience of the Melic grass is, that on clay lands it requires great moisture, but on bog it does not, as it grows best on partially drained bogs. I transplanted some roots on to a bog that had had the entire surface removed, and they are growing well. The expense would be heavy. I think, however, what I did was on too small a scale to judge. I have not been able as yet to get any quantity of good seed, but trials that have been made show that it germinates very slowly. In one case the

seeds were soaked in water for thirty hours, then sown in a pot, but it was exactly one month before they came up. In another case the seeds were sown in flannel and water, and though kept in a warm room it was three weeks before they showed any signs of life. I trust that those who have conducted experiments will give us their experience, and that botanists and others will study the habits of the plant. *B. L.*

The Effect of the Past Winter on Vegetables.—The account which I recently furnished you with regarding the deaths, and other injuries more or less fatal inflicted upon hardy plants by the unusual and protracted severity of the past winter following close upon the heels of what, to borrow an editorial phrase, can only be called by courtesy a summer, was so slight in comparison to what would be naturally expected, that the slaughter of vegetables and the utter derangement of rotation amongst important culinary crops may seem difficult to account for by those of your readers who are not accustomed to ponder and think over the *pros* and *cons* of vegetable physiology nor to reason logically upon the inevitable effect that certain conditions must have upon succulent vegetation. To the person who observes the work of Nature with a superficial eye, or to the practical man who bases his decision in these matters chiefly upon analogy and reasons by comparison upon what is no more or less than mechanical routine, it may seem difficult to reconcile results in two cases which, according to previous experience, have not differed so widely, but which upon minute inspection are rendered perfectly clear when allowance is made for the divergence of structure between succulent vegetables and hardy plants and shrubs. In the latter case there is the inherent vigour which was consolidated in the structure of the plant during favourable seasons to sustain it, or in the case of temporary injury there is the work of years, it may be, lying latent in the underground channels (the roots) ready to come into full play whenever a favourable reaction sets in. The majority of esculents, however, being of extremely slender calibre, and their roots and leaves being of annual formation, are indisputably hardy or tender according to the proportion of air and sunshine to which they have been exposed during their short period of growth, and according to the aspect in which they have been grown, as also the nature and condition of the soil in which they have been planted. It may be urged that the same thing occurs amongst other plants and shrubs, as indeed it does so far as the growth of a season is concerned, but no further. One of the most striking features of last year's experience with vegetable crops was the caprice or rather the uncertainty of succession. I had personal reasons for exercising more than ordinary caution in regard to sowing crops to come in at particular seasons, yet it is a singular fact that where I did succeed it was more by good luck or accident than anything else, for in not one single case was any crop fit for use at the time it was originally intended for, notwithstanding that the precaution was taken of making two sowings of most things that were considered of importance. We had splendid early Celery, that is to say, that which was sown to come in early was first-rate, whilst the late crop was hardly fit for soups. The autumn crop of Turnips, grown upon a north border, by a mere accident took the place of the winter crop, which was of little use except to supply "tops" (greens) during the past spring. Spinach, which was sown on a rich piece of ground in an open plot running parallel with the west wall, has survived the winter, but the supply was amentably short all the winter. This position was chosen because the north and west walls prevented the sun from having much effect upon the leaves after severe frosts; perhaps the position saved the crop from being wholly destroyed, as it is now affording abundant supplies, but still the fact remains that there was a dearth for this as for other things last winter, and the question is, are we to benefit by our experience in future? What made last winter so distressingly severe in regard to a supply of vegetables was, that the storm set in so severe in November—a date unusually early of late years—that crops, such as Cauliflowers, that were lost might have been saved, had a continuation of the frost been expected. As it was, most people only expected the frost to last for a night or two, and so little was done until the ground was frozen so hard as to render removal of the plants to where they could be protected beyond the range of the practical. The same thing occurred with roots for forcing, where proper measures were not taken at the commencement to keep the frost from penetrating into the earth, which, although dry, was frozen in a few days as hard as iron. It is probable that after such experience, there will be a display of misdirected anxiety in forwarding crops for the present year, which although they may, as crops, be both abundant and of good quality, would nevertheless cause disappointment in not coming in for use at the proper time. It will therefore be the most prudent course not to deviate too far from the time of sowing, or the system which has served us best, but to supplement in auxiliary form by strengthening the weak points as indicated by last year's results, in order to avoid a vegetable famine in future. Two sowings and plantings in different situations, give a succession in favourable seasons, and it is seldom that with experience of climate and other circumstances, one or other fails to meet ordinary requirements. The planting of Broccolis and other winter greens amongst summer crops of Potatos, although an economical way of utilising land, has its disadvantages, as the plants are drawn up weakly in a young state, and are never stubby nor strong as they ought to be. It is a mistake to plant a succession of winter crops in damp or backward situations, especially if the soil is rich and the rainfall of the locality heavy. There are plenty of late varieties to choose from amongst the Brassica family, and if these are sown late and grown moderately they will always pay for themselves, and be quite as acceptable at table, if not more so, than overgrown monsters. Spinach we intend to grow upon raised mounds of earth, as well as having a couple of sowings in a dry, open plot, where the leaves will not damp in winter. The result of last year's experience with roots for forcing has been that warmer and drier quarters are provided for Rhubard and Seakale, and I am not sure that it would not pay if we could afford a sunny border for Asparagus for the earliest forcing also. Growth should be made early, and the leaves should fall and the crowns be well ripened early in the autumn, and this can only be accomplished by choosing a soil that is not over-rich nor heavy, and a warm congenial situation. *Dorset.*

Fig. 100.—In port. (see p. 556.)

Liquid Manure.—I was glad to see in a recent issue so eminent a horticulturist as Mr. Baines advocating the more general use of liquid manure. The importance of this subject can hardly be overrated, and it is certain that not a tithe of the attention it both deserves and demands is given to it in this or perhaps any other country. How many gardeners, professional as well as amateur, complain of the scarcity or dearness of manure? What horticultural establishment would not be better for more than it gets? and further, I beg leave to ask, where is the garden or farm in or near to which considerable quantities of liquid as well as perhaps solid manures are not wasted or worse than wasted? I do not now allude to the giving of liquid manure to pot plants, which is to some extent understood and fairly generally acted upon, but to the much more extended application to crops out-of-doors of natural liquid manures, principal in value amongst which, I suppose, no agricultural chemist would deem me wrong in placing human urine; at any rate, it is to the wicked waste of this most valuable fertilising agent that I especially desire to call attention. The average value of a given quantity of this article can be, and has often been, ascertained by analysis. The average quantity produced per head of the population per diem can be approximately calculated, and hence an approximation to the value of the total quantity produced in Great Britain, or in the whole world for the matter of that, per annum, can be made. Now, say—and I believe we shall be well within the mark when we do so—that at least half of that produced in the United Kingdom is, to put it mildly, wasted; what a vast sum of money the annual value of only this half reaches! I never pass a urinal in a town without thinking of and grieving over the waste constantly going on there—a waste which, except in a very few instances indeed, might be so easily and profitably avoided. That which finds its way to those apologies for or grandchildren of ignorance and stupidity, sewage farms, is not of course quite wasted, but that which finds its way to rivers or dead wells frequently becomes a curse instead of being, as it should be, under enlightened management, a blessing. Mr. Baines mentions the times and seasons when he considers liquid manures may be used with the greatest advantage, and I think I shall not be disagreeing with him much when I say that at no time of the year need any liquid manure be allowed to run to waste for want of places or subjects to which to apply it. In spring and summer when green crops are in full growth these receive great benefit from copious and frequent applications, which must of course be in a sufficiently diluted form; eight or ten times its bulk of water will not too greatly dilute human urine for application to most kinds of plants, though rank-feeding things like most of the Cabbage tribe—Rhubarb, Asparagus, as well as almost all kinds of trees and shrubs, Roses, &c., when once established, will bear it much stronger. To give it often weak is better than giving it seldom and too strong. At all times of the year it may be applied to the surface of soil surrounding and occupied by the roots of trees and shrubs with advantage. The slop-water from dwelling-houses usually contains the urine in a sufficiently diluted form for immediate application, and the soapsuds also contained therein are an additional element of fertility. Thrown on bare land in the winter or at other times when no crop occupies it the fertilising properties are absorbed by and left in the land while the water sinks away filtered and purified to the springs. Heaps of cinder ashes, wood ashes, charcoal, charred vegetable refuse, heaps of old leaves, hedge clippings, weeds, and garden sweepings, &c., are all rendered excellent and powerful manures by having slop water or even undiluted urine thrown over them. No one should grumble at the scarcity of manure while ample supplies, often ready to hand, are so utterly neglected, as is so frequently the case. I emphatically assert, and am prepared to maintain, that until agricultural and horticultural chemistry have advanced very much beyond their present state, that in nineteen cases out of

twenty, at least, natural manures have considerable advantages over those usually understood by the term artificial. When chemistry has advanced to such a state of knowledge that it shall be known what chemicals alone are required to bring each kind of crop to perfection, and some cheap instrument has been invented by which every one shall be able easily to ascertain exactly the constituents of the kinds of soil with which he has to deal, so that its deficiencies for the crop it is required to produce may be easily known, then unmixed chemicals may have a great advantage over natural manures, which, though they may contain in most instances all that is required, frequently also contain much that certain kinds of soil already have an abundance or perhaps a superabundance of. A time is not even then, however, likely to come when natural manures can be dispensed with, if only for the reason that where large populations exist they are produced in such enormous quantities that the only way to get rid of them, and render them innocuous, is by applying them to the land, *J. E. Ewing, Norwich, April* 10.

Green Glasses for Cut Flowers.—Have any of your correspondents had occasion to remark that bouquets last longer in green than in white glasses? We have proved it here over and over again, and especially notice that flowers capricious in drinking water, such as Olympian Hellebore and the variety atrorubens, take it very kindly in a dark green Bohemian glass, shaped like a porringer, and last a long time. All white blooms look lovely in this glass, especially with a bit of scarlet Geranium to supply the "complementary" colour of the green, and give the full effect. Perhaps some of your scientific readers can account for the peculiarity? Homœopathic drugs are often kept in blue vials to preserve their strength (!), and certainly plate-glass windows kill some plants outright, such as Heaths, and weaken others so as to prevent them blooming, such as common Musk. *H. M. E., April* 19.

The Birds and the Primroses.—Of late years our birds of different sorts have taken unfortunate fancies for flowers. Their tastes vary in different seasons. Last year, and for several years before, for example, it was Ribes; this spring it is Primroses, Crocuses, some a general diet, of which they never tire. But the Primrose taste seems the most provoking of all. Everything with any Primrose blood in it seems to come alike to them, with the important exception of Auriculas. These have up to this period escaped; but Primroses, Polyanthuses, Oxlips, and Cowslips seem to come almost alike to the birds. Not quite, however; they prefer Primroses, common and hybrid, and of all shades of colour, to either Oxlips or Cowslips. They do not eat the flowers, they simply eat their stalks through an inch or so below the flowers, and scatter the flowers in hundreds and thousands broadcast over the earth. It is very sad to see the wreck they make. Birds as widely different as sparrows, finches, blackbirds, pheasants, have been caught in the act of destruction, so that the lovely Primroses seem to have suddenly become a general weakness among the feathered tribes. The destruction is almost as prevalent in woods and on hedgerows as in gardens, though it is notable that birds generally attack with most severity any patches of flowers placed in new positions. I have seen birds destroy again and again Sedums and such plants placed on newly-formed rockwork, though, after a time, familiarity seemed to breed contempt in the birds, and the plants were allowed to establish themselves. We had a striking proof of the extra attention of birds in novel positions here the other day. A row of common Primroses was planted against the mansion behind a line of Myosotis dissitiflora. The effect of the contrast was most pleasing to our eyes; but it immediately attracted the notice of the birds, and the next day not a flower nor hardly a bud was left. This notice and destruction of novelty is equally observable in regard to new colours and fresh places. We have raised a great many hybrid Primulas of differing shades of colour, from white to bright red. These were freely mixed with the common varieties on the wide verges of a woodland walk. They were picked so severely as not only to prevent their flowering and any decorative effect, but so as to injure the plants. Plants out of season in woods seem to suffer the same fate. In our first enthusiasm about Primula japonica we planted out several hundreds in masses. The birds did not like this, and pecked off their crimson flowers. Bad taste in its relation to horticulture is a very serious business. It would be a startling arithmetical problem could we work it out correctly to determine how many thousands of bushels of Plums are lost annually through the love of bullfinches and finches for the sweet morsel at the base of the flowers. For the birds neither eat the flowers nor examine them for insects, they simply nip them or drive them off so rapidily that we can scarcely see them do it—stopping now and then at intervals of fifties or so to eat and swallow the tiny morsels they have collected in their beaks in the process of demolition. For the destruction of our seeds by birds we have some compensation in the numbers of weed seeds they consume, but the birds seem to have nothing to offer the horticulturist as a set-off for the enormous number of flowers in fact and fruit in embryo they destroy or consume in our gardens and orchards. *D. T. Fish.*

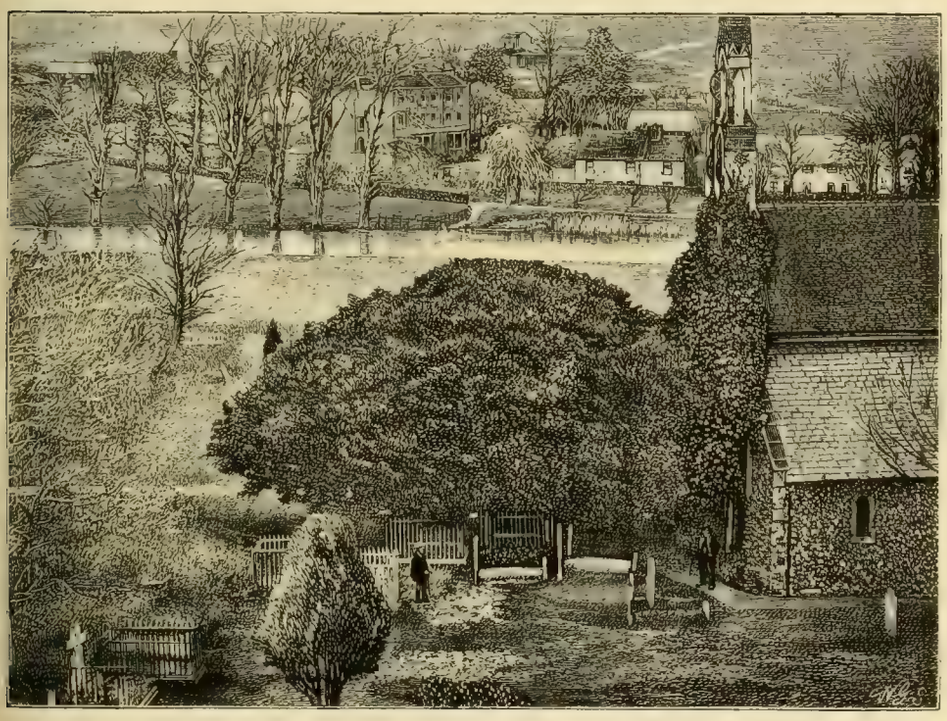

Fig. 101.—The Buckland Yew seen from above. (see p. 556.)

Double Petunias.—The merit of first raising these belongs, if I mistake not, to Mr. Grieve, of Culford, who, as is well known, is one of our most successful hybridists, and through his skilful manipulation gardens have been enriched with many fine and beautiful things, especially in the way of Pelargoniums, with which his name has long been associated. As bedding plants, double Petunias are unsuited, the flowers being too heavy and lumpish to stand the weather, but for pot culture for indoor decorative purposes during the summer they are quite unsurpassed among soft-wooded subjects, and as they can be got up quick and discarded without having to winter them, they are doubly valuable on that account, and especially to amateurs who have only a limited amount of glass-room and like to have a good display in their greenhouses. There are several named varieties, but as a large percentage come double from seed obtained from carefully fertilised flowers, it is hardly worth bringing these, as by sowing at once seedlings come in almost as soon, and should there be any single ones among them they are sure to be handy for borders or beds, where in patches or masses these marbled and blotched sorts are very attractive. When grown in pots, the best way, after the plants are potted and grown on in cold frames to a good size, is either to plunge them out in some open sunny spot, or to withdraw the lights from them for a few hours each day; by doing which and exposing them fully to sun and air, the shoots harden and the growth they make is much shorter jointed and more floriferous than it is when subjected to other conditions like it gets under glass. By potting in all fibry loam fine plants may be grown in 8-inch pots, and to get them well furnished, the shoots should be stopped by nipping out their points, which may be repeated again and again; and this will stiffen them in such a way that they will do without sticks. When beginning to bloom, liquid manure will be found a great help, as it is always better to administer stimulants then than to use any in the solid form in the soil, the tendency of which is to produce gross growth that seldom or never flowers well. The latest claimant to public favour among single Petunias is one recently sent out under the name of hybrida nana compacta, which forms a densely branched bush about 8 or 9 inches high and as much through, and which when covered with bloom looks like a huge nosegay, so regular and compact is its form. The colour of the flowers is a bright red relieved by a white star, the contrast between the two being most striking. This kind, from its habit, is specially adapted for pot culture, and when better known is sure to be sought after for that purpose. *J. S.*

Fruit Prospects in Yorkshire.—The fruit prospects this year are very poor, which, after the bad crops of the last four years, is very discouraging. Most practical men, after the little sunshine last year, anticipated light crops of our hardy fruits this year: I fear they will prove worse than many anticipated. Apricots, Peaches, Pears and Apples will be complete failures. In all my experience I do not recollect a season when Apricots, Peaches, Pears and Apples showed so little blossom; Apricots and Peaches have no blossom. The trees have suffered much from the frost, much of the young wood is killed, and some of the old is more or less injured. Apricots and Peaches outdoors will be a complete failure this year. The Pear trees show very little blossom. The pyramid and standard trees have little or no blossom, and only a few of the trees on the wall show any. Apples, too, show very little blossom, so that Pears and Apples will be very light crops. Cherry trees are full of blossom, and will probably be a good crop. Some kind of Plums have a fair show of blossom, but it is small and weak. With very favourable weather there may be a moderate crop. Strawberries promise well, and will, with favourable weather, be a good crop. Gooseberries, Currants, and Raspberries look well, and will, with favourable weather, be good crops. These will not, however, make up for the failure of the crop of Apricots, Peaches, Pears, and Apples; and 1880, however well it may prove in regard to cereal and root crops, will be a year of deficient fruit crops. *M. Saul, Stourton, Yorkshire.*

The Past Winter and the Slugs.—I quite agree with your leader on Miss Ormerod's experiments of the effects of cold on larvæ, &c. We have already found out that it has not lessened the number of slugs. Quantities of Pinks, Cauliflowers, Lettuces, Cabbages, have been planted out, only to disappear in a few nights. The usual dustings of lime, soot, &c., have not saved them. The spring has also been dry as well as the winter cold. Some of our oldest labourers were full of faith of the cold and dry weather cures. "They have done for the slugs, master," met our ears on all hands. One septuagenarian was so positive when urged to turn a piece of ground before planting, that he risked his all that no slugs would worry the crops this year. The fact is that, if possible, the slugs are more numerous and ravenous than ever. The latter goes without saying if the former be true, for, assuming the same number of snails to exist, never had they so little to eat. Almost every green thing was destroyed by the winter's frosts — not an old Cabbage stalk, hardly a Broccoli or a Lettuce was

left; so that the slugs spring up on this barren soil, and immediately creep abroad in search of green and tender blades of Lettuces, Cauliflowers, Carrots, Parsley, or what-not. But the point that I wish to emphasise is that they are as numerous, or more so than ever. So troublesome were they last year that I began to lose all faith in lime as a slug killer. It must, indeed, be very hot, and frequently applied to prove effective. Salt is quicker in its action, but somewhat dangerous should an overdose be given. Paraffin is fatal to slugs, and to not a few plants in a young state, and it is also costly. Ammoniacal water and gas-lime are also deadly and most injurious to most crops as well as slugs. Kitchen garden crops seem to produce or foster slugs, though we are careful never to dig in a single green leaf or stem. Box edges are also favourite hiding places. Are there any crops so poisonous or distasteful to slugs that they could thus be cropped or grown out? So scarce is green food this year that I see the slugs have set upon our young Onions. *D. T. Fish.*

Broccoli.—Now that all plants of weak and doubtful constitution have been placed *hors de combat*, we may, I think, derive a certain amount of consolation from the fact, that there is here an excellent opportunity of obtaining a very hardy race of this indispensable vegetable. It is only reasonable to suppose that from seed harvested this year we shall have plants which will be proof against such weather as has within the past few months sent so many to the dung-heap. Such being the case, I would at the risk of being thought a little too presumptuous, advise seed-growers and seedsmen to use every endeavour to perpetuate the stock, and on no account mix any of the new seed with the old. It seems almost superfluous to add, that in the event of seed being mixed, and the winter of 1881–2 being comparatively mild, the chances are ten to one that plants of doubtful hardiness will be left as seed producers, and thereby the present state of things will recur, which, to say the least, is far from being desirable. *J. H., The Gardens, Heytesbury, Wilts.*

Rhododendron ferrugineum.—This charming dwarf-growing shrub is now gay with a profusion of its delicate rose-coloured flowers, which are borne in compact trusses and are admirably adapted for filling small glasses, or for other purposes in a cut state. There are many who would not despise a single truss for a buttonhole bouquet, and those who have a taste for delicate colours could hardly make a better selection. Every truss is furnished with an abundance of small green leaves, which renders it at once one of the most useful flowers of its class; in fact it is Nature's buttonhole ready made. It is a native of the Alps, and is therefore quite hardy. For conservatory decoration, or for the embellishment of front halls or staircases where flowering plants are in request, the habit of the plant and the hardiness of its leaves is a recommendation which deserves the notice of gardeners. Plants lifted from the open ground in January, and brought forward gently in a temperature not exceeding 50° to 55°, with frequent applications of atmospheric moisture, will be in full flower by the middle of April. *W. Hinds.*

Stephanotis floribunda.—The following notes may be of interest, if not useful, to some of your readers. A plant of the above, growing in a small stove here, was, after flowering last year, shifted from a small tub into one 24 inches in diameter, and trained on galvanised wires 6 inches from the roof. A compost of two parts good fibry loam, one part peat, one part half-decayed leaves, some charcoal, and sand was used, and especial care taken to secure good drainage. A vigorous growth was soon made, requiring much more space than was available. During the winter water was given very sparingly, in fact only when the leaves began to shrivel, and the temperature was generally nearer 55° than 60° at night, with a rise of 5° or 10° by day. In the first week in January the knife was used freely, thinning out two-thirds of the growth, the strongest being retained full length. When the buds began to break the supply of water was increased and the temperature gradually raised 10°. The plant is now literally laden with bloom. I counted on April 14 300 trusses open, or nearly so, and this exclusive of numerous flower-buds still green. The trusses average eight pips each, some having as many as eleven. As you do not quote Covent Garden prices for Stephanotis, I suppose it is not over-plentiful as yet. *George Duffield, Winchmore Hill, N.*

Caladium argyrites and Scarlet Pelargonium for Winter Decoration.—At no time of the year are bright colours in greater request than during the winter months and at no time are they more scarce. True, there are Poinsettias with their massive floral bracts and Plumbagos and Scutellarias and Euphorbia jacquiniæflora—all beautiful plants, but defective in habit for grouping with so dwarf and chaste a plant as Caladium argyrites. The beautiful markings of the leaf of the latter seldom appear to better advantage than where they are associated with scarlet Pelargoniums, and I prefer those of the nosegay section for the purpose. La Grande is my favourite. It produces enormous trusses, even in small pots, when generously cultivated. The Pelargoniums are easily obtained of any size that is needed, but to have Caladiums in good condition in the month of November requires forethought. The Caladiums should be kept back for two or three years by potting them a month later each year until they are gradually worked round to come in at the time desired. A good stock of such plants would render invaluable service in many places in the winter months, and there are other taller growing Caladiums, such as Belleymei, that are nearly as effective and would work in with taller growing subjects, or they would impart elegance to a group by "dotting" them about, still keeping the dwarf plants of argyrites for forming the front row. *W. Hinds.*

Reports of Societies.

Royal Horticultural: *April 27.*

Scientific Committee.—Sir J. D. Hooker, K.C.S.I., in the chair.

Injury to Cypress.—Some further statements were made as to Mr. Boscawen's Cypress, Mr. MacLachlan adhering to his previously expressed opinion.

Insects Injurious to Larch.—Mr. Elwes showed specimens covered with eggs of a Chermes, and, in addition, myriads of the larva of one of the Tineinous moths, Coleophora laricella, the larvæ of which mine in the leaves, and make cases for themselves out of the cuticle. As the insects are so extremely numerous and over so large an area, anything like a practical remedy is almost out of the question; but it was suggested by Mr. MacLachlan that setting fire to the long grass might be efficacious.

Tulips.—Mr. Elwes showed specimens of T. Kolpakowskyana and of T. Eichleri, to show the result of one year's cultivation on the size and form of the flowers, the flower after one year's cultivation being, at least, three times the size that it was originally. Conversely Mr. Elwes had succeeded in reducing the size of the scarlet Van Thol Tulip to the diameter of 2 inches or thereabouts. As an inference of these experiments, as well as of the fact that little or no difference was to be seen between Central Asian and Italian Tulips, Mr. Elwes stated that the characters at present in use to distinguish Tulips are of little weight, and that most of the so-called species would eventually be reduced to geographical forms or varieties.

Specimens Exhibited.—In addition to the species above named Mr. Elwes showed T. Didieri, from Savoy; T. saxatilis, or an allied species, from Teheran; Scilla lilio-hyacinthus; Fritillaria olympica, with greenish flowers, from Broussa; F. pallidiflora, from Siberia; F. obliqua, a plant long known in gardens, but not known in a wild state; it has ascending, spirally twisted leaves; Kolpakowskya ixiolirioides, a blue flowered plant, with the habit of an Ixiolirion; Cypripedium pubescens, with two flowers; Primula mollis, from Bhotan; Arnebia echioides, which has the property of blooming twice or three times in the year; Streptopus roseus, various species of Muscari, Erythronium grandiflorum and Bomarea Caldasii.

Renanthera coccinea.—Sir J. D. Hooker showed a portion of a panicle of this superb Orchid grown in Lord Fortescue's garden. The specimen was a remarkably fine one.

Dragon's Blood Tree.—Sir J. D. Hooker also showed a drawing by Professor Bayley Balfour, made in Socotra, of a fine arborescent Dracæna, which produces the Dragon's-blood of Socotra. It is the Cinnabar of Dioscorides, Socotra itself being formerly called Dioscorida. The Dragon's-blood is used as a varnish.

The Question of the Phylloxera.—Dr. Masters again brought under the notice of the committee the restrictive laws regulating the introduction of living plants into certain European countries, as also into Cape Colony and Fiji. The futility of the regulations was pointed out as well as the needless injury inflicted on horticulture. Some discussion ensued, and ultimately it was decided that Dr. Masters should represent the matter to the Council on behalf of the committee, in order that the Society might take action on the matter.

Floral Committee.—Dr. Denny in the chair. The exhibition of plants and flowers forming part of the floral display on the present occasion was not extensive, but interesting.

The place of honour is due to the Group of Orchids contributed by Sir Trevor Lawrence, Bart., M.P., a finer collection from one establishment being rarely seen. It consisted of about three dozen plants, of which nearly all were specimen plants. At one end stood a grand example of Lycaste Skinneri, the base of which was thickly studded round with noble flowers, far too numerous to count; a splendid Oncidium ampliatum majus had eleven spikes of its lively yellow flowers; a grand branching spike of O. Marshallianum, and a good O. sarcodes balanced this near the other end of the collection, where stood the gem of the whole group—Masdevallia Harryana, a remarkably fine variety, of an intensely deep and rich colour, forming a crowded cluster of about forty blossoms. Dendrobium thyrsiflorum had nine fine spikes of its finely contrasted flowers, and near it was a striking plant of Lælia cinnabarina with four spikes of its telling orange flowers. Odontoglossums, of course, were in strong force: there was first a small plant of the very large-flowered form of O. Roezlii, which has been shown under the varietal name superbum; O. nævium, and the related O. cirrosum, O. citrosmum, and citrosmum roseum, both well bloomed; O. hystrix serratum, a fine variety, described below; O. triumphans, O. Pescatorei and Alexandræ; O. Phalænopsis, nicely bloomed: a neat little plant of O. maculatum superbum, O. Andersonianum, with crimson-spotted white flowers; Cypripedium caudatum, a small plant, with five magnificent flowers; C. Crossianum, with purple-tinged petals and lip, and strongly white-tipped dorsal sepal; Cattleya Mendelii and C. Mossiæ, always showy and attractive; and others which we have not space to record. This group was awarded a Gold Medal.

Messrs. Paul & Son, Old Nurseries, Cheshunt, had a grand group of Pot Roses, consisting of large specimen and half-specimen plants, the larger ones finely, the smaller prettily bloomed. A rich looking flower amongst the smaller plants was Souvenir de Victor Verdier, a high-coloured crimson; Mrs. Laxton, a bright cerise-rose, proved itself a good flower; and an exquisite Tea Rose was included, namely, Madame Lambard, with rosy-edged pale petals, the central parts of the flower flushed with a rich coppery hue. This group received a Gold Medal, and a Silver Medal was awarded to Messrs. W. Paul & Son, Waltham Cross, who sent six boxes of fine cut Roses, which were fresh and good, and found many admirers. Messrs. Veitch & Sons also had a group of standard Roses in pots, numbering some fifty plants, arranged on the ground level, intermixed with Japanese Maples; these were very nicely bloomed, contributing much towards making this an attractive Rose show, and winning a Gold Medal

Mixed groups of plants were shown by Messrs. Osborn & Sons, of Fulham, and by Mr. Aldous—Silver Medals to each; and a group of Primula Sieboldii varieties and of Selaginellas came from Chiswick. Two baskets of Begonia—B. Coltoni, a crimson-scarlet, and B. Rodwellii, a light scarlet, but fine large showy flowers—rewarded with a Bronze Medal—were shown by Messrs. C. Lee & Son, of Hammersmith; and Messrs. Barr & Sugden had a fine collection of cut blooms of Narcissi, in which the fine trumpet forms N. bicolor maximus and the variety called Emperor were very conspicuous.

The subjects more immediately brought under the notice of the committee comprised a Myosotis elegantissima from Messrs. Rodger, McClelland & Co., of Newry; it has the leaves broadly edged with white and pale blue flowers, and though a neat-looking plant was considered not effective. Mr. W. Bull, of Chelsea, exhibited Acacia sphærocephala, a very interesting and by no means unornamental plant, with glossy compound leaves, and huge brown hollow thorns, in which a species of ant makes its domicile, whence it sallies forth to defend the plant against all other intruders, taking toll for itself in the honeyed secretion formed in the glands on the leaflets. Maranta Kerchoveana, a species too near M. Massangeana; Drosera filiformis, a curious little plant, growing about 6 inches high, with glandular-margined erect linear leaves; and Sarracenia flava ornata, one of the strongly-veined varieties of this interesting side-saddle flower. Messrs. Veitch & Sons, of Chelsea, showed a mottled leaved Erythrina, called marmorata; a handsome Amaryllis, named Lady Bolsover; Azalea Rollissoni, and Lastrea Richardsii multifida, all noticed below; Kentia McArthuri, a pretty pinnate Palm; and Azalea Roi Leopold alba, a useful decorative variety, very floriferous, with moderate-sized flowers, which are occasionally flaked with rose; Pteris serrulata Shorei, a very heavily crested variety of drooping habit—a variety which was thought to be too much depressed by the dilatations of the crest, but, nevertheless, likely to be a very useful plant for basket culture; Azalea hydrangeæflora, one of the amœna forms. Messrs. Veitch also exhibited, on behalf of Mr. Tinné, of Liverpool, three Crotons named Tinneanus, with trilobate leaves; Briarleyensis, with sublobate leaves; and Clokei, with oblong-acuminate leaves, all with yellow costa and veins, but in the small state showing no marked novelty of character. Mr. Barnett, of the Deepdene Gardens, exhibited a plant of Pleopeltis Billardieri, a relic of the *Vanguard*. From the New Plant and Bulb Company came Odontoglossum Horsmanni, with yellowish flowers heavily blotched with brown. Messrs. Standish & Co., of Ascot, showed two white-flowered hybridised Rhododendrons, which were stated to be

perfectly hardy, but which had been flowered under glass. They were considered to be valuable plants for forcing and decorative purposes indoors, and were certificated as such, with a request that they might be shown later on as bloomed in the open ground. The best of the two was called Snowflake, the other Flag of Truce. Mr. King, gr. to G. Simpson, Esq., Wray Park, Reigate, showed one of the most brilliant varieties of Coleus we have yet seen; it was named George Simpson, and was worthily certificated. Another, named Adelaide Baxter, a fringed-leaved sort, with magenta feather on maroon, elegantly margined with green, though pretty, was not at all comparable in merit to its companion. From H. J. Elwes, Esq., came cut specimens of the pretty Corydalis bracteata, a species with long spikes of large yellow flowers subtended by conspicuous green bracts, and certainly one of the finest of the family—not a new plant, having been introduced sixty years since, but now seldom met with. Messrs. E. G. Henderson & Son sent branches of a Hedera from Northern Russia, very much in the way of H. dentata as to substance, size, and general character, but apparently producing more acutely lobed leaves. Hemsley's Giant Mignonette was shown in fine condition from Chiswick, and had a Cultural Commendation.

New Plants Certificated.

First-class Certificates were awarded to Mr. King, gr., Wray Park, for Coleus George Simpson; this splendid variety has flat ovate leaves of the richest glowing crimson, dashed with maroon, the narrow beaded edge being here green, there gold, and all the colours bright and effective, and well brought out for contrast; it is in every way A 1. To Sir Trevor Lawrence, Bart., for Odontoglossum serratum, a form of hystrix, with uniform sulphur-yellow sepals and petals, the former cross-barred with rich chestnut-brown, the latter spotted with the same, and very strongly serrated. To H. J. Elwes, Esq., Cirencester, for Corydalis bracteata, a dwarf hardy tuberous perennial with spikes of large bracteated pale yellow flowers. To Messrs. Standish & Co., Ascot, for Rhododendron Snowflake, a handsome hybrid, with large heads of fine flowers which, when developed as these were under glass, are of a very pure white, without apparent spotting, the individual flowers being smooth and well formed. The plant itself is quite hardy, but the certificate was awarded to mark the merit of the variety as a forced plant. To Messrs. Veitch & Sons, of Chelsea, for Lastrea Richardsii multifida, a pretty tasselled Fern, of elegant character, the apices of the pinnatifid pinnæ being prominently developed into a tuft of sharp-pointed segments; for Amaryllis (Hippeastrum) Lady Bolsover, a variety of good form, scarlet with a well defined white stripe down to the base, which is dark-coloured, and more or less veined with white, a distinct and showy kind; and for Azalea Rollissoni as a decorative plant and one useful for cutting, the pretty little compact double salmony-red flowers being well adapted for this purpose; and the small growing plant itself being well adapted for growing in the form of dwarf standards. A Second-class Certificate was given to Messrs. Standish & Co., Ascot, for Rhododendron Flag of Truce, a white of considerable merit, equally hardy, but less pure and less smooth than Snowflake. A Cultural Commendation was awarded to Mr. W. Bull for a panful of the pretty Drosera filiformis, which was admirably cultivated.

Fruit Committee.—John Lee, Esq., in the chair. Examples of the Giant Zittau Onion, from Mr. E. Benary, of Erfurt, were exhibited. It is a root of handsome appearance, clean, with a yellowish skin, and was Commended, as being apparently a good keeping variety. Mr. Miles, gr. to Lord Carington, of Wycombe Abbey, showed some excellent examples of fresh Black Hamburgh Grapes, together with samples of the Stanstead Winter Cabbage Lettuce, in excellent condition for use. This Lettuce was brought forward for the purpose of showing what can be done in this way by means of a very simple contrivance, consisting of four 11-inch boards, fixed securely upright, the space enclosed being covered with lights, and with mats also when necessary. The area which Mr. Miles has devoted to this purpose this season is 14 feet by 10 feet—a space which contained about 400 plants, which were pricked out in lines last autumn, 6 inches apart every way. From this frame Lettuces have been cut almost equal in quality to the samples shown [excellent in every way] since the beginning of the present month, and enough still remains to keep up a supply till the next crops come in.

National Auricula—Northern Section: *April* 27.—The annual exhibition of this section of the National Auricula Society was held on Tuesday, in the Town Hall, Manchester, in conjunction with one of the spring meetings of the Manchester Botanical and Horticultural Society, and though by no means so large a show as that of last year, or even that held by the other division of the Society at South Kensington last week, we think, as regards the latter at all events, that the quality was somewhat higher. As in the South, so it has been in the North this season, the flowers came out earlier than usual, and lasted a shorter time—a *contretemps* that has kept some of the exhibitors out of the field altogether, and crippled the powers of many others. The Rev. F. D. Horner was not in the competition at all on Tuesday, and Mr. Ben Simonite, who last year staged about fifty plants, on this occasion could only show a fifth of the number. There was no class here for twelve plants as at Kensington, nor for fifty either, and consequently the cream were shown in the class for six. The show of alpines, which are here divided into two classes according to the colour of the centre, white or yellow, was not so pleasing as at Kensington—the rule which excludes other than shaded flowers keeping away the brilliant selfs that in the South are so much admired. As regards Polyanthuses there was no comparison between the two displays, so vastly superior was the exhibition of to-day over its predecessor. The best Auricula in the show was Walker's John Simonite—a grand truss of eight pips, shown by Mr. H. Wilson, of Halifax, in his 1st prize group of six; while the 2d prize lot in the same class also included the best grey-edged Auricula in the show—Kay's Alexander Meiklejohn, shown by Mr. T. Mellor, with eight very fine pips. A very neat truss of six pips of Lancashire Hero, shown by Mr. E. Pohlman, was the best green-edged flower.

For six Auriculas, dissimilar, exclusive of alpines.—Mr. H. Wilson, of Halifax, came in 1st with Colonel Taylor (Leigh), George Lightbody (Headly), John Simonite (Walker), a splendid truss of eight pips; Alexander Meiklejohn (Kay), C. J. Perry (Turner), and Prince of Greens (Trail). 2d, Mr. T. Mellor, Ashton-under-Lyne, with Alexander Meiklejohn (Kay), a fine truss of eight pips; Lovely Ann (Oliver), and four seedlings, a green-edge, grey-edge, white-edge, and a maroon self. 3d, Mr. E. Pohlman, Halifax, with Earl Grosvenor (Lee), Acme (Read), Colonel Taylor (Leigh), George Lightbody (Headly), Mazzini (Pohlman), and New Green (Headly). 4th, Mr. W. F. Bateman, Low Moor, Bradford, with Confidence (Campbell), Lord Palmerston (Campbell), Lovely Ann (Oliver), Catherina (Summerscales), Conqueror of Europe (Waterhouse), and Onwards, a lovely violet self in the way of Turner's Charles J. Perry. 5th, Mr. W. Brockbank, Didsbury, with Ellen Lancaster (Pohlman), Maggie Lauder (Lowe), Lancashire Hero (Lancashire), Alexander Meiklejohn (Kay), Metropolitan (Spalding), and Richard Headly (Lightbody). 6th, Miss Steward, York, with Alderman Wisbey (Headly), Meteor Flag (Lightbody), Beauty (Trail), George Lightbody (Headly), Colonel Champneys (Turner), and a white-edged seedling. 7th, Mr. J. Goodier, Stakehill, with Lancashire Hero (Lancashire), Pizarro (Campbell), George Lightbody (Headly), Privateer (Grimes), C. J. Perry (Turner), and Catherina (Summerscales).

For four Auriculas, dissimilar, alpines excluded.—1st, Mr. E. Pohlman, with Confidence (Campbell), Mazzini (Pohlman), Earl Grosvenor (Lee), and Imperator (Litton). 2d, Mr. Wilson, Halifax, with Acme (Read), Lancashire Hero (Lancashire), Garibaldi (Pohlman), and Prince of Greens (Trail). 3d, Mr. T. Mellor, with Lovely Ann (Oliver), Lancashire Hero, Metropolitan (Spalding), and a white-edged seedling. 4th, Mr. W. F. Bateman, with Prince of Wales (Ashworth), Confidence (Campbell), Conqueror of Europe (Waterhouse), and Lord of Lorne (Campbell). 5th, Mr. James Bentley, Stakehill, with Lancashire Hero, Ne Plus Ultra (Smith), Pizarro (Campbell), and Lovely Ann (Oliver). 6th, Miss Steward, with Ne Plus Ultra (Smith), Lord Clyde (Campbell), Lovely Ann (Oliver), and a white-edged seedling. 7th, R. Gorton, Esq., Eccles, with Lancashire Hero, Glory (Taylor), Lovely Ann (Oliver), and C. J. Perry (Turner).

For a pair of Auriculas, dissimilar in variety and class.—1st, Mr. A. Shaw, Bury, Lancashire, with Alexander Meiklejohn (Kay), and Lovely Ann (Oliver). 2d, Mr. W. Beswick, Middleton, with Lovely Ann (Oliver), and a dark seedling self in the way of Vulcan (Sims). 3d, Mr. H. Wilson, with George Lightbody (Headly), and Prince of Greens (Traill). 4th, Mr. J. Goodier, with George Lightbody (Headly), and Blackbird (Spalding). 5th, Mr. T. Mellor, with Lovely Ann (Oliver), and a grey-edged seedling. 6th, Mr. Ben Simonite, with George Lightbody (Headly), and Mrs. Douglas (Simonite). 7th, Mr. James Bentley, with George Lightbody and Leigh's Colonel Taylor.

For a pair of Auriculas (open only to maiden growers).—1st. Mr. A. Shaw, Bury, with C. J. Perry (Turner), and Alderman C. E. Brown (Headly). 2d, Mr. J. Goodier, with George Lightbody and Blackbird. 3d, Mr. William Bolton, Warrington, with Beauty (Trail), and Lovely Ann (Oliver). 4th, Mr. James Bentley, with George Lightbody and Colonel Taylor (Leigh).

One Auricula, green-edged.—Premium, Mr. E. Pohlman, with Lancashire Hero, a very neat truss of six pips.—1st, Mr. H. Wilson, with Colonel Taylor (Leigh); 2d, Mr. Ben Simonite, with a seedling, a good bright green; 3d, Miss Steward, with Lovely Ann (Oliver); 4th and 5th, Mr. E. Pohlman, with Imperator (Litton), and New Green (Headly); 6th, Mr. Ben Simonite, with Talisman (Simonite); and 7th, Mr. T. Mellor, with Lord Palmerston (Campbell).

One Auricula, grey-edged.—Premium, Mr. T. Mellor, with Richard Headly (Lightbody).—1st, Miss Steward, with Alma (Lightbody); 2d, W. Brockbank, Esq., with Alexander Meiklejohn (Kay); 3d and 4th, Mr. A. Shaw, with Richard Headly (Lightbody), and Lancashire Hero (Lancashire); 5th and 6th, Mr. E. Pohlman, with General Bolivar (Smith), and Beauty (Trail); 7th, Mr. H. Wilson, with George Levick (Walker).

One Auricula, white-edged.—Premium, Mr. J. Booth, Failsworth, with Acme (Read).—1st, Mr. Pohlman, with Catherina (Summerscales); 2d, Mr. Pohlman, with Earl Grosvenor (Lee); 3d, W. Brockbank, Esq., with Acme (Read); 4th, Mr. T. Mellor, with Richard Headly (Lightbody); 5th, Mr. T. Mellor, with Beauty (Trail), and Smiling Beauty (Heap); 7th, W. Brockbank, Esq., with Bright Venus (Lee); 8th, John Waterston (Cunningham), shown by an exhibitor whose name we did not get.

One self Auricula.—Premium, Mr. A. Shaw, with W. E. Gladstone, a dark maroon seedling.—1st, Mr. T. Mellor, with a very dark seedling; 2d, Mr. H. Wilson, with Sapphire (Horner), a lovely violet; 3d, Mr. A. Shaw, with Ellen Lancaster (Pohlman); 4th, Mr. Pohlman, with Blackbird (Spalding); 5th, Mr. T. Mellor, with a dark maroon seedling; 6th, an exhibitor, whose name we missed, with C. J. Perry (Turner); 7th, Mr. J. Beswick, with a very dark seedling; 8th, Mr. Ben. Simonite, with Mrs. Douglas (Simonite).

Four alpine Auriculas, dissimilar.—Mr. A. Shaw, Bury, with Fair Rosamond, Elcho, Diadem, and John Leech; 2d, Mr. John Beswick, with Dolly Varden, James Douglas, Diadem, and Goliath; 3d, R. Gorton, Esq., with Stirling Castle, Marion, Evening Star, and Geo. Lightbody; 4th, Miss Steward, with four seedlings; 5th, Mr. W. Brockbank, with John Leech, Ovid, Diadem, and Diana.

One yellow-centred alpine Auricula. — Premium, Mr. A. Shaw, with John Leech (Turner).—1st, Mr. Pohlman with Pioneer (Pohlman), a very distinct flower, shaded orange-buff; 2d Mr. J. Beswick, with Diadem (Gorton); 3d, Mr. Beswick, with Queen of England; 4th and 5th, R. Gorton, Esq., with Queen Victoria and Evening Star.—White centred: Premium, Miss Steward, with a lilac-mauve shaded seedling.—1st, Mr. A. Shaw, with Elcho (Turner); 2d, Mr. T. Mellor, with Conspicua; 3d, Miss Steward, with a dark violet-purple shaded seedling; 4th, Mr. J. Beswick, with Goliath; 5th, S. Barlow, Esq., with Miss Read.

Three dissimilar, black ground Polyanthuses.—1st, Mr. J. Beswick, with Lord Lincoln (Hufton), Cheshire Favourite (Saunders), and Exile (Crownshaw); 2d, Wm. Brockbank, Esq., with Exile, Cheshire Favourite, and Beauty of England (Maud); S. Barlow, Esq., with President (Hilton), Exile, and Cheshire Favourite.—Red grounds:—1st, Mr. J. Beswick, with President, George IV. (Buck), and an unnamed variety; 2d, W. Brockbank, Esq., with George IV., President, and Cox's Prince Regent; 3d, S. Barlow, Esq., with Sunrise (Barlow), Lancer, and George IV.; 4th, Mr. W. Bolton, with three unnamed.

One Polyanthus.—Premium, Mr. J. Beswick, with Buck's George IV. — 1st and 2d, Mr. J. Beswick, with George IV. and Exile; 3d, Mr. W. Whittaker, Salford, with a black ground seedling; 4th, Mr. J. Beswick, with Lord Lincoln; 5th, Mr. T. Mellor, with a red ground seedling; 6th, Mr. J. Beswick, with Cheshire Favourite. Mr. W. Bolton's special prize for the best red ground seedling Polyanthus was won by Mr. Mellor, with a flower of fair quality; while that for the best black was taken by Mr. Whittaker, of Salford, with a flower of very great promise, and not likely to be soon beaten.

Mr. Barlow, Mr. W. Bolton, and Mr. Bateman, took the prizes for twelve distinct fancy Auriculas; while W. Brockbank, Esq., was 1st for the same number of fancy Polyanthuses and Primroses, and S. Barlow, Esq., 2d for the latter.

Manchester Botanical and Horticultural: *April* 27 *and* 28.—A spring show of this Society was held on Tuesday and Wednesday (on the former day in conjunction with the Auricula show), but calls for little notice. To Thomas Agnew, Esq., Fair Hope, Eccles, near Manchester (Mr. Elkin, gr.), the Society's Silver Medal was awarded for a group of plants which was placed at the foot as it were of the grand organ, and made a beautiful foreground. Its principal components were large and well flowered Azaleas, a good Clerodendron Balfourianum, half-a-dozen superbly flowered Deutzias, &c. Messrs. R. P. Kerr & Son, Liverpool, received a Silver Medal for a large group of flowering and fine-foliaged plants, the former consisting of Azaleas, Pelargoniums, varieties of Azalea mollis, and of Primula Sieboldii, and handsomely bloomed dwarf plants of Spiræa palmata. The same firm also had a First-class Certificate for a handsome new species of Lomaria. A similar award was made to W. Turner, Esq., for a supposed hybrid Odontoglossum named Boltii, a pale rose-coloured flower heavily spotted with brown, but which we think must be regarded as a fine type of O. Ruckerianum only. The best plant exhibited was a specimen of Odontoglossum gloriosum, a distinct and well marked form, with four branched spikes of closely packed flowers, shown by M. Spark, Esq., and awarded a First-class Cultural Certificate. First-class Commendations were awarded to W. Turner, Esq., for a box of choice cut blooms of Orchids; to James Fildes, Esq., for a nice group of Sarracenias, including S. Drummondii alba in flower, S. variolaris, and S. Fildesii, a natural hybrid; to J. G. Adams, Esq., for a small group of dark red seedling Amaryllis; and to Messrs. Rodger, McLelland & Co., of Newry, for a fine sample of the new white variegated Myosotis, a boldly variegated, distinct, hardy spring bedding plant. The executors of Mr. H. Walton, Edge End, Burley, sent a group of small Azaleas, &c.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, April 28, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables, 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables, 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
April	In.	In.	°	°	°	°	°	°	°		In.
22	29.69	−0.08	57.7	44.5	13.2	49.1	+ 1.3	44.1	83	WSW: WNW	0.01
23	29.91	+0.15	61.4	37.6	23.8	48.5	+ 0.5	40.6	74	W.: WNW	0.00
24	29.85	+0.08	58.1	40.9	17.2	49.4	+ 1.2	44.0	82	WSW: WNW	0.00
25	29.81	+0.04	57.5	44.0	13.5	49.1	+ 1.1	39.5	69	W.: WNW	0.00
26	29.88	+0.10	50.0	39.0	11.0	43.3	− 5.2	37.6	80	N.E.: E.N.E.	0.05
27	29.99	+0.22	50.9	33.1	17.8	41.0	− 7.7	37.4	87	ENE: E.	0.00
28	29.92	+0.14	50.4	37.4	13.0	43.5	− 5.4	40.2	88	E.: E.S.E.	0.00
Mean	29.86	+0.09	55.1	39.5	15.6	46.3	− 2.0	40.5	80	W.: E.	sum 0.06

April 22.—Generally fine but cloudy. A shower at 3 P.M. Cloudless at night.
— 23.—A fine bright day, partially cloudy. Cloudless at night.
— 24.—A fine day, but sky clouded, though clear at times.
— 25.—Dull till 10 A.M., fine and bright afterwards. A fine day. Cold and cloudless at night.
— 26.—Fine till 11 A.M., dull with rain till 2 P.M., generally fine but cloudy afterwards. Cold.
— 27.—A fine bright day, partially cloudy. Very cold.
— 28.—A very dull cold day. Overcast throughout.

London: *Barometer.*—During the week ending Saturday, April 24, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.94 inches at the beginning of the week to 30.06 inches by noon on the 18th; decreased to 29.85 inches by the evening of the 19th; increased to 30.06 inches by the morning of the 21st; decreased to 29.84 inches by the afternoon of the 22d; increased to 30.12 inches by the evening of the 23d; and decreased to 29.98 inches by the end of the week. The mean reading for the week at sea level was 29.98 inches, being 0.15 inch above that of the preceding week, and 0.04 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 67¾° on the 19th to 57¾° on the 22d; the mean value for the week was 61°. The lowest temperatures of the air observed by night varied from 37½° on the 23d to 48½° on the 19th; the mean value for the week was 42½°. The mean daily range of temperature in the week was 18½°, the greatest range in the day being 23¾°, on the 23d, and the least 13¼°, on the 22d.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—April 18, 49°.7, + 2°.7; 19th, 57°.1, + 9°.9; 20th, 51°.3, + 3°.9; 21st, 48°.8, + 1°.2; 22d, 49°.1, + 1°.3; 23d, 48°.5, + 0°.5; 24th, 49°.4, + 1°.2. The mean temperature of the air for the week was 50°.6, being 3° above the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 138° on the 19th, 135° on the 18th, and 129° on the 20th; on the 24th the reading did not rise above 94°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 30¼° on the 18th, and 32¾° on the 23d; the mean of the seven lowest readings was 37°.

Wind.—The direction of the wind was S.S.W., and W.S.W., and its strength strong.

The weather during the week was fine, bright, and warm.

Rain fell on two days; the amount measured was 0.28 inch.

England: *Temperature.*—During the week ending Saturday, April 24, the highest temperatures of the air observed by day were above 66° at Blackheath, Cambridge, Norwich, and Hull, and below 61° at Plymouth, Bristol, Wolverhampton, and Bradford; the mean value from all stations was 63½°. The lowest temperatures of the air observed by night were below 37° at Truro, Plymouth, Wolverhampton, and Nottingham; and above 42° at Liverpool and Sunderland; the general mean from all places was 38°. The extreme range of temperature in the week was above 30° at Blackheath, Cambridge, and Nottingham, and below 21° at Brighton, Bristol, and Liverpool; the mean range of temperature from all stations was 25½°.

The mean of the seven high day temperatures was above 61° at Blackheath, Cambridge, Norwich, Nottingham, and Sunderland, and below 57° at Plymouth, Bristol, Liverpool, and Bradford; the mean from all places was 59¼°. The mean of the seven low night temperatures was below 43° at Blackheath, Wolverhampton, Nottingham, Hull, and Leeds, and above 45° at Plymouth and Norwich; the general mean from all stations was 43¾°. The mean daily range of temperature in the week was above 19° at Cambridge and Nottingham, and below 11½° at Plymouth and Liverpool; the mean daily range from all places was 15¼°.

The mean temperature of the air for the week from all stations was 50°, being 6¼° higher than the value for the corresponding week in 1879. The mean temperature was above 51° at Cambridge, Norwich, Nottingham, and Sunderland, and below 49° at Bristol, Wolverhampton, Liverpool, Bradford, and Leeds.

Rain.—The amounts of rain measured during the week varied from 0.59 inch at Bristol and 0.45 inch at Cambridge to 0.05 inch at Sheffield and 0.06 inch at Wolverhampton, Norwich, and Sunderland. At Leeds no rain was measured. The average fall over the country was 0.22 inch.

The weather during the week was fine, bright and warm. A lunar halo was seen at Cambridge on April 23.

Scotland: *Temperature.* — During the week ending Saturday, April 24, the highest temperatures of the air observed by day varied from 61° at Dundee to 56¾° at Glasgow, the mean from all places was 58½°. The lowest temperatures of the air observed by night varied from 37¼° at Edinburgh to 42° at Glasgow; the mean value from all stations was 39°. The mean range of temperature in the week was 19½.

The mean temperature of the air for the week from all stations was 48¾°, being 7½° higher than the value for the corresponding week in 1879. The highest were 49½° at Leith and 49¼° at Dundee, and the lowest were 48° at Aberdeen and Greenock, and 48½° at Perth.

Rain.—The fall of rain was generally large, and varied from 2.10 inches at Greenock and 1.78 inch at Edinburgh, to 1.15 inch at Dundee and 1.20 inch at Aberdeen; the average fall over the country was 1½ inch.

Dublin.—The highest temperature of the air was 59¾°, the lowest 39½°, the extreme range 20¼°, the mean 49¾°, and the amount of rain 0.42 inch.

JAMES GLAISHER, F.R.S.

Variorum.

Houses for Market Plant Growing. — There is nothing that occurs to us connected with gardening that has so much changed as the description of houses in use by those who grow plants and flowers for the London market. Looking back, say a score of years, it used to be a subject for comment that those engaged in this branch of horticulture paid little regard to the kind of structures they employed, provided the means were such as to enable the requisite temperature to be kept up. Light, one of the most important of all elements to plant-life, evidently was looked upon as a matter of secondary importance, for the houses were often lean-to erections put up against any existing available wall, with a view to saving something in the first cost, and perhaps to some extent with an eye to a less consumption of fuel. To dear glass were no doubt attributable the small squares with their numerous laps, as also the heavy rafters, which all had a tendency in the same direction—to diminish the light, of such importance to a strong robust character in the plants cultivated within them. Plenty of these kinds of old houses no doubt are yet made to do duty, but amongst the best growers almost the whole of this description have been swept away, and others of a character as different in the matter of the light afforded as it is possible to make them are now used; instead of the little squares, the glass is now often 14 or 15 inches wide by 2 feet in length, with the woodwork in the roofs that carry it trussed and tied, so as to permit of the bars being reduced in substance to the lowest possible point consistent with stability. The houses of the modern market growers are like those of times past, insomuch that they are strictly utilitarian in their construction; little attention is given to finish or appearance, but if they are examined closely in many cases it will be found that in the important matter of timber the much dearer, but long-enduring, Pitch Pine is taking the place of the ordinary yellow deal. In the essential matter of position, those in private establishments, who have the erection of new plant-houses under their control, might with advantage follow the lines of the market growers, particularly in the care that is now taken to keep them away from everything in the shape of high walls, trees, or other objects that diminish the light. Through this not being foreseen or acted upon there is many a range of otherwise good houses so very much reduced in usefulness that all the care and skill possible in cultivation can never enable the grower to produce plants equal to those that are grown in suitable houses situated in a good position.

Enquiries.

He that questioneth much shall learn much.—Bacon.

The Pines of Ravenna.—It has been lately stated that these trees, celebrated by Dante and Byron, have suffered considerably from the late severe winter. Can any of your readers say if they are Stone Pines (Pinus Pinea), or Pinus maritima? *G., Bath.*

Answers to Correspondents.

Bulbs for Exhibition: *Exonian.* Neither Caladiums, Gloxinias, nor Anemones, are bulbs, strictly speaking, and therefore they would not be properly admissible to a "Miscellaneous Collection of Bulbs" for exhibition, unless there is some note or regulation permitting a very broad definition of the term. In all the cases cited the so-called roots are tubers.

Damaged Leaves: *W. H. G.* The cause is, no doubt, bad glass, the mischief being owing to sunburn.

Dandelions: *J. A. C.* We know of no method better than extirpation. A dressing of nitrate of soda, or of ammonia salt, would develope the grasses at the expense of the weeds.

Defective Pine-apple: *Constant Reader.* The Queen section of all others is less liable to ripen in such a way. Very powerful rays of sunshine will by means of a defect in the glass form a focus, and its operation upon a fruit would be similar to the defect described, but this would hardly be the case yet. Conical shaped and deep fruiting kinds, as Black Prince, Prince Albert, and others, at certain times will not ripen perfectly, and this may be the case with the Pine in question.

Golden Feather Pyrethrum: *W.* This was sent out in 1867 by Messrs. E. G. Henderson & Sons, having been raised in a cottager's garden at Ipswich, and acquired by Messrs. Henderson, by whom it was exhibited. It was not at first known that it would reproduce itself by seed.

Grubs: *J. V. C.* They were smashed when they reached us; but we think they are the larva of the Daddy Longlegs.

Indian Tea Plantations: *Cor.* Apply to the India Office, or the Secretary of the Society of Arts.

Insects: *A. G.* The destructive weevil (Otiorhynchus sulcatus, *Gard. Chron.* 1841, p. 292). *I. O. W.*—*W.* Your Raspberry shoots are infested with the red caterpillar of a pretty little moth (not with a weevil as you suppose), Tinea variella. Nothing but crushing the buds will destroy them now the caterpillars are full-grown (see *Gardeners' Chronicle*, 1853, p. 757). *I. O. W.*—*Dr. Morton.* The insect sent is the larva of one of the ground beetles (Carabus, sp.). It feeds on other insects and worms, and should be protected. *I. O. W.*—*A Country Seedsman.* The seed Peas sold, apparently in an entire condition, were infested with the Pea weevil (Bruchus Pisi), the larvæ of which had lived within the Pea and eaten its interior, and then become perfect beetles, which, when the Peas were soaked in water before planting, ate their way out and floated on its surface (see *Gardeners' Chronicle*, 1843, p. 189). *I. O. W.*—*J. C. M.* The larvæ sent with the diseased Wheat plant are those of the Chlorops lineata, or Wheat-fly (see *Gard. Chron.* 1848, p. 780, and p. 798 for figures). The plants so attacked will most probably throw out strong side-shoots. *I. O. W.*

Names of Plants: *T. H. Balding.* 1, The Snowy Mespilus (Amelanchier vulgaris); 2, Chrysanthemum, or Pyrethrum frutescens, whichever you please; 3, the Winter Aconite is Eranthis hiemalis.—*H. Munro.* 1, Ægopodium Podagraria; 2, Geranium Robertianum.—*Brazil.* Cattleya Forbesii.—*J. G. N.* Orobus vernus.—*F. R. S.* Oncidium sphacelatum.—*W. Caust.* Lonicera Ledebourii.—*D. B.* 1, Sedum acre; 2, Saxifraga crassifolia; 3, Cissus heterophylla variegata; 4, Ficus stipulata (repens).—*A. Prescott.* Lonicera xylosteum (the Fly Honeysuckle).—*C. W. D.* Apparently Claytonia caroliniana. — *Cognon & Reid.* One of the forms of Narcissus poeticus—as far as can be judged from the material sent, the form called plicatus. The Polyanthuses are good border flowers, but nothing more.—*Mrs. Prescott.* [Lonicera xylosteum, D. B.

Peach Leaves: *A Somerset Gardener.* The falling of the leaves may be owing to last year's immaturity of the wood, acted on by the natural impulse of spring growth; or perhaps it may be owing to some check, or sudden change to which the trees have been subjected. The spots on the leaves look as if they had been caused by the sun acting on drops of water either on the glass or the leaves themselves. A moderate steady temperature, and careful ventilation, will probably put matters right.

PLANTS FOR CARPETING: *W.* Plants suitable for carpet or pattern beds, or the carpeting of foliage beds, will be found amongst the following:—Alternanthera amœna, A. amabilis latifolia, A. magnifica, A. paronychioides major, A. spathulata, A. versicolor, Antennaria plantaginea, A. tomentosa, Amaranthus melancholicus ruber, Coprosma Baueriana, Coleus Verschaffeltii, Cacalia tomentosa, Echeverias of sorts, Königa maritima variegata, Kleinia repens, Lamium purpureum aureum, Leucophyton Brownii, Mesembryanthemum cordifolium variegatum, Veronica incana, and Veronica Andersoni variegata. The above-named are best suited for carpet or pattern beds. The following are best adapted for the carpeting of foliage beds:—Ageratum of sorts, Acanthus lusitanicus, Begonia ricinifolia, Coleus of sorts, Centaurea gymnocarpa, Chrysanthemum pinnatum, Geranium anemonæfolium, Heliotropes of sorts, Hydrangea hortensis, Ligularia Kæmpferii fol. var., Lantanas of sorts, Plumbago capensis, and Petunias of sorts.

PRIMROSES: *Selborne.* Very fine. Many thanks for the bunch—a delightful "sniff" of the country.

ROSES: *A. Grant.* The "disease" is a fungus—the Rose-rust (Lecythea rosarum).

STRAWBERRIES: *G. C. C. C.* Sun-scald whilst wet. There is no appearance of disease.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—Wood & Ingram (Huntingdon), Select Catalogue of Florists' Flowers, Bedding Plants, &c.—T. L. Mayos (Hereford), Bedding Plants, &c.—James Veitch & Sons (King's Road, Chelsea, S.W.), Catalogue of New Plants, 1880; List of Soft-wooded Bedding Plants, &c.—Syers' Eureka Fumigator.

COMMUNICATIONS RECEIVED:—C. L. — Crépin. — The Secretary, Civil Service Commission.—C. Y. M.—J. F. S.—H. G. Rchb. f. (registered).—Ed. André.—W. B.—G. Fox.—W. H. F.—T. V. L.—G. M.—H. A. B.—E. G. Henderson & Co.—H. Munro.—T. S.—C. M.—Corry & Soper.—L. L.—C. W. D.—H. P.—J. B.—J W.—James Veitch & Sons (2).—A. Van Geert—N. G. R.—C. R.—Statham & Co.—G. D.—J. V. C.—C. G.—J. Wheeler, Cirencester.—Trelcar & Sons.—J. W., Alfreton.—W. B. H.—W. R.—H. R. H.—T. W. H.—W. C.—H. W. W.—W. H.—E. W.—Novice.—J. S.—G. T. M.—H. K.—J. Smith.—A. E. Syers—G. D.—H. Prestoe.—James Wylde.—W. B.—E. W.—R. P.—W. W.—Inquirer.—E. W. B.—W. Elliott, Melbourne.—W. R.—L. L.—C. L.

Markets.

COVENT GARDEN, April 29.

An increased supply of Strawberries has been met by increased demand, though buyers have had the advantage. Grapes are more than equal to the demand, and prices are exceptionally low. Trade generally quiet. *James Webber, Wholesale Apple Market.*

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Ferns, in var., doz.	4 0–18 0
Azaleas, per dozen	18 0–60 0	Ficus elastica, each	1 6– 7 6
Bedding Plants, various, per doz.	1 6– 2 6	Foliage Plants, various, each	2 0–10 6
Begonias, per doz.	6 0–18 0	Fuchsias, per dozen	9 0–15 0
Bouvardias, per doz.	12 0–24 0	Genista, per dozen	9 0–18 0
Calceolaria, per doz.	8 0–12 0	Lobelia, per dozen	6 0– 9 0
— Herbaceous, doz.	6 0– 9 0	Mignonette, per doz.	5 0– 9 0
Cinerarias, per doz.	6 0–12 0	Myrtles, per doz.	6 0–12 0
Cyclamen, per dozen	9 0–24 0	Palms in variety, each	2 6–21 0
Cyperus, per dozen	4 0– 9 0	Pelargoniums, dozen	9 0–24 0
Dielytra, per doz.	9 0–15 0	— Ivy-leaved, doz.	4 0– 6 0
Dracæna terminalis	30 0–60 0	Roses, Hybrid Perpetual, per doz.	18 0–36 0
— viridis, per doz.	12 0–24 0	— Fairy, per dozen	6 0–10 0
Erica various, per dozen	12 0–30 0	Spiræa, per dozen	6 0–18 0
Euonymus, various, per dozen	6 0–18 0	Stocks, per dozen	4 0– 8 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Narcissus, various, 12 bunches	4 0– 9 0
Anemone, 12 bun.	3 0– 6 0	Pelargoniums, 12 spr.	0 6– 1 0
Arum Lilies, per dozen	3 0– 6 0	— zonal, 12 sprays	0 3– 0 9
Azalea, 12 sprays	0 6– 1 0	Primroses, 12 bunch.	0 9– 1 0
Bouvardias, per bun.	1 0– 4 0	— double, white, 12 bunches	1 6– 3 0
Camellias, per doz.	1 0– 6 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	Roses (indoor), doz.	1 0– 9 0
Cowslips, 12 bunches	1 0– 1 6	— Roses, Fr., doz.	2 0– 6 0
Cyclamen, 12 blms.	0 4– 0 6	Spiræa, 12 sprays	1 0– 2 0
Daffodils, various, 12 bunches	4 0– 9 0	Tropæolum, 12 bun.	1 0– 3 0
Eucharis, per doz.	4 0– 6 0	Tuberoses, per dozen	4 0– 6 0
Euphorbia, 12 sprays	3 0– 6 0	Tulips, 12 bunches	4 0– 8 0
Gardenias, 12 blms.	2 0– 8 0	Violets, French, per bunch	1 6– 2 6
Heliotropes, 12 sp.	0 6– 1 0	— English, p. bun.	1 0– 2 0
Hyacinths, 12 bun.	4 0–12 0	Wallflowers	4 0– 9 0
Lily of the Valley, 12 sprays	0 9– 2 0	White Lilac, Fr., per bundle	4 0– 8 0
Mignonette, 12 bun.	6 0– 9 0		

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Lemons, per 100	6 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– 1 6	Pears, per dozen	4 0– 8 0
Gooseberries, green, per quart	0 6– 0 9	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb.	4 0–10 0	Strawberries, per oz.	0 6– 0 9

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, per bundle	1 0– ..	Horse Radish, p. bun.	4 0– ..
— English, p. 100	12 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— French, per bun.	3 0– 6 0	Mint, green, bunch	1 0– ..
— French natural, per bundle	2 0–10 0	Mushrooms, p. baskt.	1 6– 2 0
Beet, per doz.	1 0– 2 0	Onions, per bushel	8 0– ..
Brussels Sprouts, lb.	0 6– ..	— Spring, per bun.	0 6– ..
Cabbages, per doz.	1 0– 2 0	Parsley, per lb.	1 6– ..
Carrots, per bunch	0 8– ..	Peas, per lb.	1 0– ..
— French, per lb.	0 6– ..	Potatos (new), per lb.	0 3– 0 9
Cauliflowers, per doz.	2 0– 5 0	Rhubarb (Leeds), per bundle	0 4– 0 9
Celery, per bundle	1 6– 4 0	Seakale, per punnet	3 0– ..
Chilis, per 100	3 0– ..	Shallots, per lb.	0 6– ..
Endive, per 2 doz.	1 6– 3 0	Spinach, per bushel	2 6– ..
Garlic, per lb.	1 0– ..	Tomatos, per dozen	3 0– ..
Herbs, per bunch	0 2– 0 4	Turnips, new, bunch.	0 6– ..

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 160*s.* to 200*s.* per ton. German, 6*s.* to 7*s.* 6*d.* per bag; new English, 1*s.* 6*d.* per lb.

SEEDS.

LONDON: *April* 28.—The end of the season being now close at hand, the attendance of buyers on the market to-day was most meagre. As regards American Clover seed the prevalent feeling exhibits less depression; nevertheless, current prices are still at a lower level, whilst the quality of the seed is finer than has ever before been the case. Other varieties of farm seeds are also surprisingly cheap. Holders of Trefoil are accepting reduced terms. The trade for Lucerne improves. Of Sainfoin and Timothy stocks are at a low ebb. Spring Tares point downwards. Hemp seed realises 31*s.* per quarter. Canary is neglected. There is a better sale for Mangel seed. Scarlet Runners are dearer; White Runners being remarkably cheap, consequently meet with more attention. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade, though very quiet at Mark Lane on Monday, was somewhat steadier in tone than on Monday se'nnight. As regards Wheat, and indeed all classes of grain, buyers operated with caution. A limited business was done in English Wheat at the rates of last week; foreign met perhaps with rather more inquiry, but with no improvement in value. The Barley trade showed no activity. Malt was quiet and unaltered in price. Oats were only a quiet sale. Maize was dull, at a reduction of about 1*s.* per quarter as compared with last Monday. Beans were steady; Peas showed weakness; and flour was quiet but steady, the rates of last week being supported.—On Wednesday a dull tone prevailed at market, and any alteration in price was favourable to the consumer. In both English and foreign Wheat prices were inclined to droop. Barley moved off quietly. Oats supported the rates of Monday, but as regards Maize prices had a downward tendency. Beans were firm, Peas were quiet, and no change occurred in flour.—Average prices of corn for the week ending April 24:—Wheat, 48*s.* 1*d.*; Barley, 32*s.* 8*d.*; Oats, 24*s.* 11*d.* For the corresponding period last year:—Wheat, 40*s.* 11*d.*; Barley, 31*s.*; Oats, 20*s.* 11*d.*

HAY.

Tuesday's Whitechapel Market report states that the supply of fodder was large, and the trade very dull. Inferior stuff was the turn cheaper. Quotations:—Prime Clover, 100*s.* to 132*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 102*s.* 6*d.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 38*s.* per load of 36 trusses.—On Thursday there was a large supply of hay and straw on sale. Trade was dull, and prices unchanged. — Cumberland Market quotations: — Superior meadow hay, 100*s.* to 108*s.*; inferior, 50*s.* to 76*s.*; superior Clover, 126*s.* to 132*s.*; inferior, 84*s.* to 110*s.*; and straw, 36*s.* to 40*s.* per load.

POTATOS.

From the Borough and Spitalfields Markets reports we learn that good Potatos continue to move off freely, and prices remain firm. Quotations:—Scotch Regents, 140*s.* to 160*s.*; ditto Champions, 180*s.* to 200*s.*; Lincoln ditto, 180*s.* to 190*s.*; Victorias, 160*s.* to 180*s.* per ton. German reds, 4*s.* 6*d.* to 7*s.* 6*d.*; Dutch rocks, 4*s.* 6*d.*; and French whites, 4*s.* 6*d.* per bag.—The imports into London last week comprised 34,157 bags from Hamburg, 7180 Danzig, 12,873 sacks, 6780 bags Stettin, 5981 bags Bremen, 7366 Harburg, and 2800 Konisburg, in addition to smaller amounts from other Continental ports.

COALS.

The prices current at market during the week were as follows:—West Hartley, 14*s.* 3*d.*; East Wylam, 15*s.* 6*d.*; Walls End—Haswell, 16*s.*; Hetton, 16*s.*; Hetton Lyons, 14*s.* 6*d.*; Hawthorns, 14*s.* 9*d.*; Lambton, 15*s.* 6*d.*; Wear, 14*s.* 6*d.*; South Hetton, 16*s.*; Tunstall, 14*s.* 6*d.*; Chilton Tees, 15*s.* 6*d.*; Tees, 15*s.* 9*d.*

Government Stock.—The closing price of Consols on Monday was 99 to 98⅞, for both delivery and the account. Tuesday's final quotation was 99⅛ to 99¼ for delivery and the account. On Wednesday 99 to 99⅛ were the closing figures for account and delivery. Thursday's leaving off prices were, for delivery, 98⅞ to 99, and 99 to 99⅛ for the account.

Verbenas—50,000 Now Ready for Sale.

S. BIDE can now supply, as he has done on previous occasions, really good strong spring-struck Plants of Purple, Scarlet, White, and Pink VERBENAS, at 6*s.* per 100. Good Exhibition Varieties, 8*s.* per 100. IRESINE LINDENI, 6*s.* per 100. HELIOTROPE, 6*s.* per 100. COLEUS VERSCHAFFELTII, 8*s.* per 100. MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATA, 8*s.* per 100. Package free for cash with order.

Also strong healthy CUTTINGS of the above at half-price, free by post.

S. BIDE, Alma Nursery, Farnham, Surrey.

TEA SCENTED ROSES,

For Planting Out or Greenhouse Culture.

Upwards of 20,000 strong, well established plants, in pots.

List and Prices on application to

CRANSTON'S NURSERY & SEED COMPANY, Limited,

KING'S ACRE, near HEREFORD.

SPRING FLOWERS.

Choice Varieties of POLYANTHUS and Single and Double PRIMROSES and AURICULAS, &c. Fine Strain of SWEET WILLIAM. Apply to

Mr. COOPER, Calcot Gardens, near Reading.

MANGEL SEED.

JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.

Bardney Manor, Lincoln.

PEDIGREE ROSES.

The greatest success yet achieved in the production of new Roses is the Stapleford Pedigree Roses.

DESCRIPTIVE LISTS post-free, including the striped Tea Rose American Banner, and the beautiful crimson climber, James Sprunt; this last Rose can only be obtained in England from my establishment.

H. BENNETT, Manor Farm Nurseries, Stapleford, Salisbury.

GEO. JACKMAN & SON
WOKING NURSERY SURREY

JACKMAN'S Descriptive Priced CATALOGUE, Free on application, containing—
JACKMAN'S List of FRUIT TREES, suitable for large or small Gardens.
JACKMAN'S List of ROSES—selected Dwarfs and Standards.
JACKMAN'S List of AMERICAN PLANTS, for Peat and Loamy Soils.
JACKMAN'S List of CONIFERS, for Lawns and Pleasure Grounds.
JACKMAN'S List of HARDY SHRUBS, adapted for Belts, Shrubberies, Screens, &c.
JACKMAN'S List of ORNAMENTAL TREES, suitable for Parks and Private Gardens.
JACKMAN'S List of HARDY CLIMBERS, including their celebrated Clematises.
JACKMAN'S Assortment of TREES and SHRUBS, adapted for planting by the Sea-coast, on Chalk Soil, beneath the Shade of Trees, and in Cities and Towns.

GEO. JACKMAN & SON
WOKING NURSERY SURREY

RARE and BEAUTIFUL ORCHIDS.

SPECIAL CHEAP OFFER.

JOHN H. LEY,

ROYAL NURSERY, CROYDON,

Has a fine stock of Established Plants of the following most popular and beautiful ORCHIDS, at prices far below their value and less than equal-size plants have ever been supplied at before. Purchasers' selection from following, 5*s.* each, 42*s.* per dozen, in 4-inch pots, flowering-size plants. Several sorts showing spikes of flower.

List of other varieties on application.

Ada aurantiaca	Mormodes pardinum
Epidendrum vitellinum majus	Lælia anceps
Cattleya Mendelli	,, albida
Maxillaria grandiflora	,, autumnalis
Oncidium ornithorynchum	Pleione Wallichii
,, Rogersii	,, lagenaria
,, unicorne	Pilumna fragrans
,, altissimum	Odontoglossum Rossi majus
,, fuscatum	,, cirrosum
,, sphacelatum	,, pulchellum majus
,, varicosum	,, grande
Calanthe vestita rosea	Catasetum maculatum
,, ,, lutea	Trichopilia tortilis

Extra strong plants, in 4 and 5-inch pots, 10*s.* 6*d.* each, 84*s.* per dozen, as follows:—

Piluma fragrans	Cymbidium aloifolium
Anguloa Clowesii	Lycaste gigantea
Cœlogyne cristata	Cypripedium Roezlii
Dendrobium thyrsiflorum	Epidendrum vitellinum majus, full of flower-spikes
,, biflorum	Cattleya crispa superba
,, Calceolus	Odontoglossum cirrosum
,, Paxtoni	,, Rossi majus.
,, Freemanni	
Oncidium tigrinum	

Thirteen plants to the dozen. All packages gratis ONLY for Cash WITH Order.

JOHN H. LEY, Royal Nursery, Croydon.

To Nurserymen, Seedsmen, and Florists.

Copy from *London Gazette*, Feb. 27, 1880.

NOTICE is HEREBY GIVEN that the PARTNERSHIP heretofore subsisting between Joseph Rains, Marcus Rains, and Morris Isaacs, carrying on business as Dealers in Dutch Flower Roots and Bulbs, at 62, Tenter Street South, Goodman's Fields, Whitechapel, in the County of Middlesex, under the style or firm of M. ISAACS, RAINS AND CO., was DISSOLVED, by an order of the Chancery Division of Her Majesty's High Court of Justice, on November 27, 1879, as from that date.

MR. MORRIS ISAACS, for fourteen years the Senior Partner in the above late Firm, will for the future carry on the Business of IMPORTER of DUTCH FLOWER ROOTS, in PARTNERSHIP with his Son, Mr. LEWIS ISAACS, at their New Warehouse, 3, Victoria Warehouses, Mansell Street, Goodman's Fields, London, E.C.

Flowering Pelargoniums.

F. AND A. SMITH have an extensive stock of the above, in best sorts only. Prices (which are low) on application.

The Nurseries, West Dulwich, S.E.

N.B. Also splendid SPIRÆAS and a few CYTISUS.

HYBRID RHODODENDRONS, all colours in mixture, fine plants, 1½ to 3½ feet high, £10 per 1000.—W. JACKSON, Blakedown, near Kidderminster.

STEPHANOTIS FLORIBUNDA on Sale, very fine plant in tub, trained on flat trellis. Easily removed. Clean, and in robust health. Price £10, or would EXCHANGE for ADIANTUM CUNEATUM.

TAYLOR AND CO., Timperley, Cheshire.

Seed Potatos.

MAGNUM BONUM and CHAMPION, the two best disease-resisting Potatos in cultivation. Stock of the former from Messrs. Sutton, 1879, latter from Scotland. Sample hundredweight bag of Magnum Bonum, 13*s.*, and Champion, 9*s.* 6*d.* (sound and true to name), put on Rail on receipt of Post-office Order and address.

J. T. SMITH, Potato Merchant, Wisbech, Cambridgeshire.

PEAS.—A few bushels for Sale, at 24*s.*, to clear—Little Gem, Dr. Maclean, Prince of Wales. Good samples: true.

THOS. MILNER AND SON, Bradford.

Uninjured by Frost.

EVERGREENS.—In splendid condition for safe removal; having been regularly transplanted and growing in a very exposed situation, are very hardy and robust, thus having withstood the past excessively severe winter without injury.

With reference to the hardy nature of the Trees and Plants reared in these Nurseries, a customer in Yorkshire writes:—

"*I am very well satisfied with the Roses you sent—the frost has not hurt them, whilst a lot I got from the South have suffered very much.*"

CATALOGUES on application.

JAS. DICKSON & SONS, "Newton" Nurseries, Chester.

TWELVE Beautiful and New CALADIUMS, 21*s.*; strong plants, about 1 foot high, in 4-inch pots, fit for 8-inch pots at once, selected from twenty finest and most distinct sorts, such as Beethoven, Belleymei, Albert Edward, &c.; carefully packed to travel any distance. Hamper and packing gratis and carriage paid to any railway station in England for cash with order. Dry roots (carriage free), 10*s.* 6*d.*, 21*s.*, and 42*s.* per dozen, according to size.

J. H. LEY, Royal Nursery, London Road, Croydon.

Notice.

GEO. SMITH is now sending out his three splendid Exhibition FUCHSIAS, viz., Eclipse, Grand Duchess and Orlando. For description see Circular, that will be forwarded on application. The set 21*s.*; the usual discount to the Trade. Post-office Orders to accompany all orders from unknown correspondents.

Tollington Nursery, Hornsey Road, London, N.

To the Seed Trade.

W. CROWDER has to offer to the Trade:—

SWEDE, Crowder's Improved Purple-Top.
" Hartley's Short-Top.
TURNIP, Heanley's White Globe.
" White Stone.
" Crowder's Improved Green Globe.
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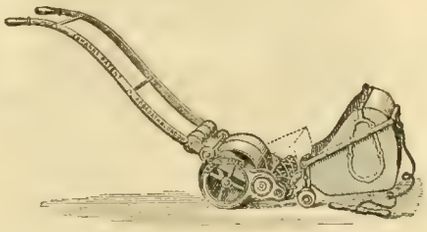

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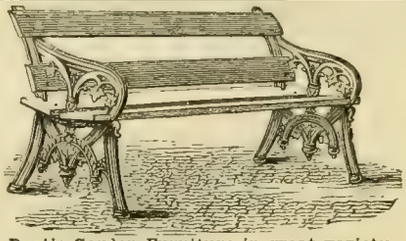

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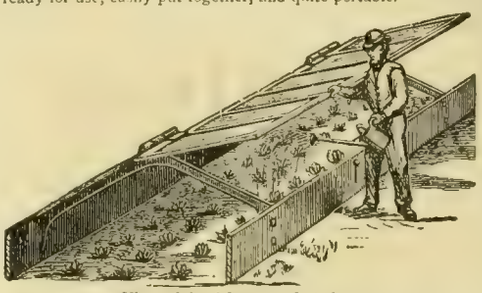

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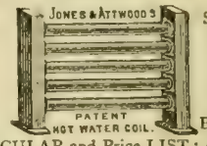

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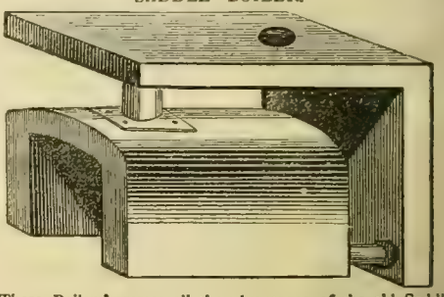

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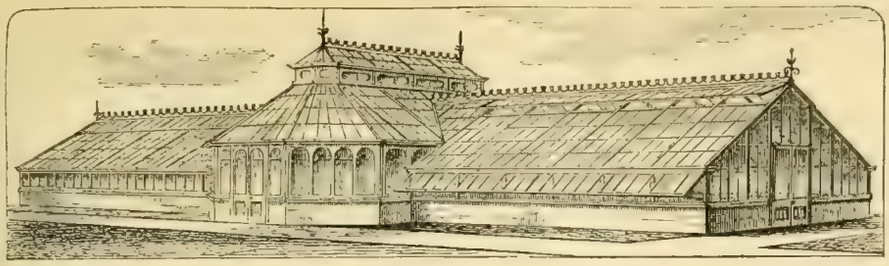

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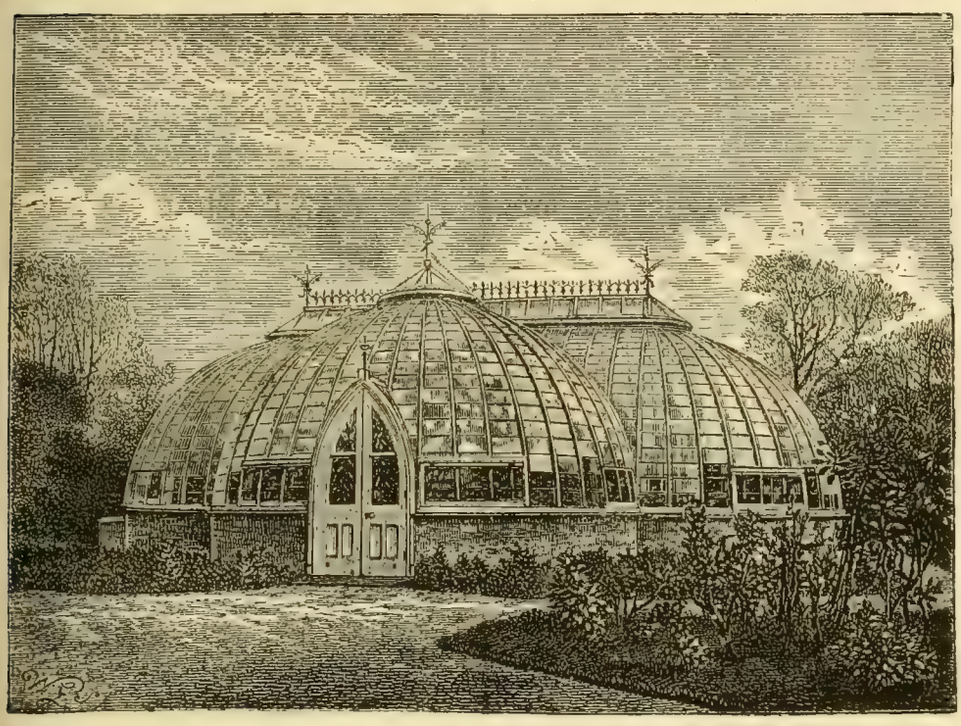

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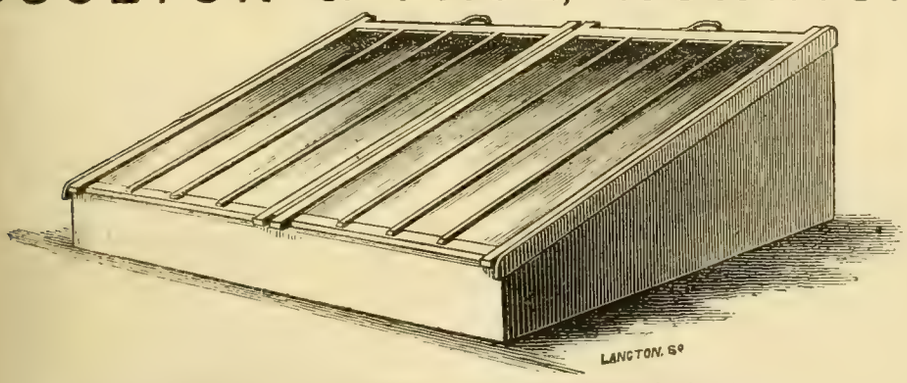

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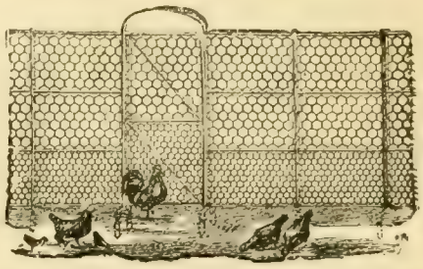

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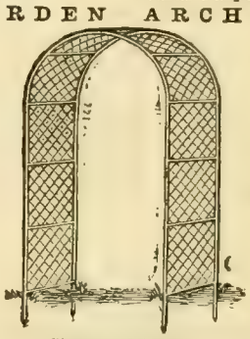

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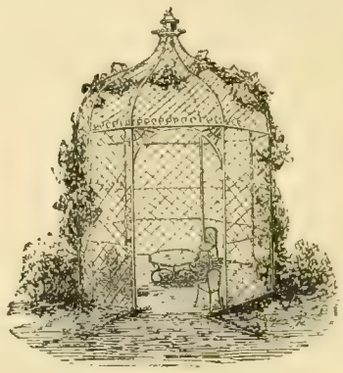

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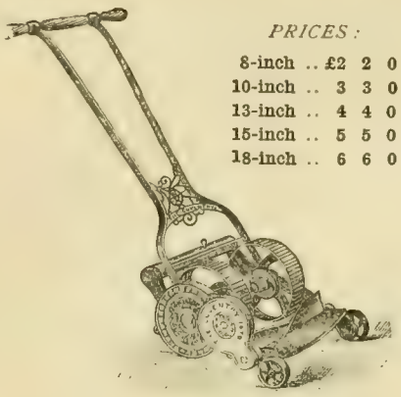

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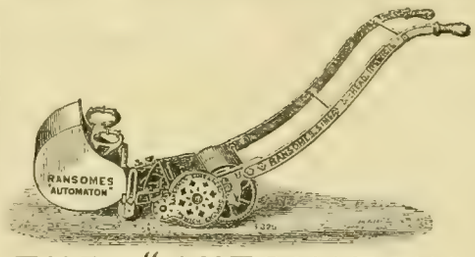

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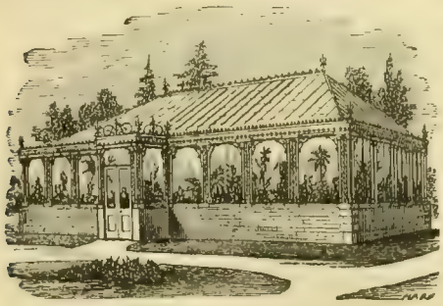

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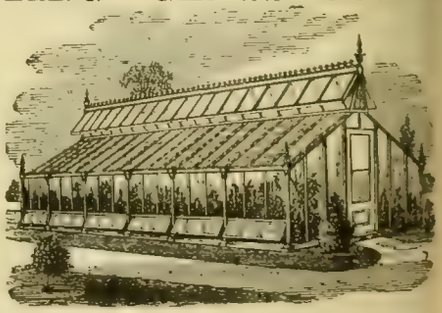

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 332.—Vol. XIII. { New Series. } SATURDAY, MAY 8, 1880. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

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1879.—October 11.	1880.—January 10.
,, 25.	,, 24.
November 8.	February 7, 21.
,, 15.	March 20, 27.
,, 29.	April 3.
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NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral at 11 A.M., Scientific at 1 o'Clock—Ordinary Meeting for Election of Fellows at 3 P.M., and Band, on TUESDAY NEXT, May 11. Admission, 1s.

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THE ABOVE CATALOGUE, containing Lists of Hardy Orchids, Bamboos, and Ornamental Grasses, Carnivorous Plants, Bulbs, Climbing and Trailing Plants, and a fine selection of Choice New and Rare Hardy Perennials. Post-free on application.

THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London.

New Lilies.

TWELVE LILIUM SPECIES, good bulbs, 12s. This is a fine, new, and as yet unnamed species from the Rocky Mountains. The flowers are large, brilliant red, with yellow stamens; a grand addition to its class. Only a few have been imported by J. H. L. Carriage free on receipt of Post-office Order. LIST of other choice Lilies free.

J. H. LEY, Royal Nursery, Croydon.

FRENCH ASTERS. The best varieties only. Price 1s. and 2s. 6d. per packet, post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

To the Trade.

CINERARIA SEED, 1880 Crop.

F. AND A. SMITH can supply the above (saved from their well-known collection) by weight. Price on application.

The Nurseries, West Dulwich, S.E.

Now is the Best Time to Transplant Hollies.

HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d. to 31s. 6d. each. Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.

RICHARD SMITH AND CO., Nurserymen, Worcester.

To the Trade.

ROSES.—Maréchal Niel, Gloire de Dijon, Madam Berard, on Seedling Brier, in 5-inch pots, good stuff, all last year's working, 75s. per 100.

GEORGE COOLING, Nurseryman, Bath.

To the Trade and Amateur Rosarians.

NEW ROSES in POTS. TEA and NOISETTE ROSES in Pots.—One of the most extensive, most select, and perhaps the most thriving stock of young plants in the country.

Special LIST, now being prepared, will be sent gratis and post-free to applicants.

EWING AND CO., Eaton, near Norwich.

POT ROSES.—The Largest and Finest Stock in the country of hardy well-established Plants for present Planting or Greenhouse Culture.

Priced LISTS free by post.

WM. PAUL AND SON, Paul's Nurseries, Waltham Cross, Herts.

PENZANCE EARLY WHITE BROCCOLI PLANTS.—Good plants, free by post, at 1s. per 100.

J. G. MITCHINSON, Seed Stores, Penzance.

Floral Commission Agency.

WANTED, GARDENIAS, Crimson and Maréchal Niel ROSES, CARNATIONS, choice ORCHIDS. Best quality only. Letters and consignments to W. CALE, 4, Tavistock Row, Covent Garden, W.C.

WANTED, VERBENAS, strong-rooted Cuttings and Seedlings; also Bedding GERANIUMS. State lowest Cash price per 1000 to

JAMES KIRK, Stourbridge.

WANTED, TEA ROSES—Niphetos, Mdlle. Falcot, Isabella Sprunt—healthy young plants in pots, on own roots or Brier. State lowest cash price per 100 to S. BADMAN, 4, Cobden Terrace, Canterbury Road, Forest Hill, S.E.

CARTER'S HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other competitors, English as well as Foreign, received awards of inferior merit.

CARTERS, the Queen's Seedsmen, High Holborn, London.

Gardenias.

MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.

Royal Nurseries, Ascot, Berks.

Seeds—Seeds—Seeds.

WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

ANTHURIUM ANDREANUM (Linden); First-class Certificate.—The grand novelty, described in the *Gardeners' Chronicle*, 1880, on p. 400, and illustrated on p. 497, will be SENT OUT on the 1st of OCTOBER next, at Twenty Guineas each. The subscription list is now open at this establishment. Descriptive CATALOGUES on application.

J. LINDEN, Exotic Nurseries, Ghent, Belgium.

Verbenas—Verbenas.

VERBENAS.—Strong, healthy, well-rooted Cuttings, free from disease, guaranteed to give satisfaction, at 6s. per 100, 50s. per 1000, of Purple, White, Crimson, and Pink, or Rose. Package free. Cash with orders. Sample dozens, post-free, 1s. 2d. per dozen.

T. FLETCHER AND SON, Florists, &c., Chesterfield.

Verbenas—Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other good Bedding and Exhibition varieties, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, for cash with order.

Queen's Road Nursery, Markhouse Common, Walthamstow.

JOSEPH BAUMANN, NURSERYMAN, Ghent, Belgium, begs to offer his splendid Standard and Pyramidal SWEET BAYS, of different sizes, at from 4s. to 560s. the couple. Details in full of these magnificent Trees will be found in his letter CATALOGUE, to be had gratis on application. 100 couples of these Sweet Bays will figure throughout this summer at the National Exhibition at Brussels

CAMELLIA - FLOWERED BALSAM. The best varieties only. Price 6d., 1s., and 1s. 6d. per packet, post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

PELARGONIUMS, Show and Fancy, best varieties, good plants, in 48-pots, coming into flower, 8s. per dozen, 50s per 100.

JAS. GARAWAY AND CO., Durdham Down, Clifton, Bristol.

HARDY PERENNIALS and FLORIST FLOWERS.—The above Two New CATALOGUES are now in circulation, and may be had Post-free by applying to THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London, N.

To the Trade.

HOLLIES, Green, transplanted, 6 to 12 inches, 8s. per 100. 70s. per 1000.

THOMAS PERKINS AND SONS, 34, Drapery, Northampton.

NEW CATALOGUE for 1880.—All intending purchasers of Greenhouse and Stove Plants, Herbaceous Plants, Florists' Flowers, Indoor and Outdoor Plants generally, should look through our CATALOGUE and compare our Prices before purchasing elsewhere. See also last week's large Advertisement.

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

AURICULA SEED. Saved from named flowers only—Stage and Alpine. 2s. 6d. per packet.

CHARLES TURNER, the Royal Nurseries, Slough.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.

CATALOGUES free. The Trade supplied.

CABBAGE PLANTS.—200,000 Red Pickling, at 5s. per 1000. Good strong healthy plants. Cash or reference from unknown correspondents.—Apply to

W. VIRGO, Wonersh Nursery, near Guildford, Surrey.

Seed Potatos.

H. AND F. SHARPE have still to offer the following varieties of SEED POTATOS at greatly reduced prices, to clear out, viz.:—American Early Rose, Paterson's Victoria, Snowflake, Extra Early Vermont, and Pride of Ontario. Seed Growing Establishment, Wisbech.

DAVID ALLESTER, 6, Market Buildings, Mark Lane, E.C., has placed in his hands, for SALE, 170 Bushels of TURNIP SEED, got mixed by mistake. Very fine stock, Green-top Bullock, Yellow and Green, Round White, Price 20s. per bushel, delivered in London, nett cash.

SALES BY AUCTION.

Catford.

Unreserved Sale, by order of the Executors.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Park House, Southend, Catford, Kent, on WEDNESDAY, May 19, at 1 o'Clock precisely, the whole of the STOVE and GREENHOUSE PLANTS—50 fine grown specimen Camellias and Azaleas, 2,000 Bedding Plants in variety; capital Farm Cart and Effects.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Postponement of Sale.

MESSRS. PROTHEROE AND MORRIS beg to announce that the SALE of ORCHIDS advertised to take place on Monday next is POSTPONED UNTIL MONDAY, MAY 24.

Catalogues had at the Auctioneers' Offices, 98, Gracechurch Street, London, E.C.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 10, at half-past 12 o'Clock precisely, a quantity of plants of the beautiful and rare DENDROBIUM JAMESIANUM, just received from Burmah, where it grows at an altitude of 4000 feet in a cool temperature; added to the beauty of its flowers, the length of time they last makes it a desirable species in every collection. A quantity of plants of DENDROBIUM LITUIFLORUM. This is the beautiful Burmese variety, just received from Burmah in good condition. Also several small collections of ESTABLISHED ORCHIDS, consisting of Odontoglossum vexillarium, O. crispum, O. triumphans, and others; Angræcum sesquipedale, Cypripediums, &c., in variety supposed to be new.

May be viewed the morning of Sale and Catalogues had.

New Cypripediums.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, on TUESDAY, May 11, without the least reserve, two apparently new CYPRIPEDIUMS, with beautifully marked leaves; also a fine Importation of CYPRIPEDIUM STONEI, all in excellent condition.

May be viewed the morning of Sale, and Catalogues had.

Odontoglossum vexillarium Lehmanni, Rchb. f.

ODONTOGLOSSUM ALEXANDRÆ LEHMANNI, Rchb. f. See Professor Dr. Reichenbach's description in the *Gardeners' Chronicle*.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 12, at half-past 12 o'Clock precisely, a splendid lot of the above two new ODONTOGLOTS. The plants are in extra fine condition.

Dried flowers and drawings on view day of Sale, and Catalogues had.

Epidendrum vitellinum majus in flower.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 12, at half-past 12 o'Clock precisely, a quantity of extra-sized plants of this beautiful ORCHID in bloom; its vivid colour and great durability of flower make it specially attractive and valuable.

May be viewed the morning of Sale, and Catalogues had.

Cattleya labiata speciosissima varieties.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 12, at half-past 12 o'Clock precisely, by order of Messrs. Hugh Low & Co., a grand lot of the above-named lovely CATTLEYAS, which produce on short stout bulbs flowers in great profusion, as can be abundantly seen on inspection of the specimens offered. The flowers are usually 7 to 8 inches in diameter, three and four on a spike; sepals and petals delicate rose-purple; lip very large, front portion bright amethyst, with white and yellow markings. The plants are extremely varied in appearance, the labiata type predominating; and all without exception are splendid masses, many with 20 to 50 bulbs; they are well furnished with green healthy leaves, and altogether exceptionally fine.

On view the morning of Sale, and Catalogues had.

Valuable Importations of Orchids.

MR. J. C. STEVENS has received instructions from the New Plant and Bulb Company, Colchester, to SELL by AUCTION at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 13, at half-past 12 o'Clock precisely, several splendid Importations of ORCHIDS, consisting of the beautiful Oncidium superbiens, Odontoglossum hastilabium, Oncidium obryzatum, Maxillaria venusta, &c.; Dendrobium Fytchianum, D. formosum giganteum, D. Freemanni, D. densiflorum, Vanda cœrulea, Aerides Lobbii, Saccolabium Blumei, S. gemmatum (rare), &c.; also Oncidium Marshallianum, O. dasytyle, O. Gardnerianum, O. Forbesii, O. phymatochilum, O. crispum grandiflorum, Lælia Perinnii, Zygopetalum maxillare, &c.

May be viewed the morning of Sale, and Catalogues had.

Specimen Stove and Greenhouse Plants, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 19, at half-past 12 o'Clock precisely, a fine collection of Specimen STOVE and GREENHOUSE PLANTS, including many fine varieties of Ferns, Palms, Anthuriums, Marantas, &c., many of them having taken Prizes at the various Horticultural Shows in Kent; also a collection of ESTABLISHED ORCHIDS, many of them in flower, including fine specimens of Odontoglossum vexillarium, O. Andersonianum, O. triumphans, O. gloriosum, Dendrobiums, &c.

May be viewed the morning of Sale, and Catalogues had.

The Collection of Established Orchids formed by the late J. B. Cockerell, Esq., of Cheshunt.

MR. J. C. STEVENS has received instructions from the Executrix to offer for SALE by AUCTION, without the least reserve, on THURSDAY and FRIDAY, May 20 and 21, at half-past 12 o'Clock precisely each day, the entire COLLECTION of COOL and other ORCHIDS, formed by the late J. B. Cockerell, Esq., comprising beautiful specimen plants of Odontoglossum Alexandræ, triumphans, vexillarium, Andersoni, &c.; Masdevallia Veitchii, Harryana, Lindeni, ignea, all nice healthy plants; Cattleya Mendelli, labiata, lobata, Trianæ, Mossiæ, &c.; Dendrobium Wardianum, crassinode, nobile, and other good varieties; Oncidiums, Calanthes, Epidendrums, &c.

May be viewed the mornings of Sale, and Catalogues had.

Important Collection of Established Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, May 11, at half-past 12 o'Clock precisely, a COLLECTION of ESTABLISHED ORCHIDS, the property of W. S. Gore Langton, Esq., M.P., of Newton Park, Bristol, comprising many of the finest plants and varieties in existence. Amongst them will be found Saccolabium guttatum, Loddige's var., which plant gained the Veitch's Memorial Medal, June 24, 1873, at the Horticultural Exhibition at Bath; other fine specimens, such as Dendrochilum filiforme; Aerides Lindleyana, fine specimen and splendid variety; Angræcum sesquipedale superbum; Cattleya Skinneri, five new growths; Dendrobium densiflorum; Aerides Fieldingii and Lobbii, Cattleya gigas, Odontoglossum Roezlii, Vanda suavis, Veitch's var.; Vanda tricolor, a splendid large variety; Vanda insignis, Camarotis purpurea, Aerides affine majus, Phalænopsis amabilis and Schilleriana, and many other valuable sorts.

May be viewed the morning of Sale, and Catalogues had.

Cattleya Mossiæ and its varieties.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 19, at half-past 12 o'Clock precisely, a large importation of CATTLEYA MOSSIÆ and its varieties, just arrived from South America in good condition, many of them in magnificent masses that would make good exhibition plants; the leaves are as fresh on most of these Cattleyas as if they had only travelled a few miles. C. Mossiæ, being one of the most beautiful of Cattleyas and so easily grown, is especially worthy of notice.

May be viewed the morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS has received instructions from W. Turner, Esq., Over Hall, Winsford, Cheshire, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 2, and following days (instead of the days previously announced), at half-past 12 o'Clock precisely each day, without the least reserve, the entire COLLECTION of ESTABLISHED ORCHIDS. Amongst other grand things will be found Lælia Warneri, Saccolabium Turneri (spikes nearly 2 feet long), Cattleya Skinneri alba, C. Morgani, C. Wagneri, Lælia Williamsi, and many other rare and valuable plants.

May be viewed the morning of Sale, and Catalogues had.

Woronzow Nursery, Woronzow Road, St. John's Wood.

TO NURSERYMEN, BUILDERS, and OTHERS.

MR. TAPLIN will SELL by AUCTION, at the Mart, Tokenhouse Yard, on THURSDAY, May 13, at 1 o'Clock precisely, the GOODWILL and LEASE of the above, standing on about 1 Acre, together with the GREENHOUSES. Estimated annual value, £100. The Property, having a Frontage of 165 feet to the main road, is well adapted for building purposes. Held for 39¾ years, at £10 5s. per annum.

Conditions of W. H. PAIN, Esq., Solicitor, 171, Marylebone Road, N.W., and of the Auctioneer, St. John's Wood Road, N.W.

N.B. The entire STOCK of PLANTS will be SOLD in Lots on FRIDAY, May 14, at 12 o'Clock.

Catalogues at the Auction Offices.

Brentwood Nursery, near the Railway Station.

WITHOUT RESERVE.

GREAT SALE of BEDDING PLANTS, comprising 40,000 fine, healthy, choice new Zonal, Silver, Golden, Tricolor, and Bronze Geraniums, from the best Raisers; Verbenas, Calceolarias, Heliotropes, Tropæolums, Lobelias, Coleus, Alternanthera, Mesembryanthemum, Golden Feather, Ferns, and a capital assortment of the most popular Window Plants; also a lot of splendid named Dahlias, tuberous Begonias, &c.

MR. C. BURLEY will SELL the above by AUCTION, opposite the Bank, High Street, Brentwood, on THURSDAY, May 20, at 1 o'Clock punctually. Arrangements can be made for goods being packed for railway at a nominal rate.

Catalogues may be had at the principal inns in the neighbourhood, and of the Auctioneer, High Street, Brentwood.

London, N. (4946).

FOR DISPOSAL, an old-established NURSERY, comprising nearly an acre of Ground, five Glass Erections, Pits, Shed, Cottage, and Shop. Price 600 guineas. Stock at a Valuation.

Details and order to view of Messrs. PROTHEROE AND MORRIS, Horticultural Auctioneers and Valuers, 98, Gracechurch Street, E.C.

TO BE SOLD, a NURSERY BUSINESS, in a leading thoroughfare; 3000 feet of Glass, heated by hot water. Miscellaneous stock of 7000. Good Dwelling-house. Price for whole, £400.

A. ABBOTT, Belsize Nursery, South Hampstead, N.W.

FOR IMMEDIATE DISPOSAL, in consequence of the death of Proprietor, an old-established NURSERY and SEED BUSINESS in Warwickshire, in full working order, with every facility for doing a large trade.—For particulars address M. W., 3, Dungannon Terrace, North End Road, Walham Green, London, W.

Grange Nursery, Heaton Mersey, near Manchester.

TO BE DISPOSED OF, by Private Treaty, Grange Villa, Heaton Mersey, with the site thereof and adjoining Land used as a Nursery, and containing together by admeasurement 14,520 square yards or thereabouts. The house comprises Dining, Drawing and Breakfast-rooms, with Kitchen, Scullery, Six Bed-rooms, Dressing-room, Water-closet, and Store-room, and is Cellared throughout. The Outbuildings consist of Stabling for Three Horses, Coach-house and Harness-room, with large Loft and Store-cupboard, Cow-house, Piggeries, Pigeon-house, and Hen-house. There is a Greenhouse attached to the house. On the land there is erected a range of Glass 225 feet long, consisting of Vineries, Fernery, Greenhouse, and Propagating Pit. There are materials on the ground requisite for Erecting another Range of Glass, the foundations for which are already laid. There is a good Stock of Rose Trees, Shrubs, Fruit Trees, and other Plants, Flowers, &c. The Premises have for some time been used as a Nursery by the late proprietor, Mr. Thomas Studd deceased, and are replete with every convenience for carrying on the Business of a Nurseryman. The situation is healthy, and the premises command an extensive view of the Derbyshire Hills, Alderley Edge and Bowdon.

The Premises can be inspected on application at the House, and any further information can be obtained from Mr. W. R. MINOR, Solicitor, 26, Brown Street, Manchester.

Special Notice.—To Florists, Nurserymen, &c.

MR. JOHN EMBLETON, Suffolk House, New Hampton, is favoured with instructions to SELL by Private Treaty about 60 Acres of FREEHOLD LAND, well adapted for the above requirements.—Apply as above.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

ZINNIA

The best varieties only. Price 6*d.* and 1*s.* per packet, post-free.

SUTTON AND SONS, The Queen's Seedsmen, Reading.

MEXICAN ORCHIDS, PALMS, TREE FERNS, &c.—The undersigned has for several years past collected Orchids, Arborescent Ferns, &c., for some of the largest European and United States Nurseries. He is prepared to furnish price LISTS upon application by mail. The best season for collecting Orchids is now at hand, and will terminate with the month of May. Large orders can be filled at very low rates for cash in advance, or upon satisfactory references.—HUGO FINCK, Cordoba, Mexico

Dr. Denny's Zonal Pelargoniums.

TO THE TRADE.

JOHN BALAAM can now supply Dr. Denny's "Sixth Set" at 10*s.* 6*d.* per set, and the magnificent variety, "Commander-in-Chief," at 10*s.* 6*d.* per half dozen. Cash (without any deduction) to acompany order.

J. B. begs to announce that he will be prepared to send out Dr. Denny's "Seventh Set" early in May, and a set of "Double Varieties" in the early autumn.

Descriptive CATALOGUES forwarded, post-free, on application.

Vine Nursery, Downs Road, Lower Clapton, N.E.

MATRICARIA INODORA PLENA (NEW DOUBLE MAY-WEED).

Figured in *Gardeners' Chronicle* of December 13, 1879.

Will bear the severest winter without protection. If grown in a rich border it will flower in the greatest profusion from June till October, and the flowers, which are pure white, are equal to those of a Pompon Chrysanthemum. It is invaluable for cutting. 1*s.* 6*d.* each, 12*s.* per dozen, 75*s.* per 100. Engraving sent with three plants. The usual discount to the Trade.—Messrs. DICKSONS AND CO., 1, Waterloo Place, Edinburgh.

To the Trade,

HOME-GROWN TURNIP SEEDS.

H. AND F. SHARPE invite the attention of the Trade to their fine selected Stocks of TURNIP SEEDS, which comprise, amongst others, the following excellent varieties, viz.:—

Sharpe's Improved Large Swede	Sutton's Mammoth Purple-top
Sharpe's West Norfolk Swede	Devonshire Grey Stone
Sutton's Champion Swede	Pomeranian White Globe
East Lothian Swede	Lincolnshire Red Round
Green-top Yellow Aberdeen	Stratton Green Round
Golden Yellow Aberdeen	White Stone or Stubble

The quality is very fine, and the prices will be found very advantageous to purchasers. For further particulars apply to

Seed Growing Establishment, Wisbech.

Special Cheap Offer of Good Plants.

All for Exhibition or Garden Decoration, and fine named varieties of our selection.

PANSIES, PINKS, PHLOXES and DAHLIAS, 3*s.* per dozen, 20*s.* per 100, or 12 of each for 1*s.* CHRYSANTHEMUMS, FUCHSIAS, COLEUS, SALVIAS, 2*s.* 6*d.* per dozen, 15*s.* per 100, or 12 of each for 9*d.* LOBELIAS and AGERATUMS, best sorts, from store-pots, 1*s.* per dozen, 4*s.* per 100.

CATALOGUES of all Indoor and Outdoor Plants for the largest or smallest Gardens, Conservatories, &c. Very comprehensive. Prices very reasonable. Plants true to name.

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

Green Hollies, &c.

C. WHITEHOUSE, Brereton Nurseries, Rugeley, has to offer fine first-class Plants, extra good rooted, having been several times transplanted, are very stout and healthy—12 to 18 inches, 18 inches to 2 feet, 2 to 2½ feet, 2½ to 3 feet, 3 to 3½ feet and upwards; also fine specimen SILVER HOLLIES, 4 to 5 feet: every one will move safely, quality unsurpassed. Also AUCUBA JAPONICA, 12 to 18 inches and upwards. Price per 100 and dozen, moderate for the quality, on application.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.

Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

PEDIGREE ROSES.

The greatest success yet achieved in the production of new Roses is the Stapleford Pedigree Roses.

DESCRIPTIVE LISTS post-free, including the striped Tea Rose American Banner, and the beautiful crimson climber, James Sprunt; this last Rose can only be obtained in England from my establishment.

H. BENNETT, Manor Farm Nurseries, Stapleford, Salisbury.

MANGEL SEED.

JOHN SHARPE can offer to the Trade well harvested SEED, and of full growth—Crop '78. Samples and Prices of ORANGE GLOBE, YELLOW GLOBE, INTERMEDIATE and LONG RED on application.

Bardney Manor, Lincoln.

SPRING FLOWERS.

Choice Varieties of POLYANTHUS and Single and Double PRIMROSES and AURICULAS, &c. Fine Strain of SWEET WILLIAM. Apply to

Mr. COOPER, Calcot Gardens, near Reading.

TEA SCENTED ROSES,

For Planting Out or Greenhouse Culture.

Upwards of 20,000 strong, well established plants, in pots.

List and Prices on application to

CRANSTON'S NURSERY & SEED COMPANY, Limited, KING'S ACRE, near HEREFORD.

CALCEOLARIA.
The best varieties only. Price 2s. 6d. and 5s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers the following Plants, of which he has a very large stock :—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6s. per 100, 50s. per 1000; 100, in 12 choice sorts, 8s.; or in 25 sorts, 10s.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2s. 6d. per 100, 20s. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 12s. per 100; Master Christine, best pink, 12s. per 100; White Vesuvius and New Life, 20s. per 100; Dr. Denny, nearest to blue, fine, 5s. per doz. Pelargoniums, in 12 best varieties, 5s. per doz., 30s. per 100.
" TRICOLORS—Mrs. Pollock, 2s. 6d. per doz., 18s. per 100; Sir R. Napier and Sophie Dumaresque, 3s. per doz., 20s. per 100.
" SILVER VARIEGATED—May Queen (Turner's), Flower of Spring, 12s. per 100; Princess Alexandra and Prince Silverwings, 15s. per 100.
" GOLD-LEAVED—Crystal Palace Gem, 12s. per 100; Happy Thought, 15s. per 100.
" DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 12s. per 100; Madame Amelia Baltet, very fine white (the best), 20s. per 100.
" BRONZE—Maréchal McMahon, the best for bedding, 18s per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5s. per 100, 50s. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6s. per 100, 50s per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh, 5s. per 100, 40s. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10s. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

ALTERNANTHERAS and other CARPET BEDDING PLANTS.
ALTERNANTHERA, amœna, 8s. per 100, 70s. per 1000.
" amœna spectabile, 8s. per 100, 70s. per 1000.
" magnifica, 8s. per 100, 70s. per 1000.
" amabilis latifolia, 8s. per 100, 70s. per 1000.
" paronychioides major, 8s. per 100, 70s. per 1000.
" versicolor, 8s. per 100, 70s. per 1000.
" spathulata, 8s. per 100, 70s. per 1000.
MESEMBRYANTHEMUM, cordifolium variegatum, 8s. per 100, 70s per 1000.
COLEUS, Verschaffeltii, 8s. per 100, 70s. per 1000.
IRESINE, Lindeni, 8s. per 100, 70s. per 1000.
LEUCOPHYTON, Brownii, 8s. per 100, 70s. per 1000.
HERNIARIA, glabra, 5s. per 100, 40s. per 1000.
LOBELIA, Brighton Gem, 5s. per 100, 40s. per 1000
MENTHA, Pulegium gibraltaricum, 5s. per 100, 40s. per 1000.
All the above are well established plants. LIST of other kinds free on application. Liberal allowance to the Trade.
WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

FERNS.—100 Rare and Beautiful, 42s., or fifty at the same rate—pretty plants in small pots, to grow on for Winter Decoration or Cutting. Many varieties rarely to be met with except at 3s. 6d. or 5s. each, including Adiantum Farleyense, Pteris Leyii, &c. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

Bedding Geraniums.

ALFRED FRYER offers the following, in Autumn-struck Plants, at per dozen for cash :—Golden Tricolors : Isle of Beauty, 4s. 6d. ; Peter Grieve, 6s. ; S. Dumaresque, 3s. 6d. Silver Tricolors : Lass o' Gowrie, 3s. 6d.; Mrs. John Clutton, 3s. ; Prince Silverwings, 3s. ; Queen of Hearts, 3s. 6d. ; A Happy Thought, 3s. Gold and Bronze : Bronze Beauty, 3s. 6d. ; Endymion, 3s. 6d. ; Gilt with Gold, 3s. 6d. ; Roi de Siam, 4s. 6d ; Packing free for cash with order ; post-free for 6d. per dozen extra. Priced LISTS on application to
ALFRED FRYER, The Nurseries, Chatteris, Cambridgeshire.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

ADIANTUM FARLEYENSE.—Six beautiful large plants for 21s., very fine strong fronds from single crowns. Grown this way the pinnæ are double the size usually seen. All fine for immediate decoration, in 5-inch pots, £10 10s. per 100. Package gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers to the Trade, PALMS, per 100, in store pots :—Areca rubra, 30s. ; Bactris Binotii, 60s. ; Chamærops excelsa and humilis, 8s. ; Cocos insignis, 40s. ; Cocos Weddelliana, 100s. ; Corypha australis, 12s. ; Geonoma Schottiana, 80s. ; Latania borbonica, 10s. ; Pandanus utilis, 20s ; Phœnix reclinata, 10s. ; Phœnix tenuis, 10s. ; Seaforthia elegans, 25s. ; and Aralia Sieboldii, 6s. FERNS, in small pots:—Adiantum cuneatum, 30s. ; Cibotium regale, 80s.; Lomaria gibba, 30s. ; Nephrodium cristatum, 40s. ; Pteris serrulata and cristata, 30s. PRIMULA, acaulis alba plena, luteo plena, lilacina plena, and Arthur Dumoulin, 100 strong plants, twenty-five of each sort, at 50s. ARUNDO DONAX, arg. var., twenty-five for 15s.

GERMAN ASTERS.
The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Verbenas—Verbenas—Verbenas.

STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6s. per 100 ; 50s. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8s. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

FUCHSIAS, 100 nice young plants, in 12 splendid varieties, 8s.
HELIOTROPES, of sorts, 6s. per 100.
AGERATUM, Imperial Dwarf, strong young plants, 5s. per 100.
CALCEOLARIA, Golden Gem, 6s. per 100. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

Palms.

TWELVE, Graceful, 21s.; strong healthy plants, fit to pot on at once into 5-inch pots, of Cocos Weddelliana, Euterpe, Areca lutescens, A. rubra, Corypha, Latania, Seaforthia, Chamærops, &c., usually sold at 3s. 6d. and 5s. each. Double size, for immediate decoration, 1½ to 2 feet high, 42s. and 63s. per dozen. Package gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

Jean Verschaffelt's Nurseries.

DESCRIPTIVE CATALOGUE free on application to
Mr. JEAN NUYTENS-VERSCHAFFELT, 134, Faubourg de Bruxelles, Ghent, Belgium.
London Agents : Messrs. R. SILBERRAD AND SON, 15, Harp Lane, Great Tower Street, E.C.

VIOLAS, 20,000 fine strong plants :—
" cornuta, white } 5s. per 100, 45s. per 1000.
" " Queen of Blues, }
LOBELIA, Emperor William, strong autumn-struck, from stores, 2s. 6d. per 100, 20s. per 1000 ; from single pots, 5s. per 100, 45s. per 1000.
Cash only. Carriage and package free.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

Gloxinias.

TWELVE GLOXINIAS (new and beautiful), 12s., selected from sixty of the finest novelties of the last three years. Fine bulbs to produce plenty of flowers in two months if potted at once. A few extra strong, 21s. per dozen. One-year-old small bulbs, 6s. per dozen. All carriage paid.
JOHN H. LEY, Royal Nursery, Croydon.

SUTTON'S
LAWN GRASS SEED

PRODUCES
THE BEST LAWNS.
Price 1s. per pound ; 20s. per bushel ; Carriage free.
For full particulars see
SUTTON'S PAMPHLET
ON
Laying Down and Improving Lawns, &c.,
Gratis and post-free on application.

Sutton & Sons
THE QUEEN'S SEEDSMEN, READING.

Bennett's Pedigree Roses
Should be in every Collection.

GEORGE COOLING has pleasure in offering fine plants, coming into bloom, of these desirable varieties, viz. :—

Beauty of Stapleford	Jean Sisley
Duke of Connaught	Michael Saunders
Duchess of Connaught	Nancy Lee
Duchess of Westminster	Pearl
Honourable George Bancroft	Vicountess Falmouth

The complete Set, 25s., basket and packing free for cash with order.
New LIST of Roses in pots, Clematis, &c., post-free.
The Nurseries, Bath.

To Nurserymen, Seedsmen, and Florists.
Copy from *London Gazette*, Feb. 27, 1880.

NOTICE is HEREBY GIVEN that the PARTNERSHIP heretofore subsisting between Joseph Rains, Marcus Rains, and Morris Isaacs, carrying on business as Dealers in Dutch Flower Roots and Bulbs, at 62, Tenter Street South, Goodman's Fields, Whitechapel, in the County of Middlesex, under the style or firm of M. ISAACS, RAINS AND CO., was DISSOLVED, by an order of the Chancery Division of Her Majesty's High Court of Justice, on November 27, 1879, as from that date.

MR. MORRIS ISAACS, for fourteen years the Senior Partner in the above late Firm, will for the future carry on the Business of IMPORTER of DUTCH FLOWER ROOTS, in PARTNERSHIP with his Son, Mr. LEWIS ISAACS, at their New Warehouse, 3, Victoria Warehouses, Mansell Street, Goodman's Fields, London, E.C.

CYCLAMENS.—Pot now for Winter Flowering.—Strong, healthy Seedlings, in distinct and varied colours, 1s. 6d. per dozen, 10s. per 100. Choice mixed ANEMONE, 1s. per packet—all post free.
G. CORNHILL, Byfleet, Weybridge Station, Surrey.

VERBENAS and CALCEOLARIAS.—Strong, well-rooted Cuttings of White Verbenas, Boule de Neige, Eclipse Scarlet, and Purple King, the best purple, 6s. per 100, free for cash, safely packed. LOBELIA Bluestone, intense blue.—WILLIAM FIELD, Tarvin Road Nurseries, Chester.

The best time for transplanting Hollies.

HOLLY, Green, 2-yr. and 3-yr., mixed, fine, 7s. 6d. per 1000 ; if 25,000 are taken, 6s. per 1000 ; if 50,000 are taken, 5s. per 1000.
PETER T. ROBERTSON AND CO., Trinity Nurseries, Edinburgh.

PANSIES.
The best varieties only. Price 6d., 1s., and 2s. 6d. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Alternantheras from Stores.

WM. BALCHIN begs to offer the following varieties :—Amœna, spathulata, versicolor, amabilis latifolia, magnifica, paronychioides ; also LOBELIA BRIGHTON and MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATUM, 8s. per 100, or 70s per 1000. MENTHA PULEGIUM and HELIOTROPES, 6s. per 100. Terms cash.
Hassock's Gate Nursery, Keymer, Sussex.

To the Seed Trade.

W. CROWDER has to offer to the Trade :—
SWEDE, Crowder's Improved Purple-Top.
" Hartley's Short-Top.
TURNIP, Heanley's White Globe.
" White Stone.
" Crowder's Improved Green Globe.
" Green-Top Yellow Scotch.
MANGEL WURZEL, Wroxton Orange Globe.
Price on application to
The Thimbleby Nurseries, Horncastle.

TWELVE Beautiful and New CALADIUMS, 21s. ; strong plants, about 1 foot high, in 4-inch pots, fit for 8-inch pots at once, selected from twenty finest and most distinct sorts, such as Beethoven, Belleymei, Albert Edward, &c. ; carefully packed to travel any distance. Hamper and packing gratis and carriage paid to any railway station in England for cash with order. Dry roots (carriage free), 10s. 6d., 21s., and 42s. per dozen, according to size.
J. H. LEY, Royal Nursery, London Road, Croydon.

CINERARIA.
The best varieties only. Price 2s. 6d. and 5s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Uninjured by Frost.

EVERGREENS.—In splendid condition for safe removal ; having been regularly transplanted and growing in a very exposed situation, are very hardy and robust, thus having withstood the past excessively severe winter without injury.
With reference to the hardy nature of the Trees and Plants reared in these Nurseries, a customer in Yorkshire writes :—
"*I am very well satisfied with the Roses you sent—the frost has not hurt them, whilst a lot I got from the South have suffered very much.*"
CATALOGUES on application.
JAS. DICKSON & SONS, "Newton" Nurseries, Chester.

Verbenas—50,000 Now Ready for Sale.

S. BIDE can now supply, as he has done on previous occasions, really good strong spring-struck Plants of Purple, Scarlet, White, and Pink VERBENAS, at 6s. per 100. Good Exhibition Varieties, 8s. per 100. IRESINE LINDENI, 6s. per 100. HELIOTROPE, 6s. per 100. COLEUS VERSCHAFFELTII, 8s. per 100. MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATA, 8s. per 100. Package free for cash with order.
Also strong healthy CUTTINGS of the above at half-price, free by post.
S. BIDE, Alma Nursery, Farnham, Surrey.

Primulas — Primulas — Primulas.
Eleventh Year of Distribution.

WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100 ; package and carriage free.
CINERARIAS, choicest assortment, same size and price.
The above are quite equal to those I have sent out in previous years. Cash with order.
JOHN STEVENS, The Nurseries, Coventry.

STOCKS.
The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

New Japanese Azalea.

AZALEA ROSÆFLORA.—This beautiful species, which is now offered for the first time, differs from every other Azalea in cultivation. The flowers in the bud resemble those of a miniature Tea Rose, whilst as they expand they regularly imbricate like those of a Camellia. These qualities, combined with the fact that it does not fall off, render it invaluable for coat flowers, bouquets, as well as for exhibition and general decorative purposes. It is compact and free in growth, and much branched ; colour deep rosy-red.
First size, 6 inches high, some in flower, 10s. 6d.
Second size, 6 to 9 inches high, some in flower, 21s.
Third size, 1 foot high, many in flower, 31s. 6d.
WM. HUGH GOWER (Manager to the late Wm. Rollisson & Son), The Nurseries, Tooting, S.W.

Valuable Plants, Carriage Paid.
New Mode of Packing.

PELARGONIUMS.—
ZONAL, new and choice, 30s. per 100, 5s. per dozen.
GOLDEN TRICOLORS, in fine variety, 4s. per dozen.
SILVER TRICOLORS, in choice new sorts, 5s. per dozen.
Older varieties, 4s. per dozen.
SILVER-EDGED Fancy-flowering varieties, 4s. 6d. per dozen.
BRONZE, choice, in fine variety, 4s. per dozen.
DAHLIAS in all the best kinds, 3s. 6d. per dozen, or 21s. per 100
PHLOX, all the best, at 3s. 6d. per dozen.
TUBEROUS BEGONIAS, 5s. per dozen.
The above are all first-class varieties and true to name, cash with order to
CHARLES BURLEY, Brentwood.

PHLOX DRUMMONDI GRANDIFLORA.
The best varieties only. Price 1s. per packet, post-free.
SUTTON AND SONS, The Queen's Seedsmen, Reading.

GARDEN REQUISITES.
COCOA-NUT FIBRE REFUSE,
3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 for 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags, 4d. each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.
H. G. SMYTH,
10, Castle Street, Endell Street, Long Acre, London, W.C.

COCOA-NUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1s.; 30 bags (bags included), 20s.; truck free to rail, 25s.
T. RICH (late Finlayson & Hector), Cocoa-Nut Fibre Works, 24 and 25, Redman's Row, Mile End Road, London, E.

COCOA-NUT FIBRE REFUSE at Reduced Prices, as supplied to Messrs. J. Carter & Co., High Holborn, W.C.; at the International Agricultural Exhibition, Kilburn; and all the Principal Nurserymen and Seedsmen in England. In 4 bushel bags at 1s., bags included; 30 bags, bags included, 20s.; or truckload of about 250 bushels, 25s. (truckload free on to rail).—J. STEVENS AND CO., Greyhound Yard, and 134, High Street, Battersea, S.W.

COCOA-NUT FIBRE REFUSE, as supplied to all the Royal Gardens of Europe, useful at all seasons, Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c., Destroys all Slugs and insects. Bags (about 4-bushel), per bag 1s., 15 bags 12s., 30 bags 20s. (all bags included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (about 250 bushels), free on rail, 25s. Terms cash with order.
CHUBB, ROUND AND CO.,
Fibre Works, Westferry Road, Milwall, London, E.

GARDEN REQUISITES.
COCOA-NUT FIBRE REFUSE,
4 bushels, 1s.; 120 for 20s.; Truck, 25s.
BEST BROWN ORCHID PEAT,
5s. per Sack, 5 for 22s. 6d.
BLACK FIBROUS PEAT 4s. 6d. per Sack, 5 for 20s. Sacks 4d. each.
COARSE SILVER SAND, 1s. 6d. per Bushel.
YELLOW FIBROUS LOAM, splendid LEAF-MOULD and PEAT-MOULD, 1s. per bushel. TOBACCO CLOTH and PAPER, highly effective—Cloth, 8d. per lb.; Paper, 7d.; Roll Paper, best quality, 1s. Write for Price List.
W. HERBERT AND CO., Broad Street Mews, Broad Street, City, E.C., (turning opposite Metropolitan Railway Station).

Fibrous Peat for Orchids, &c.
BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck.
BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths. American Plant Beds, 15s. per ton.
Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4s.; 5 bags, 20s., 10 bags, 36s. Bags, 4d. each.
Fresh SPHAGNUM, 10s. 6d. per bag.
WALKER AND CO., Farnborough Station, Hants.

PEAT, brown fibrous; noted throughout Kent for the growth of Orchids, Ferns, Rhododendrons. Delivered at Bexley Station, S.E.R., 9s.; St. Mary Cray Station, L. C. & D. R., 10s. per cubic yard.
Mr. BOXALL, North Cray, Kent.

FLORVITA.
THE LIFE OF FLOWERS.
For Stimulating and Quickening the Growth of Plants, and producing a rapid and high development of blossoms.
Samples, post paid, 1s. 2d. Prepared only by
PRENTICE BROS., Chemical Laboratory, Stowmarket.
Sold by all Chemists and Florists, in bottles 1s. and 2s. 6d. each, and in jars 18s. and 36s. each.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.
Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

An Important Discovery.
SOLUBLE FIR TREE OIL INSECTICIDE.—The cheapest and best of all insecticides for small and large nurseries, plantations, &c. Once tried always used. Full directions with each Bottle, price 1s. 6d., 2s. 6d. and 12s. 6d. each. Special quotations for large quantities.
London Agents: HOOPER AND SONS, Covent Garden, and from all Seedsmen. Manufactured by E. GRIFFITHS HUGHES, Operative Chemist, Victoria Street, Manchester.

Tobacco Fibre Insecticide.
All who have a Greenhouse and love to see their Plants look clean and healthy should use
DARLINGTON BROTHERS' TOBACCO FIBRE.—Contains more Nicotine than any other Insecticide sold; purer and better than the best Tobacco Paper or Cloth; easy to use; no apparatus requisite; a common garden pot only required; will not flare, is perfectly safe, and is the best article for making Nicotine Juice for syringing purposes. Forty per Cent. saved by the use of this article. Prices, 6 lb., 5s.; 28 lb., 21s. First-class ROLL TOBACCO PAPER or CLOTH same price as above. Best Paper and Cloth made. *Vide* Testimonials, free on application. Post-office Orders, Darlington Brothers, Chatham. Cheques crossed London and Provincial Bank.
DARLINGTON BROTHERS, Frederick Street, Chatham.

NEW CYPRIPEDIUMS.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, May 11, without the least reserve, two apparently NEW CYPRIPEDIUMS, with beautifully marked leaves; also a fine importation of CYPRIPEDIUM STONEI. All in excellent condition.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

ODONTOGLOSSUM VEXILLARIUM LEHMANNI (Rchb. f.)
ODONTOGLOSSUM ALEXANDRÆ LEHMANNI (Rchb. f.)

See Prof. Dr. Reichenbach's description in *Gardeners' Chronicle.*

MR. J. C. STEVENS has received instructions from Mr F. SANDER, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 12, at half-past 12 o'Clock precisely, a splendid lot of the above two NEW ODONTOGLOTS. The plants are in extra fine condition.

Dried Flowers and Drawings on view day of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

CATTLEYA LABIATA SPECIOSISSIMA VARIETIES.

MR. J. C STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 12, at half-past 12 o'Clock precisely, by order of Messrs. HUGH LOW & CO., a grand lot of the above-named lovely CATTLEYAS, which produce on short, stout bulbs, flowers in great profusion, as can be abundantly seen on inspection of the specimens offered. The flowers are usually 7 to 8 inches in diameter, three and four on a spike; sepals and petals delicate rose-purple; lip very large, front portion bright amethyst with white and yellow markings. The plants are extremely varied in appearance, the LABIATA type predominating; and all, without exception, are splendid masses, many with twenty to fifty bulbs. They are well furnished with green, healthy leaves, and altogether exceptionally fine.

On view the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

VALUABLE IMPORTATIONS OF ORCHIDS.

MR. J. C. STEVENS has received instructions from The New Plant and Bulb Company, Colchester, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 13, at half-past 12 o'Clock precisely, several splendid importations of ORCHIDS, consisting of the beautiful ONCIDIUM SUPERBIENS, ODONTOGLOSSUM HASTILABIUM, ONCIDIUM OBRYZATUM, MAXILLARIA VENUSTA, &c.; DENDROBIUM FYTCHIANUM, D. FORMOSUM GIGANTEUM, D. FREEMANNI, D. DENSIFLORUM, VANDA CŒRULEA, AERIDES LOBBI, SACCOLABIUM BLUMEI, S. GEMMATUM (rare), &c. Also ONCIDIUM MARSHALLIANUM, O. DASYTYLE, O. GARDNERIANUM, O. FORBESII, O. PHYMATOCHILUM, O. CRISPUM GRANDIFLORUM, LÆLIA PERINNII, ZYGOPETALUM MAXILLARE, &c.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

LANDSCAPE GARDENING.

R. H. VERTEGANS, F.R.H.S.,

Is able to point to many successful instances of the

LAYING OUT OF GARDENS,

which have been designed and executed by him in various localities. He has long made a SPECIAL STUDY of this department of his business, and has in his employ competent Draughtsmen, Foremen, and a Staff of Workmen thoroughly accustomed to the Work; and is thus enabled to undertake the Laying-out of Gardens of any size, LARGE OR SMALL, to furnish Plans or Designs suited to varied situations and surroundings, and to carry them out quickly and economically.

In a recent competition for a Design for converting the old Wolverhampton Racecourse into a Public Park for Wolverhampton, there were twenty-seven Competitors, and R. H. V.'s Design was awarded the

FIRST PRIZE OF £50.

He is now engaged in carrying this Design out at a cost of £5000. But he desires to point out to his connection and the Public generally, that though he is able to undertake the Formation and Planting of Parks, Cemeteries, and Public Grounds of any dimensions, he has had very large experience in Laying-out Suburban Gardens of all sizes, from such as are attached to small Villas, to others of considerable extent surrounding Mansions, and he has the pleasure of knowing that he has invariably succeeded in giving entire satisfaction to those who have employed him. He therefore confidently solicits the favour of being allowed to submit Plans and Estimates to Gentlemen who are about making new Gardens, or remodelling old ones, and he will do so promptly, and at as reasonable a cost as the work will admit of.

CHAD VALLEY NURSERIES, EDGBASTON, BIRMINGHAM.—May 4.

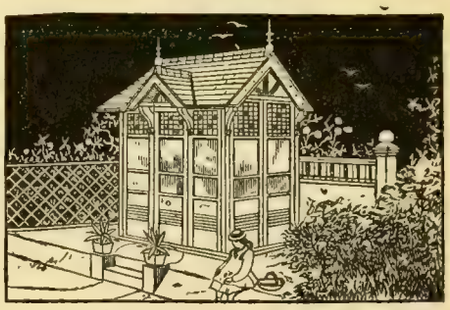
"ART WITH ECONOMY,"

Applied to Conservatories and Greenhouses.
With Illustrations, Prices, &c.
Part I., now ready. Post-free, twelve stamps.

CHEAP ART-SUMMERHOUSES.
Illustrations and Prices Gratis.

T. H. P. DENNIS & CO.,

MANSION HOUSE BUILDINGS, LONDON, E.C.
WORKS: CHELMSFORD.



PARHAM'S PATENT SYSTEM of GLAZING WITHOUT PUTTY,

With Wrought-iron Channelled Rafters, Continuous Lapped Glass, and Rainproof Ventilators under Glass Super Roof.

Parham's Patent Registered Plant Preservers,

With "Truss" Hinge, and no Principals. The Ridge always fits close, the interior is free from all obstruction, and the corners are secured in iron angle-plates: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
6 feet by 3 feet	.. ..	£2 7 6	12 feet by 3 feet ..	..	£4 0 0
6 feet by 4 feet	.. ..	3 0 0	12 feet by 4 feet ..	..	5 0 0
6 feet by 5 feet	.. ..	3 15 0	12 feet by 5 feet ..	..	6 5 0
6 feet by 6 feet	.. ..	4 15 0	12 feet by 6 feet ..	..	7 10 0

Any other sizes at proportionate price.

Both systems avoid the heavy expense of re-puttying and breakage of glass, and effect a great saving in cost of re-painting and repairs, combined with absolute freedom from drip.

The sole manufacture of both the above systems is carried on by

WILLIAM PARHAM,

Horticultural Builder and Hot-water Engineer,
NORTHGATE WORKS, BATH;
AND
280, Oxford Street, London, W.
(Who has purchased the Business of the late Firm of
CRANSTON AND LUCK,
Birmingham).
Specimens of both Systems on view at either address.
Illustrated Catalogues free.

*** Orders amounting to £3 and upwards delivered free to any Railway Station in England and Wales, and to the Principal Ports in Ireland and Scotland.

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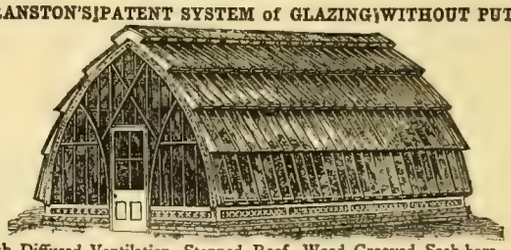

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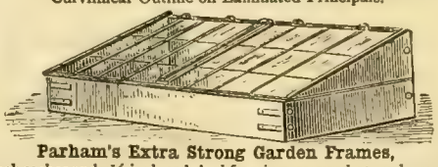

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With 2-inch sashes and 1½-inch red deal framing, secured at each corner with two wrought-iron strap bolts: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
4 feet by 6 feet, 1 light ..		£2 2 0	16 feet by 6 feet, 4 lights..		£7 5 0
8 feet by 6 feet, 2 lights..		3 12 0	20 feet by 6 feet, 5 lights..		8 15 0
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Patent Glazed Sash Lights, as above, with Sills and Bearers for Brickwork, at proportionate prices.

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Both of these varieties are pure white, of great substance, free and continuous bloomers.
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ALBA PERFECTA.—Pure white flowers, very dwarf and free flowering. Will prove one of the very best white bedders, as the flowers have no shade of pink in them.
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LA NUBIEN.—Deep fiery crimson, very free flowering.
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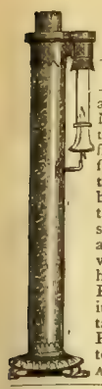

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21-oz., Orchard House,	20 × 12,	20 × 13,	16*s.* 6*d.*, 19*s.* 3*d.*, 20*s.*, 21*s.*	
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KENT PEATS or LOAM supplied at lowest rates in any quantities.
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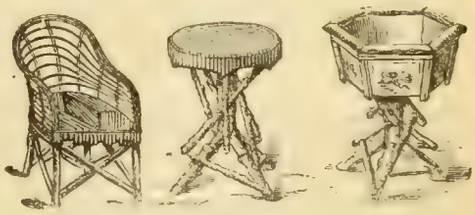

Rustic Garden Furniture in great variety.
Garden Seats, Awnings and Tents, Rustic Tables, Chairs, and Flower Stands, Lawn Mowers, Garden Rollers, Water Barrows, Wheelbarrows, Garden Tools, Summer Houses, Sun Dials, Fancy Wirework, Birdcages, Hammocks, and all kinds of Garden Furniture at lowest marked prices. *Catalogues post-free.*

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SEND FOR A PRICE LIST OF

JOHN BLAKE'S
PATENT SELF-ACTING HYDRAULIC RAMS,

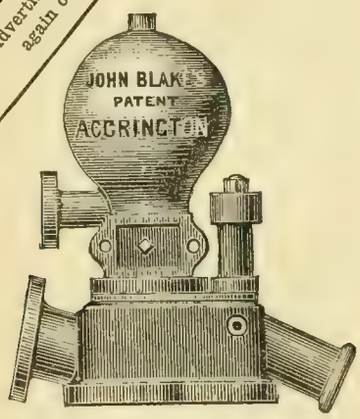
For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions, Fountains, Farms.

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

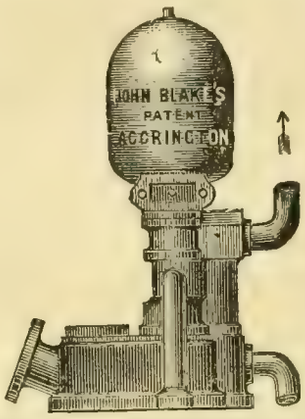
No Oiling or Packing Required.

Made in sizes to raise from 300 to 500,000 Gallons per day.

This Advertisement will appear again on May 29.

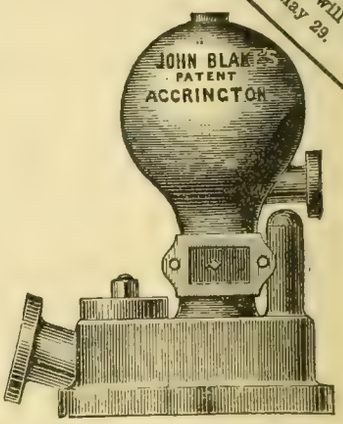


This Ram for small working falls.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 feet.

This Advertisement will appear again on May 29.



This Ram, for deep working falls, will force up one-third of the water passing through it

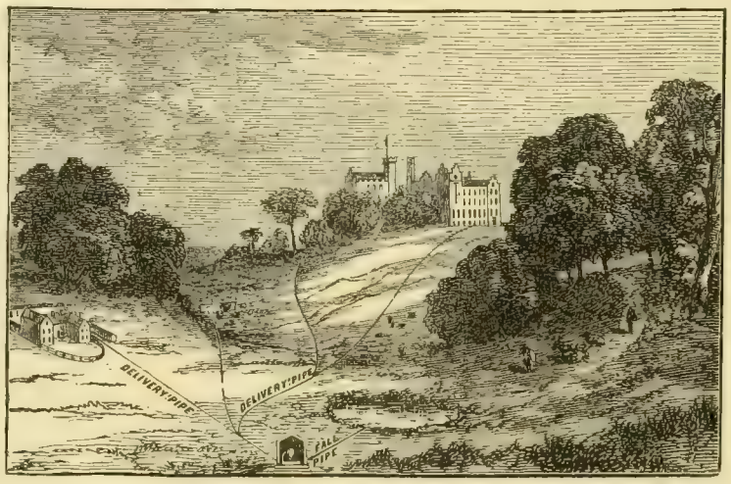
Parties requiring a Water Supply should not too readily conclude that the quantity and fall of water, if any is available, is too small to work a Ram before consulting J. B.

TESTIMONIALS.

From the Right Honourable the EARL of GRANARD, *Castle Forbes, March* 1, 1880.—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of a tower 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

From Col. TREMAYNE, *Perran-a-Worthel, Cornwall, March* 7, 1880.—The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

From W. SCARTH, Esq., *Agent to* His Grace the Duke of Cleveland.—"Raby Castle, Darlington, July 16, 1878.—The Hydraulic Ram you supplied to his Grace the Duke of Cleveland in 1875 is a complete success. It worked for more than two years without once stopping, and throws more water than promised."



This view represents one Ram worked by water from a spring, and forcing it up to a Farm, Cattle Troughs, Kitchen Garden, and Mansion, all at different elevations, the highest being 444 feet, and to a distance of 2008 yards.

From JOHN TAYLOR, Esq., *The Rocks, Bath, August* 22, 1878.—"The Self-acting Hydraulic Ram you fixed here in March of last year continues to work well. It has only the same quantity of water and fall to work it as the water-wheel and pump which I used previously to force a height of 294 feet, and yet the Ram sends up more than double the quantity of water that the wheel did to the same height."

From Major STARKIE, *Lovely Hall, Blackburn, May* 13, 1878.—"Sir, I have great pleasure in testifying to the good qualities possessed by the Ram you erected here last year. It has done its work well, and not failed as the other Ram did, which was of a different construction, and supplied by a different firm. I consider that there are great difficulties to contend with here, but your practical mechanical knowledge, both as to the construction of the Ram and its situation here, overcame most of the difficulties that we had to contend against."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December* 21, 1868.—"Sir.—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force-pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

TESTIMONIALS.

From Capt. GANDY, *Castle Bank, Appleby, February* 11, 1880.—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 73 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

From JOHN WALKER, Esq., *Mount St. John, Thirsk, February* 13, 1880.—"In reply to your enquiry I am glad to inform you that the Hydraulic Ram you fixed here in May last has fully answered my expectations, and your promises as to the quantity of water it would force to a height of 185 feet. I consider it a very good machine, and superior to one I had in use previously."

From Captain TOWNSHEND, *Wineham, February* 10, 1877.—"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe, 900 yards long, at the rate of 80,000 gallons per day, although you only promised 50,000."

From the Right Hon. T. SOTHERON-ESTCOURT, *Estcourt Park, Gloucestershire, September* 6, 1875.—"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful." (The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

Deanewater, Wilmslow, November 20, 1873.—"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house about 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required—namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—Yours, &c., L. HANMER."

From Mr. THOMAS MASON, *Alkincoates Hall, Colne, September* 30, 1871.—"Sir,—Your Self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours, to a height of 194 feet.

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Is now recognised by practical men throughout the United Kingdom as the best Manure that has ever been manufactured.

This Manure is composed of *highly concentrated animal matter*, and is entirely different from Guano, Nitrate of Soda, and all Chemical Manures, which are merely stimulants, and in the end exhaust and deteriorate the soil. It is really a *Plant Food*, and all Crops appear to benefit in a most remarkable manner from its application. It is now being used most successfully

For all Farm Crops,
For all Kitchen Garden Crops,
For Lawns and Flower Gardens,
For Vines and Strawberries,
For Melons and Cucumbers,
For all Soft-wooded Plants,
For all Stove and Greenhouse Plants,
For Camellias, Azaleas, and Gardenias.

Sold in Packets 1s. each, and in Bags,

¼ Cwt.	½ Cwt.	1 Cwt.
7s. 6d.	12s. 6d.	20s.

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Manufactured by

CLAY & LEVESLEY,

174, HIGH STREET, HOMERTON, E.

B. S. WILLIAMS'

PRIZE MEDAL

FLOWER SEEDS.

	Per packet—s.	d.
BEGONIA, New Bedding variety, finest mixed	1	6
BEGONIA, Splendid Mixed Hybrids	1	6
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and	1	6
CARNATIONS, finest mixed..	1	6

CINERARIA, Weatherill's Extra Choice Strain. 5s., 3s. 6d., 2s. 6d., and	1	6
CYCLAMEN PERSICUM, Brilliant (New) .. 5s. and	3	6
CYCLAMEN PERSICUM GIGANTEUM, 5s., 3s. 6d. &	2	6
CYCLAMEN PERSICUM GIGANTEUM RUBRUM (New) .. .. 5s. and	3	6
CYCLAMEN PERSICUM, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and	1	6
PANSY, English Show .. .. .. 2s. 6d. and	1	0
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THE

Gardeners' Chronicle.

SATURDAY, MAY 8, 1880.

FRANCES JANE HOPE.

THE announcement of the sudden death of this lady, on the 26th ult., at her residence, Wardie Lodge, near Edinburgh, will be received with dismay and sorrow by those who were privileged to know this enthusiastic plant-lover. Her plants were her pets, but in cherishing them she employed discrimination and tact amounting almost to genius. Her taste in selecting plants was only equalled by her skill in cultivating them. By her a plant was grown for the sympathy and interest it excited. It was not the mere brilliancy of a bedding plant, nor the formal symmetry of a florist's flower, that attracted her attention. Her appreciation was wider and deeper. She had all a botanist's love of flowers without his pedantry. Most generous in giving information and in sharing her treasures with any one who had similar tastes to her own, she was not without a vein of sly satire. Such a plant was called by such a botanist by this name, by another a different name was applied — a third had called it so and so; all these names, those of the plants and of those by whom the names were given, were registered on the tally. A visit to her greenhouses was in this way not a wholly unalloyed pleasure to those who happened to be "tallied" in the manner we have mentioned. There was always the excuse of "synonyms" to take refuge behind, albeit the lady was quite keen enough to be able to weigh its validity! Miss Hope was, to a large extent, her own gardener. That goes without saying: not many gardeners possessed her knowledge of plants—very few have equal zeal and interest in them. To very many gardeners the garden is everything, the plants are mere accessories. This was not Miss Hope's way of viewing things; for her the garden existed for the plants, not the plants for the garden. It was this spirit which led her to affix a conspicuous announcement to a bed of Hellebores, or what not—"This bed is not to be dug." How many of us there are who will sympathise with the feeling that prompted that injunction.

Another characteristic of Miss Hope was her taste in arranging flowers, her fertility of resource, her originality of conception, her daring combinations. It is impossible to convey an adequate idea of these on paper. Although she herself frequently contributed hints on this very subject to our columns, it was only by personal inspection that the art and learning she displayed in these arrangements could be appreciated.

Miss Hope was the youngest daughter of Mr. James Hope, Writer to the Signet, and niece of Dr. Thomas Hope, Professor of Chemistry and Pharmacy in the University of Edinburgh, to whom Wardie Lodge then belonged, and who, in his leisure hours, indulged a taste for plants, which he inherited, no doubt, from his father, James Hope, M.D., Professor of Botany in the University of Edinburgh—a

man justly eminent in his day as a teacher of that science, and who, to show his respect for the great Linnæus, erected a tablet, which is still standing in the Botanic Garden, bearing this inscription :—

LINNÆO
POSUIT.
J. Hope.

The branch of the old family of Hope from which Miss Hope was sprung is that of the Hopes of Craighall and Pinkie, now represented by Sir Archibald Hope, Bart. Miss Hope leaves behind her two brothers, Writers to the Signet, one, Mr. John Hope, being justly eminent for his great services and the much good he has done in the cause of temperance.

The same spirit of benevolence which characterised her brother influenced his now departed sister in many beneficent acts unostentatiously done. Her love of plants was throughout most notable, and its ardour was so strong that she thought little of a trip to Aberdeen to secure some much desired Hellebore, a tribe of plants of which she was passionately fond, and of which she possessed a greater number of species than could be found in many public gardens. With a great love for all herbaceous plants she was, like many more of the present day, passionately fond of all bulbous things. Many fine old plants, now lost and neglected in many places where they should be found, she rescued from oblivion. She was great in interchanges, and many amateurs all over the kingdom will, says Mr. I. Anderson-Henry, to whom we are indebted for some of the particulars now given, read with deep regret the sad intelligence of her demise when still in middle life.

The Rector of Market Deeping writes :—

"I should like to add my testimony to the loss all lovers and growers of flowers have sustained in the death of Miss Frances Jane Hope, of Wardie, near Edinburgh. She was no ordinary person. Inheriting a love of botany from her uncle, the celebrated Dr. Hope, she was not so much a botanist as a gardener. To her it was a greater pleasure to cultivate her flowers and make them happy than to classify and dissect them. Her garden was the great interest of her life. She was up early and at work late in it—working as hard as her men, and doing everything much better than they. She spared no pains to add to her collection, and had visited every nursery garden of importance in England and Scotland. Her heart was open to flowers of all sorts. She loved even those which others thought dull and unattractive, and discovered beauties in them. No plant was despised by her, and she made use of the meanest as well as the noblest. In winter, for example, she would fill her beds with common curly Kale of many shades. Thus her garden was as suggestive as most gardens are commonplace. Many visited it and drew inspiration from it. Her drawing-room, with its large window overlooking the sea, was adorned each week with fresh combinations of flowers arranged with untold thought and study, and she would mix with perfect taste the humblest leaves and flowers of the field with choice exotics, and rare greenhouse plants and mosses. So kind and true a friend was seldom seen. Long before the days of 'flower missions' her flowers found their way to many a hospital and sick room. She grew certain sweet-smelling herbs on purpose for posies for the poor of Edinburgh. Her bright handsome face will long be missed. Many a one, both in England and Scotland, as he walks round his garden, will point sadly to some choice plant and say, 'I got that from dear Miss Fanny Hope.' No lady that I have ever known or heard of was so good a gardener or loved flowers so well."

Another friend writes :—

"'That kind old lady, Miss Hope, of Wardie, is dead,' was the exclamation at our breakfast-table to the grief of all who heard it. You must allow me to add a small stone to her cairn. She was not only a valued correspondent, but it was one of the pleasures of my year, on the way home from farther North, to pay a visit to her most inviting garden, where her warm kindly welcome and the way she went over her favourites one by one made the day a very pleasant one, while the constant 'Would you like it?' made it sometimes difficult to admire aloud. She had the true gardener's love of plants for their own sakes free from any question of ownership. I could see this well last year when I had the pleasure of going with her carefully through the gardens here. In my wild wood garden is a bed—one of the most successful ones—called Miss Hope's bed, in which every plant was given me by her. As one beautiful flower after another comes out it will call up a pleasing recollection of a valued lost friend. *George F. Wilson.*"

New Garden Plants.

MESOSPINIDIUM INCANTANS, *n. sp.**

When I had the delight of seeing the Orchid collection at Burford Lodge, some particular curiosities excited my highest interest. There was a fabulous Orchid, unseen before, which enchanted me with its extraordinary leaves, oblong ligulate acute, white with very numerous green nerves, so as to appear greenish-grey at a certain distance. What could it be? Was it not some new Odontoglossum, surpassing Roezlii and the king of Odontoglossums, the bluish mauve vexillarium itself? Was not its history marvellous enough! Certain Indians, whether simply brown ones or belonging to the rare greenish-brown variety is unknown, brought the plant with a lot of vexillarium to one of the Klabochs. On June 27, 1878, the poor creature came under Mr. Stevens' hammer. Having had the good luck to find a resting place at Box Hill in one of those Orchid palaces, it ultimately flowered. Alas! Marvellous as the flowers are for the botanist, they would not secure a First-class Certificate at South Kensington. They remind me of the flowers of the green Odontoglossum ramosissimum, though those are much superior in the good opening of the blossoms. Sepals and petals ochre-coloured, with brown blotches. Lip white, with ochre-coloured callus and many small brown dots. Column white with some mauve spots. I have to thank Sir Trevor Lawrence for a full-grown living plant and a very good panicle with beautiful mauve peduncle. I give the name in allusion to the fascinating effect the plant made on every one who saw it. It was as much the object of expectation as that plant of Phalænopsis Schilleriana at Consul Schiller's before it flowered. *H. G. Rchb. f.*

ODONTOGLOSSUM VEXILLARIUM LEHMANNI, *n. var.*

This is a curious variety, which would appear to deserve a special name, judging from rich dried specimens at hand. The plant is rather small. The wild flowers, up to seven in a raceme, are light rose, very large in proportion to the size of the plant. The inferior sepals bear each three dark stripes. The white area around the yellow base is striped. It was found by our excellent friend, Mr. F. C. Lehmann, in the Andes of Western South America. *H. G. Rchb. f.*

DENDROBIUM LITUIFLORUM (*Lindl.*) CANDIDUM.

This is a lovely variety, with white flowers, whose young growth lacks likewise the purple marking. It is apparently one of the uniques of the celebrated collection at Burford Lodge. *H. G. Rchb. f.*

A PARK
FOR WOLVERHAMPTON.

NOWHERE in England are open breathing spaces—recreation-grounds, parks, play-grounds, &c.—more needed than in populous manufacturing districts, such, for instance, as that central portion of the Midland Counties which is known in current phrase as "the Black Country." Sanitary science has opened the eyes of most people to the value and importance of fresh air; and as a love of outdoor exercises has spread little by little, so it has dawned on the minds of our leading men that it is part of their duty to provide the people with suitable places close to their homes where they may be indulged in. We are glad to be able to congratulate Wolverhampton on having followed the example set by Birmingham (which now has seven distinct parks) by providing its inhabitants with a public recreation-ground.

Since 1825, and until very recently, annual races have been held on a fine open space close to the heart of the town, and within the borough boundaries, belonging to the Duke of Cleveland. The racecourse, for something like fifty years, was held by lease, and was under the management of a committee. As the term of the lease approached its completion, it became known that the land would no longer be available for a racecourse. Negotiations were then opened with the Duke's agent by the then Mayor (Samuel Dickinson, Esq.), which ended in a most liberal offer being made by the noble owner to lease to the town, for a period of sixty-three years, 50 acres (the larger portion) of the racecourse, at the nominal rental of £300 per annum, with right of purchase at the end of that term for the sum of £20,000 (£400 per acre). This offer was submitted to the Corporation at a special meeting held in September, 1877, and after a lengthy debate was accepted by a majority of twenty-eight, six only voting against it. In March, 1879, the Park and Baths Committee advertised in our columns for designs for laying out this land as a public park, and premiums of £50 and £25 were offered for the best and second best designs respectively, an express stipulation being that the premiated designs could be carried out for a sum not exceeding £5000.

Twenty-seven designs, accompanied by specifications and detailed estimates, were sent in by the 3d of May last. After careful examination the design bearing the motto "Spe labor lævis" was awarded the first prize, and on opening the accompanying letter it was found to be the work of Mr. R. H. Vertegans, of Chad Valley Nurseries, Edgbaston, Birmingham, and Great Malvern. At a meeting of the Town Council in July last, the award was confirmed, and Mr. Vertegans' tender to carry out the works for the sum of £5000 was accepted. This successful prize design we have now the pleasure of submitting to our readers at p. 593 (fig. 103).

The instructions and conditions issued on behalf of the Corporation by the Borough Engineer and Surveyor (Mr. G. Eastlake Thoms, C.E.), for the guidance of the competitors, stipulated that of the area 8 to 10 acres should be laid out as a lake or lakes. The positions of the entrances to the park were fixed by the committee, and the designer had to arrange the walks accordingly. The whole area, it was provided, should be efficiently drained into the lakes, and ample space, covering altogether 10 to 12 acres, was to be provided for volunteer drill, archery, cricket, and bowling grounds. Sites were also to be set apart for two entrance lodges, refreshment rooms, shelters, and other conveniences. The designer, it will thus be seen, was somewhat hampered by a number of conditions dependent on local circumstances and requirements, to which must be added that the flatness of the site and the unpicturesqueness of its surroundings were more or less difficulties to be borne in mind, dealt with, and, if possible, overcome. The area was not only flat but treeless, waterlogged, and more or less boggy. On the other hand, the soil over the greater part of the plot is of a kind well adapted, when properly drained, for the growth of many sorts of trees and shrubs. The larger part of the area is covered with 18 inches to 3 feet deep of a mixture of good loam and peaty soil, while in another part the ground is much heavier in texture.

Mr. Vertegans entered on the work of laying out the park early in September last, and has made such satisfactory progress that it is expected the whole will be completed in about three or four months. At the time when we paid a visit to the park, early in the month of April, we found the low boundary wall finished in some parts and in progress elsewhere. This wall will be surmounted by handsome iron palisades. The entrance pillars, &c., were in course of erection. At present the lodges are not begun, but we saw the designs for them prepared by the Borough Surveyor, and were much pleased with them; they are handsome though not expensive, and more commodious and convenient than such buildings often are. But the surveyor is not only an engineer but an artistic architect, and he seems to have remembered while he was designing his plans that it was as needful to provide for the comfort of the occupants as the pleasure of the spectators. And here it may not be out of place to point out, as an example worth copying, the admirable manner in which Mr. Thoms has utilised the exterior of the park for the public convenience. On reference to the plan it will be seen that a wide road (60 feet wide) encircles it. This road has for its entire length been separated into three divisions; the one nearest the park, 17 feet broad, for a ride for equestrians; the centre, 28 feet broad, for carriages and other vehicles;

* *Mesospinidium incantans*, n. sp.—Pseudobulbis minutis ellipticis compressis; foliis cuneato oblongo ligulatis acutis, albis, densissime viridinervis, panicula expansa, mento bene evoluto; sepalo impari fornicato oblongo ligulato acuto, sepalis paribus alte connatis apice bidentatis; tepalis ligulatis falcatis acutis, labello oblongo pandurato acuto apice reflexo, callo in disco basilari pandurato-formi limbo elato, pilis intus transversis; columna utrinque medio angulato.—Ab affini M. Warscewiczii cum foliis, tum labello satis superque distat. Neo Granada. Col. ill. Trevor Lawrence. *H. G. Rchb. f.*

the remaining 15 feet for foot passengers. Outside this road a sufficient depth of land remains for the erection of villa residences surrounded by suitable gardens. As this must in the nature of things become a favourite spot for residences of the better class, the park will eventually be entirely surrounded by good houses and gardens, the effect of which, if planted with taste, will be to enhance that produced by the park itself. The length of the road around the park is about 1 mile.

So far as the work of laying-out the park is already done, Mr. Vertegans' design comes out admirably, and it seems abundantly clear that when the work is finished the park will be a really handsome one, with a nicely undulated surface, while the arrangement of the walks in combination with the planting will produce the illusion of a much greater area being occupied than is contained within the boundaries. Much thought has been bestowed on the planting, for the situation is too close to an always smoke-laden district to hope for success with all sorts of trees and shrubs. Care has been taken to ascertain the kinds which are already known to thrive in the neighbourhood, and to these other hardy sorts have been added which there is reason to expect will do well. The total number of trees, shrubs, &c., set down in the specification to be planted is close on 20,000, and as the information may be useful to others who may have to plant parks in manufacturing districts, we subjoin details of the kinds which are being used at Wolverhampton. Of evergreens there will be more than 14,000: these consist of Arbor-vitæ, Aucuba japonica, Box, green and variegated; Cotoneaster microphylla and C. Simonsi, Cupressus Lawsoniana, Pinus sylvestris, double Furze, Hollies, green and variegated; Laurel, colchic, common, and Portugal; Pinus austriaca, Privet, evergreen and P. ovalifolium; Rhododendron ponticum, and other mixed hybrid varieties; Berberis Aquifolium, and 1000 other evergreen trees and shrubs to be selected by the superintendent. Of flowering trees and shrubs there will be between three and four thousand, including white flowering Acacias, Almonds, Broom, white and yellow; Elders, variegated, &c., and Forsythia viridissima, Guelder Roses, purple-leaved and other Hazels, Laburnums, Scotch and English; Lilacs in variety, Ribes sanguineum and other varieties; Spiræas, of sorts, Sweet Briers, Philadelphus grandiflorus, Thorns, crimson and white; Weigelas, and 500 ornamental deciduous trees and shrubs of kinds to be selected by the superintendent. There will also be about 1500 deciduous forest trees, including Mountain Ash, Weeping Ash, Alder, Beech, Chestnut, scarlet and white; Elm, Scotch and Wheatley's; Weeping Elms, Hornbeam, Limes; Poplars, Lombardy, Ontario, Black Italian, and argentea; American Weeping Willow, &c. These ornamental forest trees will be used largely in the formation of avenues; the main one, from south to north, being of Limes, two of Chestnuts, one of Mountain Ashes, one of Chestnuts and Norway Maples, one of Norway Maples alone, and one of English and Huntingdon Elms alternately, while the walks around the lakes will be planted with Poplars of various kinds, Turkey Oaks, Sycamores, Purple Beeches, &c. Planes, it will be observed, have not been mentioned, nor will they be used, as they do not flourish in this locality.

The circle of beds around the central space, which will eventually be occupied by refreshment rooms and shelters, it is intended to define and intersect with Ivies, Box, or other dwarf growing plants, a 3-feet margin being reserved for spring and summer bedding plants, annuals, herbaceous plants, &c., so as to afford scope for a cheap display of flowers. The centres of these beds will be permanently filled with Rhododendrons, hardy Heaths, Azaleas, Gaultherias, Pernettias, Ledums, Vincas, Berberis of sorts, and other suitable plants. The other beds and borders generally, judging by those already completed, will be furnished no less satisfactorily, while from among the trees and shrubs mentioned above with Pampas-grass, Arundo conspicua, &c., a fitting selection will be made to plant the islands and the margins of the lakes.

The contract specifies that all the work is to be finished and the park handed over to the Corporation by the 1st of December next, but judging by the forward condition of the work at the time of our visit, and the speed with which everything seemed to be pressed forward, there is every reason to expect that Mr. Vertegans' sanguine expectations will be realised, and the park be finished three months earlier than the stipulated time. The whole of the planting will be completed early in May. It will be an agreeable task to visit this park again a few months hence, when all the work is finished, and we will then inform our readers how far the promise of excellence given by the parts already done has been kept. *Philanthes.*

EXHIBITION PLANTS AT HENWICK GRANGE.

The growing of specimen plants, such as may be seen in the highly-cultivated examples met with at the leading horticultural exhibitions, forms one of the many departments that go to make up the total of gardening as it at present exists in this country. There are some who argue that the plants as necessarily trained for these competitions have too much formality in their appearance. When we take into account the difference in their nature, and the widely varied management required to grow a collection of hard-wooded plants really well, and the years of patient watchfulness and study needed to enable the cultivator to master the treatment needed by each species—the fact that inattention for a single day is often enough to destroy a plant that has taken a considerable number of years to bring it up to the mark—it will, at all events, be admitted that the cultivation of these plants is a fitting field to bring out the first essentials to successful gardening. These may be summed up as consisting of attention, observation, and perseverance. The sun of fashion for hard-wooded plants is just now in a fog; but no doubt in the course of its revolution will return, unless gardeners have lost the pride that they used to take in being able to grow things that required more skill than just sticking a plant right end up in a pot, and giving a soaking of water at intervals. There is one thing indisputable—that is, if hard-wooded flowering plants were absent, the exhibitions would be as sombre in appearance, and little more interesting, than a field full of Turnips.

If asked to point to the best grown collection of hard-wooded subjects in the country, I should have no hesitation in naming that belonging to J. F. Greswolde Williams, Esq. Not but that there may be others comprising greater numbers, but what the Henwick Grange collection may lack in quantity is fully made up by their fine condition. They include quantities of beautiful young thriving examples of Heaths, Azaleas, New Holland and other greenhouse plants, Ixoras, Dipladenias, Allamandas, Anthuriums, besides Ferns, Palms, Cycads, and fine-foliaged subjects generally. Amongst Ericas, which are represented by most of the best varieties, there is a very fine plant of E. elegans some 3 feet through and 2½ feet high—a complete sheet of bloom, fast assuming its bright pink colour. This is now a very scarce Heath in any size, and is a slow grower, but not so liable to die as some kinds. E. ventricosa coccinea minor, similar in size, its dense green shoots set at every point with buds. E. Victoria, equal in size to the above; this is one of the handsomest spring flowering varieties, and is one of the best-constitutioned of the dark-coloured sorts. E. ventricosa magnifica, 4 feet in diameter, in beautiful health, promising well for bloom; this is another fine Heath, one of the brightest in colour when skilfully managed. E. ventricosa superba is equal to the preceding in every way. E. mirabilis, a little less than the last, but equally full of advancing flowers. The major variety of E. Massoni, one of the most distinct and handsome of the whole family, 3 feet through. E. ampullacea obbata, one of the best of the Heaths with flask-shaped flowers, 3 feet through. Several varieties of E. tricolor. E. Parmentieri, an immense dense bush, green and vigorous, not less than 5½ feet through, such a plant as has rarely been seen. Of late summer flowering kinds there are E. Austiniana and E. Irbyana, both handsome specimens, and amongst the best of the later blooming sorts.

Azaleas are equally well represented by the best of the established kinds that have been long enough in existence to admit of having attained full specimen size; they are thoroughly furnished with plump flower-buds—a condition not by any means general this spring with plants that bloomed late last season, a circumstance no doubt attributable to the sunless low temperature of last summer. Conspicuous in a number of other hard-wooded subjects was an unusually fine plant of the largest variety of Aphelexis macrantha rosea, with a full crop of advancing bloom; and an equally fine example of Pimelea mirabilis. Ixoras, Dipladenias, and Allamandas have each a small house to themselves, where they are stood well up to the roof. The Ixoras include very fine specimens of the hybrids Williamsii, Dixiana, and amabilis, and several of the old species coccinea, still the best of all the family, but a plant that few now appear able to grow well. The large specimen of the best variety of Anthurium Scherzerianum, so often exhibited, is in grand health, and has grown to an enormous size. Standing near it was far the largest plant of the white variety of this plant that I have seen. It is over 2 feet in diameter, with above a hundred leaves. As it attains age and size the flowers get larger. In another house I saw a stout young plant of the scarce A. Scherzerianum Wardii, bearing a couple of its very large broad flower-spathes.

One of the best features present in the plants mentioned, and scores of others of a like character at this place, is that they are furnished to the pots with healthy wood, well clothed with foliage. The natural habit of far the greater portion of the hard-wooded section of plants used for exhibition is that of a low spreading bush, with leaves down to the base; and when, as pot plants, they are bare and naked at the bottom, they are deficient in one of the first essentials requisite in a well-grown specimen. Some individuals who exhibit, and many more who look on at the shows, question why such or such a collection is placed before another, composed of plants that are fair to the eye so far as their heads go, but will not bear the close scrutiny necessary to fairly assess the merits of the competing groups.

Amongst Palms, many of which are large growers, and in excellent condition, there are several of the very best, as well as most elegant and distinct; of these Geonoma gracilis is a beautiful example, contrasting well with the broad massive leaves of Pritchardia pacifica, Geonoma princeps, Kentia australis, the now well-known Leopoldinia pulchra, and others of equal merit.

Ferns comprise the best of the tree species—Gleichenias, Davallias, Adiantums, and other favourite kinds.

As I have already intimated, the above are not a tithe of the many fine things contained in the collection which gives evidence of Mr. Tudgey's plant-growing abilities, and I have no doubt that he will be found in the van through the coming summer's exhibition campaign. *T. Baines.*

A SAND DISTRIBUTOR.

The desirability of superseding manual labour by some simple and efficient mechanical means in distributing sand or ballast over the surface of roads when rendered slippery either by frost, or, in the case of asphalte, by moisture, has long been experienced. The want has now been met by Chambers' sand-distributing machine, which has just been publicly tried on the Thames Embankment in the vicinity of the Chelsea Suspension Bridge. The machine is constructed upon the principle of the manure-distributor, which is well known to agriculturists. It consists of a box or hopper in which the supply of sand is carried, and upon which the driver's seat is placed. Beneath the hopper is a horizontal cylinder, having ribs formed upon it at intervals. This cylinder is made to revolve by gearing in connection with one of the travelling-wheels of the machine, which is mounted on a pair of wheels, and drawn by a light horse. Under the cylinder is a screen through which the sand or ballast passes, thus completing its separation, and insuring its uniform distribution on the roadway. The ballast first passes from the hopper, in which irregularity of delivery is prevented by a reciprocating stirrer—and, falling on to the revolving cylinder, is delivered in a thin stream into the screen through which it falls vertically on to the ground. The cylinder is kept clean by a system of spring scrapers. The quantity of ballast delivered can be regulated by the driver by means of a slide attached to the hopper, and the supply may be greater or less according to requirement. The supply of ballast in the hopper is calculated to last on an average for about a mile of travel of the machine. The machine was made to the order of Mr. George Livingstone, the surveyor to the parish of St. George, Hanover Square, subject to his approval on the trial, which was made recently in the presence of a number of other district surveyors, and which proved in every way successful. The action of the machine was almost noiseless, and the spread of the ballast was perfectly regular and uniform. The width of the spread being confined within the width of the machine, no annoyance or hindrance is occasioned to passing traffic. The manufacturers are Messrs. Richard Garrett & Sons, of the Leiston Works, Suffolk. *Times.*

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JAPANESE CONIFERS.—X.

(*Continued from p.* 363.)

THUYA (MACROTHUYA) STANDISHII.*—We have little to add to what has been before said with reference to this plant, whose history we gave at p. 397, vol. x., 1878.

We have now an opportunity of giving a woodcut of the cones (fig. 102), from which it will be seen that the plant is a true Thuya. Maximowicz' name of japonica has to some extent the right of priority, but, for garden purposes at least, it must cede to the name given by Gordon, inasmuch as there are already two, if not more, plants called Thuya japonica in gardens, and which have been taken up in various printed lists, and even in Parlatore's Monograph. Since our former article on this plant the new part of Messrs. Bentham and Hooker's *Genera Plantarum* has been issued, in which the genus Thuya is made to include as sections :—

§ 1. Euthuya, in which only two of the scales of the oblong cone are fertile ; seeds winged, 2—3 to each scale. Thuya occidentalis.

§ 2. Macrothuya, in which 4—6 of the scales of the oblong cone are fertile ; seeds winged.

§ 3. Thuyopsis, with globose cones and 4—8 fertile scales, each with 4—5 winged seeds—*e. g.*, Thuyopsis dolabrata.

§ 4. Biota, with subovoid cones, with 4 fertile scales, and 2—3 wingless seeds. Biota orientalis.

§ 5. Chamæcyparis (= Retinospora), with globose cones, 4—6 fertile scales, each with 2 winged scales.

The species we have now to deal with belongs to the section Macrothuya, and is of the more interest as being so nearly allied to T. gigantea of North-west America as to have been confounded with it. The differences are alluded to in the previous article.

Up to recently T. Standishii had only been found in a cultivated condition in the gardens of Japan, but Mr. Maries met with it wild on the mountains of Central Japan mixed with Thuyopsis dolabrata. The idea that this plant is the same as the N.W. American T. gigantea must therefore be abandoned. As things go the two plants are quite as distinct as other species of Thuya. There is no evidence to show whether, as some think, the plant was originally introduced from America to Japan ; all that we are justified in saying is, that the Japanese is the "representative" form of the American. T. Standishii is a handsome Conifer, quite hardy, and one which no collection should be without. *M. T. M.*

FIG. 102.—THUYA STANDISHII.

* THUYA STANDISHII, Carrière, Traité Général, 108, 1867 ; Gordon, Pinetum, ed. 2, 408, 1875 ; Mast. in Gard. Chron. 1878, ii., 397.
Thuyopsis Standishii, Gordon, Suppl., p. 100, 1862.
Thuya japonica, Maximowicz, Diagn. Decas. i. 1866 ; Mel. Biol., vol. vi., p. 26 ; haud T. japonica, hort.
Thuya gigantea, Parlatore, in DC. Prod. xvi. 2, p. 457 ; haud Nuttall.
Thuya gigantea var. japonica, Franchet and Savatier, Enum. Pl. Jap. i. 469.

Foreign Correspondence.

BOSTON, U.S.A.: *April* 20.—I am pleased with what is said of Mr. Carmichael's seedling Azaleas, and I concur with him in the belief that we shall be able to produce by hybridisation a race of Indian Azaleas that will prove hardy even in our inclement climate. The Azalea mollis is as hardy as an Oak with me, and I see no reason why it may not be used as a parent for this purpose ; in fact, I have a few small plants produced by the pollen of the mollis on the Indian variety, and which have stood the winter by being covered with leaves. My crosses on the A. Edward de Walle, alluded to by Mr. C., as also by its pollen on others, are truly fine ; some of them are magnificent in flower and foliage (see sketch enclosed) [Very fine. EDS.], being very brilliant, and of shades from dark crimson to the most delicate rose. One is as well imbricated as a Camellia, with several rows of concentric petals, and very large ; another a splendid large single, with a blotch like that of Comtesse de Beaufort. Most of those from the seed of Ed. de Walle are crimson or rose, and nearly all double, very large and vigorous ; and here let me state that it has long been a desideratum with me to obtain Azaleas with strong vigorous foliage. This is easily done by using as parents those of this character, and of which the de Walle is one.

On Saturday last we celebrated the fortieth anniversary of the Massachusetts Agricultural Club. It was to all a beautiful and interesting occasion—friends, flowers of female loveliness, baskets of Orchids, &c., presented a brilliant spectacle, and were I not past fourscore I should look forward to the next fortieth with longings for a renewal of the same. The big Camellias of which I wrote two years since are flourishing like a green Bay tree. I enclose a leaf of the old Camellia Floyii, the original plant, 13 feet high, head 7½ feet broad, over fifty years old, and for which I gave 250 dollars in 1839. It is an American seedling, sometimes called Grand Frederick. Mrs. Abby Wilder, original plant, 13½ feet high, by 7 feet wide in head, forty-five years old. One Double White, nearly 14 feet high, whose stem is 23 inches near the base in circumference ; over sixty years of age. *Marshall P. Wilder.*

A ROBIN REDBREAST'S NEST.—That the apparently amiable but really pugnacious little robin not unfrequently selects odd places in which to build its nest every gardener knows, but we very much doubt if many gardeners have seen a redbreast's nest in the centre of a plant of Adiantum farleyense, yet such is the position in which one of these birds has pitched its tent in the stove at Summerhill, Pendleton, the residence of Wm. Agnew, Esq., M.P.

Florists' Flowers.

Greenhouse Florists' Flowers.—Azaleas.—Some of our largest specimens that have not been subjected to more than a greenhouse temperature are now in flower. Probably the rather warm weather in March and April brought them on much faster than usual. In ordinary seasons the same plants would probably not be in flower for a month later. The small specimens, with stems about a foot high, and not too closely tied in, are well adapted for placing on side stages. To keep the flowers in good condition for as long as possible it is necessary to shade rather closely, and during such high east winds as we are getting now the ventilators must not be opened too freely. As the plants pass out of flower the seed-pods must be picked off, and the plants placed in a heated house where they can be freely syringed and well watered while they are making their growth. Pot any that may require it, using good fibrous peat.

Begonias.

The culture of these plants is very simple. They do well in a warm house if early flowers are wanted, or they do equally well as we have them, in quite a cool frame. Under the latter conditions they are growing quite freely, and to prevent lanky growths we air abundantly, as well as keep the plants close to the glass. Good fibrous loam, a little rotten manure, and leaf-mould seems to be the most suitable soil for them.

Bouvardias.

The principal object in view at present is to maintain a vigorous growth, and this can be best attained by keeping the plants in a house where they can have a little heat with a moist atmosphere. Our plants became rather stunted last year, owing to some check while they were making their growth, and that seems to have had an effect on the cuttings this year. They were not strong, and took longer to form roots; now, however, the small plants have been potted separately into small pots, and they are making very fair growth. When the weather is better they will be placed in a cooler house, to which air will be freely admitted.

Calceolarias.

As these are now coming into flower, it is necessary to fumigate the house thoroughly to destroy greenfly, or even if none are observed it is best to fumigate, as they may be there, and will soon spread, to the utter destruction of the beauty of the plants. Weak manure-water may be given about twice a week. The plants like a rather moist atmosphere, and a good supply of water at the roots. Pour the water in carefully without wetting the leaves. Shade the plants from the sun with thin scrim or tiffany.

Chinese Primulas.

We sow our seeds rather early, and the young plants are now up; they will be pricked out in a few days, about six in a 3-inch pot. They will soon gather strength, and when the leaves meet together each may be potted singly in a small pot. The plants become stunted in growth if they are exposed to the direct rays of the sun: it is best to place them in a frame with its back to the south or that is shaded in some way from the sun. Plants in these small pots are often injured by careless watering. I use a small water-pot, and avoid wetting the leaves.

Cinerarias.

The flowering period is over for this season. A few late-flowering plants may still produce a few cut flowers, but the finer varieties selected to propagate from should be placed in a frame that is shaded in the way recommended above for Primulas. The plants will start from the base, and as soon as the young growths are large enough they should be taken off, and potted singly in small pots. Seedlings should be potted off as advised for Primulas, but they require rather more space. Handle the plants carefully, and water gently with a fine syringe to settle the soil round the plants. All young seedling plants require careful treatment at first until they have fairly started into growth; and during such cold weather as we are now experiencing, with east winds blowing keenly, water must be kept from the leaves. It is as well to water the plants in the morning at present.

Cyclamens.

The plants have now done good service, and are going out of flower. The best varieties should be placed aside to save seeds from. It is best to place them on shelves near the glass in a greenhouse. Other plants will be passing into the resting period. Some persons place their plants in a cold frame and take very little pains with them, but they must still be looked to. So much water at the roots is not required now, but the drying-off system is a grievous mistake. Enough water must be applied to keep the leaves in a healthy state. The very old corms may be thrown away, to be succeeded by younger and better varieties.

Fuchsias.

The plants that were started in heat early will now be in flower, and they are useful to place in the greenhouse or conservatory when other spring flowering plants have been removed from it. The younger plants intended to flower in the summer or autumn must be potted on into larger pots as they require it. They require a rich compost of good turfy loam, rotten stable manure, and a small portion of crushed bones. Although a rich compost is desirable, I have seen the plants injured by being over-done with rich stimulating manure, so much so that both flowers and leaves dropped off. A light shade is necessary to plants either in flower or those approaching the flowering period. If pyramid-formed specimens are required, a centre stem must be tied to a stout stick, and all side growths must be pinched back.

Pelargoniums, Large-flowered.

Where the plants have been well managed they have now formed dwarf compact bushes, the stems being clothed to the base with healthy green foliage. Still tie out the growths, and place sticks to hold any that are out of their places in the position required. It is best to thoroughly fumigate the plants before the first flowers open, and if this is done thoroughly greenfly will not appear on them until the flowering period is over. Now is a good time to put in a few cuttings. These will form good-sized plants by the end of the season and make excellent flowering specimens for next year. The cuttings dislike being placed in hot-beds or forcing-houses. The best plan is to put each cutting separately in a small pot, placing them afterwards on a shelf in the greenhouse; very few of them will fail to form roots in this position.

Zonal Pelargoniums.

Plants that were raised from cuttings put in early last autumn are now well established in 6-inch pots. These grown on in a light airy house will begin to produce flowers by the end of the month. As soon as it is seen that the plants are well furnished with flower trusses manure-water may be applied in a weak state, but there is certainly more danger of over-dosing these plants than there is of underdoing it. Old specimens will not be so likely to be injured either with richer soil or with manure-water. The variety, too, must be considered; some require very much more liberal treatment than others. A strong-growing variety must be checked by being potted in poor soil, dwarf free-flowering examples being treated exactly the reverse. *J. Douglas, Ilford.*

Garden Operations.

KITCHEN GARDEN.

Tomatos.—Within my remembrance the growth of these wholesome and estimable edible fruits was solely restricted to plants which were put out-of-doors in the spring on such places as walls and other sheltered and warm spots, and the demand for them at that time comprised the supply which was required for making sauce and for bottling purposes. Since, however, their use in a fresh state in various ways has been more commonly practised, a taste for them has been extensively acquired and diffused, so much so that they have already increased in popularity and general estimation to such an extent as to create a demand for them at all seasons during the year. This, as a natural consequence has given an impulse to the cultivation of the plant to an extent formerly unknown, and at the present time whole glass structures are to be met with entirely devoted to their culture either for private or commercial purposes.

The improvement in the varieties of the Tomato which has been made during the past few years may in a great measure be ascribed to the increased favour in which they are held. Formerly the large red variety, notwithstanding its defects in the way of furrowed sides, &c., stood pre-eminent for ordinary purposes, and was grown more extensively than any other kind; but since selections for the perpetuation of sorts have had more attention and care, the Stamfordian and others of a kindred character have been obtained which possess colour and excellence of quality combined with an evenness of surface and beauty of form which gives them the precedence for most requirements. Recently so many good varieties have been raised or obtained by selection, and now appear in the trade lists, that to make a choice is a difficult matter to those unacquainted with them. I will, therefore, mention a few which, in my opinion, possess sterling merits in their respective classes. The bright red or scarlet section will undoubtedly at all times command most notice in a commercial point of view, and they are doubtless the best for ordinary requirements. Of these the Stamfordian and selected Trophy may be classed as A 1 varieties for exhibition and first-rate for other purposes; while for sauce the old Large Red grown out-of-doors need not be discarded. As fancy kinds, Carter's Green Gage stands first amongst the yellow section, and backs Criterion in the dull reds; others, as the Red Cherry, Red Currant, and Yellow Cherry may also with propriety be included under this head as being interesting in their way.

As the season and demand for Tomatos in a fresh condition is now extended over the greater part of the whole year, the cultivation of this subject has necessarily undergone a change. Instead of its being carried out under natural circumstances alone, as formerly, and the rest of the supply left to the hands of the Continental growers, home growers have at length turned their attention to this subject, and already the process of forcing and growing them in glass structures is established at numerous places, and from reliable authority I gather that good English grown Tomatos meet with a more ready sale in the markets than foreign ones, and at very remunerative prices. We may, therefore, under such circumstances, naturally expect that the production of them in greater quantities will be assiduously pursued for public use, as well as for private consumption. For several years past Tomatos in a ripe and raw condition are often required at various seasons for the breakfast table as well as for the salad occasionally. Such requirements were, in the first instance, the cause that induced me to commence the cultivation of them under glass, and since that time several years have elapsed; but we have persistently carried it on in some degree either by means of pot cultivation or otherwise. The former process can be made instrumental in aiding the supply, where planting out cannot be effected, by means of pots being placed at the ends—where light abounds—of vineries, Pine-stoves, or similar places, but where a house or a portion of it can be spared to these plants entirely they should be planted out, because they are not so likely to suffer from neglect or inattention in watering. Although the Tomato plant may justly be considered an accommodating subject, and readily acclimatised to any temperate condition whatever, still to do it properly considerable heat, and as far as possible every ray of sunshine, is necessary, as well as a place where during the daytime a free circulation of dry warm air is proceeding. The compost we find best suited for it consists of about half rough turfy loam, a fourth of roadside scrapings, and a fourth of decomposed manure or horse droppings, moderately fresh. For planting out a ridge of soil, 2 feet wide and 15 inches deep, should be placed on a warm bed of tan or leaves; and for pot cultivation those of 12 to 15 inches in diameter are most appropriate. These should not be quite filled, in order that surface-dressing of the same material or of pure manure may be applied afterwards. We make a sowing for early work in January, and move the plants onwards until they have moderately filled 5-inch pots with roots, when they are transferred to the beds or pots, the plants in either case being kept about 2 feet apart. We likewise sow at other periods, to obtain plants for taking the place of exhausted crops, which occur in the interim between the former and the latter sowing, which is usually made about August 20. From these plants we get a supply for a considerable period onwards through the winter months. We still adhere to the plan on which we at first commenced, of having only one main stem, which is allowed a good run of 6 feet or more as the place may admit, and from which all laterals are removed at an early stage. Other cardinal points in management comprise top-dressings with rich materials, when the surface soil becomes full of roots, waterings copiously given with some stimulating agent intermixed, and keeping the fruit perfectly free from damp while the ripening process is is proceeding. For this purpose, in close confined pits, a chink of air should be left on the house continuously.

In the cultivation of these plants out-of-doors they are generally placed in an excellent position to do well, but the main point—the preparation of the places for them—is overlooked or not attended to sufficiently. As I said before, good soil moderately enriched is indispensable to insure success, and soil of this nature does not abound about the roots or in close proximity to wall trees, but by taking out a bushel of soil where it can be done, and adding a like quantity of such as has already been

recommended, the labour involved will be more than compensated for in the end in the yield of fruit of greater size and heavier quality. A heavy mulching of manure should as soon as practicable after they are planted, be placed about the surface of the plants, to prevent the soil becoming dry and parched. In the case of out-of-door plants we depart from the plan of having individual stems, and let three or more of these main shoots run, because in many places the space will not allow a good run, and a certain amount of growth with foliage is essential to their well-being.

Ordinary Work will at this period include, if not already done, the planting of the main crops of both Scarlet Runner and Dwarf French Beans. If the bines of the former subject are to have a good run of 6 or 7 feet in height, the rows should be not less than 6 feet apart; but for those which are not to be supported by sticks 3 feet will suffice; this also will be a suitable distance for French Beans, excepting in the case of very dwarf kinds, when it may be considerably diminished. Former sowings of these will doubtless need attention as soon as they are up, to prevent damage from frost; a few leafy sticks placed inside the rows will answer this end. The preparation for Celery will also soon need attention; the quarters where late winter stuff grew will be available for this crop. Let, therefore, the trenches be dug out and be prepared in readiness to receive the plants immediately they are fit. A good breadth of the tall section of Peas should be sown, and supplementary crops of Lettuce, Spinach, Turnip Radishes, &c., should have due attention, both in regard to sowing and watering. If the places, as before advised, were prepared for Vegetable Marrow, ridge Cucumber, and Tomato plants, these should be planted out into their respective places at the earliest moment it can be done with safety. A finer seed-time could not possibly be desired, nor one for making good defective operations of last year in the way of clearing the land could not really exist. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

Vines.—We are now in the midst of the busiest season, not only in this, but in every other department under glass, and great activity will be necessary to prevent many very important operations from falling into arrear. The past month having been dry, with more than the usual amount of bright weather, Vines in all stages have grown rapidly, and under the influence of solar heat the occupants of late houses which broke weakly have already regained their usual vigour; but we hear complaints of a tendency to the production of tendrils, or loose bunches—a sure sign of imperfectly ripened wood. In our Lady Downe's house, although we applied fire-heat last autumn until the Grapes began to lose colour, the shows are not so numerous as usual; but the bunches are compact, and as large as we wish to have winter Grapes; moreover, we have the satisfaction of seeing the old Grapes fresh in the stalk and berry, with every prospect of their keeping well into June. To prevent the disposition to run into tendril growths the late houses should be started earlier, and receive more fire-heat in the autumn. To correct it, the shoots should be tied down to the wires, and stopped to within three or four eyes of the fruit, the best time for the performance of the work being the latter part of a fine day, when the growths are limp. In mid-season and autumn houses, Muscats and other shy kinds have set as fully as Hamburghs, and will require careful thinning as soon as the properly fertilised berries begin to take the lead. If a large percentage of the surplus bunches were not cut off before they came into flower, no time must be lost in getting them removed; and laterals which have been allowed to ramble may be stopped, tied, and regulated in accordance with the uncovered space at command. Early Grapes now ripening will require moderate fire-heat for keeping up a circulation of dry warm air by day, and a temperature of about 60° by night. Guard against excessive dryness, as early Grapes, with ventilation, take a great deal more water than late ones, independently of the fact that it is better to keep the foliage clean and healthy as long as possible, than to run the risk of having another crop of new Grapes next January. Gradually remove the remains of fermenting material from outside borders, leaving a good mulching of the most suitable for the protection of the surface roots, and allow them to have the benefit of exposure to summer rains, which will wash in the fertilising elements of the manure, and stimulate the Vines into the production of new laterals after they are relieved of the crop. Look well to pot Vines, and if late spring planting is contemplated, no time should be lost in getting it done. Large growing plants from pots or turf may be transferred to inside borders at any time; but the earlier the better, as Grapes cannot be obtained from badly ripened wood, neither will half-ripened canes, when cut down, throw such clean short-jointed growths next season as others that have been properly matured and rested through the autumn. *W. Coleman.*

Orchard-house.

Very full instructions as to culture were given at p. 527, and the same treatment may still be continued. Thinning the fruit is very important, and as soon as it is seen that there is no danger of its dropping off it should be finally thinned out. See that all insect pests are destroyed, and that thoroughly. If any of the aphis tribe are seen alive on the leaves a day or two after fumigating, give them another good smoking. Syringe now every morning at 6 P.M., and in the afternoon, just before shutting up; the time for this will depend much upon the position of the house, but a good time is between four and five o'clock. Before shutting up see that all trees that require it are thoroughly watered. We have finally thinned out the Strawberry plants on the shelves to rather less than half the quantity that was placed there in the autumn, or rather winter, because we leave them out until very late in the year. All that are removed we use in the forcing houses, commencing to gather early in March from Black Prince, following on with Keens' Seedling and President. Many other sorts have been tried, but we have gone back to Keens' Seedling as the best for forcing, to come in from April 1 and onwards. The fruit is not only of such a rich dark colour, but of a distinct and good flavour. We have thinned out the fruit, leaving from six to twelve on each plant. We support the fruit with sticks or branchlets instead of allowing it to hang over the sides of the pots. As the plants are now growing freely they require very considerable supplies of water at the roots, and manure-water in a weak state frequently. I believe cow manure soaked in water is the best, and it should be used in a clear state. I do not like guano, it causes over-luxuriance, and does not improve the quality of the fruit. Saucers under the pots are a means of saving watering, but this is also gained at the expense of quality. *J. Douglas.*

Orange-house.

The fruit that was set early in the year will now be swelling rapidly, and the only way to obtain good flavour combined with size is to keep up a high temperature, combined with a moist atmosphere, with a corresponding supply of water to the roots. If it is thought that the trees require stimulating, the best plan is to apply surface dressings: the best for this purpose is powdered bones mixed in a liberal manner with good yellow loam—pounded charcoal should be added to it; a handful or two of this spread thinly over the surface of the soil in the pots very speedily causes a change in the growth of the trees. With the increasing temperature, scale and even mealy-bug will appear, but this must be destroyed at once. Ventilate the house as freely as possible. *J. Douglas, Loxford.*

PLANT HOUSES.

Orchids.—The grower of these plants will now and for the next three or four months find himself extremely busy in every department. Putting aside the always very necessary work of cleaning plants, pots, floors, and stages, a vast deal of time must be taken up in watering, ventilating, and shading. Beginners in the culture of Orchids always find the watering of their plants quite a puzzling performance. They do not begrudge either water, time, or trouble, but after they have given freely of all three they are in their own minds far from certain as to whether they have injured the plants or otherwise. This, although not pleasant, is a very proper feeling, which time and experience gradually wears away. To such persons two excellent rules can be given: through the winter months keep on the dry side, through the summer keep on the wet. Thus at the present time I would advise every one when looking over their plants to water not only the dry ones but also those of which they are not quite certain as to their being exactly wet or dry. In watering give every plant a thorough soaking. Plants in baskets or on blocks may be dipped up to the base of the young breaks; those in pots should receive sufficient for the water to rush rather than dribble through the lower holes of the pot. The great question then arises, How often is this to be done? The answer depends in a great measure upon how the plants are potted, &c. Taking the cool-house plants, if these are potted in well-drained peat and sphagnum, and the house properly ventilated and shaded, the majority of them will now take a thorough soaking every four or five days. Water less often plants in large pots that have a large mass of material to root in, and a trifle oftener those in small pots that are well-rooted. Imported Odontoglossums and Masdevallias should be watered just often enough to keep the material they may be potted in moist. The moment they break and make roots give more water. None of these plants require syringing overhead, but the atmosphere must be kept decidedly moist. If the Disas are grown in this house they should now be watered both morning and evening. Give them, if well rooted, weak manure-water three times a week, and keep them well to the light in the coolest portion of the house. Suspended from the roof of this house and growing in baskets or on blocks will be Cattleya marginata, Lælia Dayana, Odontoglossum Rossii, O. Cervantesii, Masdevallia Chimæra Wallisii, M. bella, &c., Sophronites of several kinds, Nanodes Medusæ, and Pleione humilis. The two last-named, along with Oncidium nubigenum and O. Phalænopsis, should be kept constantly wet in an airy position. The whole of the others should be kept moist, the basket plants having water every four or five days, and those growing on bare blocks every day. For some of the dwarf growing Odontoglossums and also for Dendrobium Jamesianum, we have used with good results lichen covered blocks. These, if used immediately after being cut from such trees as Elm and Maple, retain their bark and green covering for three or four years. Plants growing on such blocks run their roots freely among the lichen, and do not require water more often than basket plants.

In the Cattleya and intermediate houses there are now no plants requiring a resting and dry treatment. The majority of our Cattleyas take a good watering about every five days; some in very large pots and pans go longer, while others in a very pot-bound state are watered more often. Such plants as Zygopetalum maxillare, Vanda cœrulea, Cypripedium Boxalli, C. Schlimii, C. insigne, Calanthes of the evergreen section, Bolleas and Pescatoreas, and many others, must have water often enough to keep them wet; Pleione lagenaria, P. maculata, P. Wallichii and P. Reichenbachiana, that are growing in shallow suspended pans, will now take water every morning, and will appreciate a soaking of weak liquid manure once a week. Sobralia macrantha, if showing flower, should also have liquid manure once a week, and be kept at all times wet. The Mexican house will now, if freely ventilated, and not over-shaded, get very hot and dry during the daytime. It must be often damped down, and the plants should now be watered in the evening instead of morning, so that during the cool hours of night they may take up sufficient moisture to carry them through the heat of next day. Avoid getting water into the now pushing growths of Odontoglossum Londesboroughianum and Oncidium cheirophorum, or they will certainly rot. In the East Indian-house the whole of the Cypripediums, if properly potted, should get a thorough soaking every three or four days. These plants can at no time stand the least dryness. Still water with care Calanthes of the vestita section, for until they are thoroughly well rooted they are easily upset by over-wetness. Such plants as Phalænopsis, Aerides, and Saccolabiums, that are rooted in nothing but crock, charcoal and sphagnum, are seldom over-watered at this season of the year. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

Shrubberies and Ornamental Grounds.—The flowering trees and shrubs here are better furnished with bloom this season than I have ever seen them. I mentioned in one of my former notes that the winter had made sad havoc with the shrubs here; I am sorry further to state that the Yuccas are killed to the ground. They may break from the bottom, but their appearance will necessitate their removal from the ornamental grounds to the reserve garden, at least for the present season.

Bedding-out.—This month and June are the great furnishing months of the year. It will not be safe to begin with the bulk of the plants until after the 15th—with Calceolarias, Petunias, Verbenas, then Pelargoniums, continuing on with other plants in rotation according to their hardiness. The planting can hardly be performed with too much care. Not only should each plant be placed in the best position for effect, but it ought to be allowed sufficient space to grow, and should be transplanted to it with the greatest possible care, so as not to receive the slightest check. As soon as planted they should be well watered, to prevent them flagging and to consolidate the soil round the roots, so as to enable them to start into fresh growth at once. The great secret of continuous blooming is rich soil, a fair start, with good plants, careful planting, and picking off the seed-pods as soon as they appear.

Ornamental Foliage Plants. — These are, generally speaking, better adapted for growing in town than flowering plants, for the reason that they are more easily kept clean. At the present time Caladiums and Coleus are conspicuous plants. Of Caladiums I may mention C. argyrites, bicolor, Chantinii, and Wightii; these are easy of cultivation, and are very pretty table plants. Of Coleus, aurea marginata, Beauty of Widmore, Duchess of Edinburgh, Emperor Napoleon, and Queen Victoria, with some of the ragged section of more recent introduction, such as Kentish Fire, multicolor, &c. I think one of the prettiest fire-place decorations I have seen is a bank of these different coloured Coleus with an edging of Lobelia Lustrous and Pelargonium Lady Plymouth, plant and plant, backed up with green foliage plants, Ficus elasticus, Acacia lophantha, &c. *Wm. Gibson, Chelsea.*

APPOINTMENTS FOR THE ENSUING WEEK.

MONDAY,	May 10	Sale of Imported and Established Orchids, at Stevens' Rooms.
TUESDAY,	May 11	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Sale of the Collection of Orchids belonging to W. A. Gore Langton, Esq., M.P., at Stevens' Rooms.
WEDNESDAY,	May 12	Sale of several Importations of Orchids, at Stevens' Rooms. Sale of a Freehold Estate and Mansion, at Woodstock, by Debenham & Tewson, at Clarendon Hotel, Oxford.
THURSDAY,	May 13	Sale of Importations of Rare Orchids, at Stevens' Rooms.
FRIDAY,	May 14	Manchester Botanical and Horticultural Society's Great Whitsuntide Exhibition opens. Sale of Scientific Instruments, at Stevens' Rooms.

A VERY interesting lecture was lately delivered before the Society of Arts by Mr. C. PFOUNDES. His subject, "Art in Japan," appeals to a very large and varied community, and in his way of treating it he shows clearly that to understand the subject it is necessary to enter into the feelings of the people, to know their habits and thoughts, and to be conversant with their history. The designs, which outsiders are apt to look on as quaint and curious only, have, as Mr. PFOUNDES shows, a meaning, which the educated, or in some cases even the uneducated, Japanese appreciate at a glance. We subjoin a few illustrations relating to plants, which may be of interest to our readers and to the large numbers who now make use of Japanese trays and other objects :—

"The following combinations are most frequently met with in Japanese design :—

"*Phœnix and Paulownia imperialis.*—This design is to be seen embroidered on the imperial robes, and on them only, but is frequently depicted on fans, screens, and hanging scrolls ('kakemono').

"*Pine-tree and Stork.*—Both emblems of longevity, a common design, and most frequently used in the embroidery of robes presented to new-born babes, and on other articles, lacquer ware, &c., for festive occasions.

"*Pæony and Chinese Lion.*—The Pæony is a design usually sketched on large articles, such as screens at the entrance of temples ('tsui-tate'), or on panels, ceilings, &c.

"*Bamboo and Sparrow*, both being of a mild and gentle nature, a design to be seen in embroidery, fans, screens, and household furniture.

"*Equisetum* (*Scouring Rush*) *and Rabbit.*—It is supposed that there is an 'usagi' (hare or rabbit) in the moon which scours it with the dried 'Tokusa:' a design found on a variety of articles.

"*Willow and Marten* (*or Swallow*).—The Willow waves in the breeze, the swallow flits to and fro: a favourite design for fans.

"*Stag and Maple.*—Maple leaves turn red in autumn, and the stag in autumn calls the doe. There is a play in the idea of the colour ('iro') of the leaf changing, and the love ('iro') of the deer; generally sketched in screens, &c.

"*Lespedeza and Sleeping Wild Boar.*—The wild boar generally makes its bed in clusters of 'hagi.'

"*Cherry and Pheasant.*—The Prunus pseudo-cerasus, cultivated solely for its bloom, is associated with the gorgeously plumed pheasant, generally used in embroidery and coloured designs.

"*Plum and Nightingale.*—The Plum tree, called 'the poets' favourite tree,' in allusion to the verse composed in honour of Naniwa no Oji (afterwards Nin toku Ten O) by Oni (or Wani). The nightingale is fond of song or verse; one of the most frequent designs.

"*Moon and Cuckoo.*—In allusion to Yorimasa and his verse when he slew Nuye: the design is usually a bird flying across the crescent moon.

"*Rushes and Geese.*—Geese flying long journeys carry Rushes in their beaks, and, before resting on the water, drop the Rush, and then alight upon it; an allusion to the care to be taken in choosing a resting-place.

"*Chrysanthemum and Fox.*—Hanzoku Tai-shi, prince royal, was bewitched by the nine-tailed fox, in the form of a lovely damsel. He made her his mistress. One day she fell asleep in a bed of Chrysanthemums, resuming the normal shape of a fox. He shot at it with a bow, and hit it in the forehead. Noticing his mistress afterwards to have a wound on her temple, this led to the discovery of her being a fox.

"*Bamboo and Tiger.*—Tigers feared the elephants, and, therefore, hid in the Bamboo jungle. This design is often seen on screens.

"*Peach-trees and Oxen.*—There is an old Chinese saying, 'Turn the horse loose on the flower-covered mountain, and the ox into the Peach orchard.'

"*A Dragon Crossing the Summit of Fusi-yama on the Clouds.*—Small snakes become dragons, and an abject mortal often becomes an exalted person, rising to a great height, and easily surmounting the greatest obstacles: an emblem of success in life.

"*Long-armed Ape and the Moon.*—It sees the reflection of the moon in the water, and endeavours in vain to grasp it.

"*The Mulberry and the Goat.*—Goats are fond of this plant, and its product paper.

"No mistakes are permitted as to seasons and the appropriate objects. Conventionalised ideas appear in the accepted form in many common designs and groupings, but the artists of Old Japan are above being led by any canon that does not permit of an appeal to Nature's hand-book of art, with the glory and charms of which they are ever surrounded. Theoretical to a fault, and systematic even in their love of variety, colour, and form, the Japanese artists, nevertheless, are no mere servile copyists of Nature, like their neighbours the Chinese. They clothe Nature with the full wealth of their ideal conceptions, and so confer upon it their own mental individuality.

". . . A combined triplet emblem of Bamboo, Pine, or Plum-tree is held to be especially suitable for festivals or auspicious occasions, such as marriage. A little bird perched on a blooming Plum-tree is an allusion to a well-known poem.

"Floral forms have a high importance, and widely affect the minor details of decorative art. The arrangement of flowers is also reduced to a system, taught in progressive lessons; the natural forms of the various plants are altered, but with an art that conceals the effort. Daily accustomed to these floral arrangements, backed with hanging scrolls of a Chinese poem or with an artists's sketch, in the hallowed nook that exists in every Japanese sitting-room, the mind grows accustomed to these objects. Every house has a little bit of garden; if without room for more a box is found, containing a miniature garden in the area of a few superficial inches.

"It is thus seen that there was, and is, as a deep current, a strong love of Nature flowing through this people's art instinct. Periodical holidays furnish but an excuse to dress up and have a day's outing; even a visit to a shrine or a temple is ever attractive. Going to church is no mere dull prosaic routine of duty. The flowers of the season, from spring to autumn, furnish periodical excuse for these festive picnics. Pilgrimages to distant shrines give opportunities to visit beautiful or grand scenery, and celebrated places.

"Delighting to look at scenery from a high point, the popular pictoral art may have been influenced by this peculiarity. Thus we see that their love of Nature, of flowers, and poetry, was so intermingled with their domestic life and their art, their literature and poetry, that it is difficult to draw the line where art begins and ends."

We may add that Mr. FFOUNDES has favoured us with an inspection of several objects brought by him from Japan, and amongst others a whole series of drawing-books adapted for botanical purposes. These show a knowledge of botanical detail, relative size, proportion, position of parts, and even of perspective, which would surprise those accustomed to consider the Japanese as our inferiors in such matters.

—— DR. NILS JOHANN ANDERSSON.—This celebrated Swedish botanist and traveller, as we learn from the *Botanisches Centralblatt*, died after long suffering on March 27 at Stockholm. ANDERSSON was born on February 20, 1821, studied at Upsal, graduated as Doctor of Philosophy in 1845, and resided at the University as Assistant Professor of Botany. Afterwards he took part in the expedition of the frigate *Eugénie* round the world, 1851—1853, the result of which he published in several treatises which were translated into various foreign languages. In 1855 he became Demonstrator of Botany at Lund, and in the following year was appointed permanent Professor of Botany, Director of the Bergianska 'schen Garten and Superintendent of the botanical division of the Royal Museum. There he worked with great success till the beginning of 1879. From here ANDERSSON undertook numerous journeys in the cause of science to Lapland, Norway, Germany, France, England, &c. He also acquired scientific renown through his various treatises, books of travel, and text-books. Our last meeting with this amiable and accomplished botanist took place at the Exhibition in Cologne.

—— EUCALYPTS.—The fifth decade of Baron VON MUELLER's valuable illustrated treatise on the Eucalypts of Australia is before us. The species figured are E. amygdalina, corymbosa, crebra, diversicolor, hemiphloia, incrassata, largiflorens, paniculata, ptychocarpa, and trachyphloia. The text comprises structural and other details relating to these important trees, from which we may borrow on another occasion. In the meantime we are glad to note that the value and interest of this important publication increase as it proceeds.

—— THE VINE LOUSE AT THE CAPE.—Mr. CLOETE in a letter in the *Cape Argus* maintains, not only that the pest exists now in certain vineyards at the Cape, but also that it is a native of the Cape.

—— THE VINE LOUSE IN ITALY.—For Italy this question is very important, says one of our correspondents, as it involves a constant menace to the now flourishing trade in cut flowers, fruit, and vegetables. Now that we have the Phylloxera in Italy (happily only to a small extent), there is more ground for apprehension than ever. It has been seriously proposed to prevent the holding of our great exhibition in Florence, which, if not interfered with, promises to be as great a success as that of 1874.

—— NEW CRIMSON EAST LOTHIAN STOCK.—Mr. DOWNIE sends us cut flowers of this new Stock, which is really fine. The colour is exceedingly rich and deep—an intense crimson-magenta, and the blossoms are very fragrant, forming a dense spike of unusual attractiveness. It will be a valuable acquisition from the richness of its colour. With it came flowers of giant Mimulus, the flowers bold and variously spotted—a very fine strain.

—— ANTHURIUM ANDREANUM.—We understand that the 200 plants brought home by Mr. F. C. LEHMANN, and sold at Stevens' Rooms on Wednesday last, realised about £500, individual examples being knocked down at prices ranging from two to seven guineas.

—— THE PINES: PINUS.—Dr. ENGELMANN, of St. Louis, has recently published in the *Transactions of the St. Louis Academy of Science* a valuable revision of the genus Pinus, the substance of which we may transfer to our columns hereafter. In the meantime we may state that the primary divisions are founded on the form of the cone-scales, the form of the connective of the anther, the position of the resin canals of the leaf—near the skin of the leaf, in the cellular tissue of the leaf, or close to the bundle sheath, the presence of strengthening or hypoderm cells, the proportion of the wing of the seed, the subterminal or lateral position of the cones, the number of leaves, &c.

—— EFFECTS OF THE LATE WINTER ON PLANTS.—A sub-committee has been appointed to collect information on this point. Circulars have been prepared for this purpose, and those willing to assist in filling them in will oblige by forwarding their address to the Secretary of the Scientific Committee of the Royal Horticultural Society, South Kensington, London.

—— HARRISON'S MUSK AS A BEDDING PLANT.—Mr. DOWNIE recorded the fact last season of this very fine Musk being successfully used as a bedding plant in the North of Scotland, and it may interest some of our readers to know that it was also tried in the neighbourhood of Manchester, at Summerhill, Pendleton, the residence of WM. AGNEW, Esq., M.P., whose gardener, Mr. ELLIS, was well pleased with the result.

—— GLADIOLUS COLVILLEI ALBA.—The white variety of Gladiolus Colvillei, known under the popular name of The Bride, is well grown by Mr. SWAN, at Oakley, Fallowfield, for producing choice white flowers for cutting in June and July. The plant is perfectly hardy, but comes much finer when grown in pots and afforded the shelter of a cold frame. Mr. SWAN plants from 8 to 10 corms in 6-inch pots, which give him a dozen spikes or more, that prove invaluable for cutting.

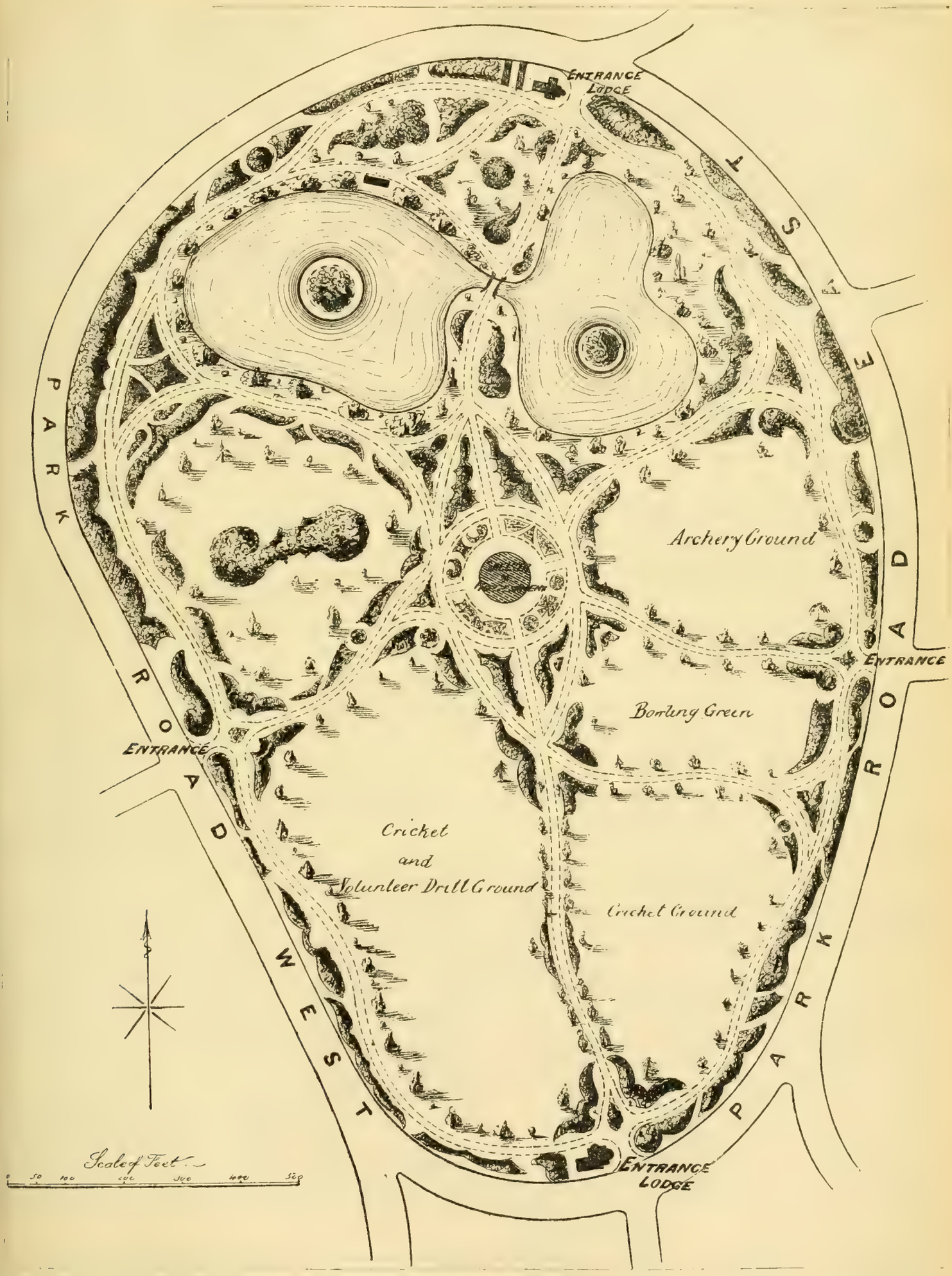

FIG. 103.—PLAN OF THE NEW PARK AT WOLVERHAMPTON. (SEE P. 586.)

—— Yucca filamentosa variegata. — Nowhere in the British Isles, so far as we know, is this handsome plant grown to so great an extent, or with so much success, as in the neighbourhood of Manchester, where it would almost appear as if the gardeners had a special affection for it. Our latest acquaintance with a fine lot of plants was made a few days ago at The Firs, Fallowfield, where Sir Joseph Whitworth's gardener, Mr. Smith, has a large three-light frame full of plants of various sizes. The method of propagation adopted by Mr. Smith is that of cutting up the roots in the same way as Dracænas are treated, and in a compost of peat, sand, and loam, in which the two former preponderate, the young plants appear to thrive like evil weeds in good ground. It is a native of the Southern States of North America, and will not make much growth in a cool greenhouse, but in a little warmer temperature it grows with great luxuriance.

—— Goniophlebium lachnopus. — This fine deciduous species from Northern India is strongly recommended by Mr. Swan as a stove basket Fern for summer decorations. It dies down in winter, but makes up for the winter's rest in a fine summer crop of bold handsome fronds.

—— Hibiscus rosea-sinensis as a Screen Plant.—Mr. Swan has employed one of the single forms of Hibiscus rosa-sinensis rosea with very good effect as a side screen round the central stage in the little show house at Oakley, Fallowfield. It is planted out underneath the stage, and tied out to the side of the path, where the dark vivid green of its foliage contrasts well with the gay Orchids above.

—— Standard Wistaria sinensis. — One of the leading features in the floral arrangements at the opening of the premises of the general Horticultural Company (John Wills) Limited, at Warwick House, Regent Street, on Monday last, was some very fine specimens of Wistaria sinensis growing in tubs as standards, with large heads 5 to 6 feet in diameter, densely covered with heads of bloom of fine colour. These plants were obtained from Rouen, and it is supposed they are from thirty-five to forty-five years of age at least, and were originally grown up from cuttings. As decorative agents in spacious conservatories at this season of the year they can scarcely be surpassed, and some of our English nurserymen would do well to attempt the culture of plants of this character. So completely did they strike the popular taste that there was quite a competition to become purchasers of them, and large sums were offered by those anxious to possess them. The general public, unaccustomed to this fine Chinese climber, looked on with wonder at "Lilacs" of such unwonted size and beauty of colour. Time is required to get good heads to such plants, but when obtained their beauty is above praise and their value great.

—— Celosia pyramidalis plumosa.—We learn from Mr. Thomas Simpson, gr. to H. C. Wells, Esq., Broomfield Lodge, Chelmsford, that he has some small plants in flower of a "lovely strain of Celosia pyramidalis plumosa, discovered by a friend near the Kurrum Valley while in search of the scientific frontier."

—— The Colours of Flowers, &c.—M. Ch. Flahault, in the *Annales des Sciences*, brings forward additional observations to support his view that, under equal conditions, the leaves of plants of the same species are larger in proportion as we go northwards, these relatively large dimensions being due to the duration of light of relatively feeble intensity. In cases where the chlorophyll is formed in the absence of light it must be formed at the expense of the materials stored up in the tissues. The importance of these reservoirs of nutriment is still greater in the case of flowers. Thus, in the case of Hyacinths, both blue and red, M. Flahault found no difference in the colour of the flowers grown in the light or in the dark, the colour being manufactured from the stores of material in the bulbs.

—— Tropæolum Cooperi.—A correspondent sends us a flower of this species perfectly "regular" as to form, that is to say, destitute of spur; the sepals, petals, and stamens all of normal number, but the pistil entirely absent, its place being occupied by a shoot some 1½ inch long, bearing two or three small but perfect leaves.

—— Oncidium concolor. — A correspondent sends us a flower of this species with the lip divided into two distinct portions. It might be thought that there were two lips, but as the other parts of the flower are normal it is more probable that this is a case of one divided lip rather than of two. The lateral sepals are always partially united, or, rather, are not entirely separated.

—— Royal National Tulip Society. — A meeting of the subscribers to and friends of this Society will be held to-day (May 8), at the "Bull's Head Inn," off Market Place, Manchester, at 3 o'clock p.m., for the purpose of transacting business, as below:—To enrol subscribers; to appoint officers for the year; to draw up schedule of prizes for, and to fix the day and the place for the exhibition of 1880; to appoint judges; and to transact all other necessary business. The Hon. Sec. (Samuel Barlow, Esq., Stakehill House, Castleton, near Manchester) invites particular attention to the following rule (3) of the United Florist Societies:—"That as the prize list is based upon the subscriptions of the previous year, and the amount promised at the annual meeting in January, the Society considers subscribers of the previous year to still remain members on the same terms, unless they signify their withdrawal from the Society to the Hon. Sec. on or before the annual meeting, which is held on the last Wednesday in January." The Hon. Sec. would consequently be glad to hear from all who cannot attend the meeting, and who have not sent their contributions. All such members should state the day of exhibition which will best suit their bloom, and their wishes will be fully considered by the meeting.

—— Trillium grandiflorum.—No words are needed to speak the praises of this plant. We allude to it now merely for the purpose of calling attention to some varieties which Mr. Ware has submitted to our notice, and in which the petals are more or less virescent. The disc or centre of the petal is occupied by a broad or narrow belt of green, the edges being white. The effect is very pretty.

—— Racemose Polyanthus.—In the ordinary Polyanthus the flowers are borne in an umbel or truss at the end of the main flower-stalk. Mr. Wilson sends us one in which the flowers are arranged in a cluster or raceme, each flower-stalk being separated from its neighbour by a long interval. The result is clearly produced by the lengthening of the stem between flower and flower—but why? We know not.

—— Wine of Berberis Aquifolium.—According to Dr. Engelmann this is called Mountain Grape in Colorado; and the juice, when fermented, makes, on the addition of sugar, a palatable and wholesome wine.

—— The Botany of Captain Wheeler's Survey of the United States' territory bordering on Mexico and west of the hundredth meridian has recently reached this country. Like most of the works issued by the Engineer Department of the United States Army, it is a handsome volume, well printed on excellent paper. It is also very interesting, as it deals with the vegetation of a region where the northern types are gradually replaced by Mexican types. There are, however, very few novelties described or figured. Parryella, which may be an apetalous Dalea, and Palmerella, Dr. Gray's new genus of Lobeliaceæ, are both figured. Professor J. T. Rothrock is the editor of the work, and he has had the assistance of the principal botanists in America. We have extracted a few interesting notes, which will appear amongst our short paragraphs, or Variorum.

—— Medinilla magnifica. — Mr. H. C. Wells has now in flower at Broomfield Lodge, Chelmsford, a magnificent specimen in a 10-inch pot of this remarkable plant, with no less than sixty-one of its pleasing pendulous racemes of rosy-pink flowers, fully expanded.

—— A Botanical Prize.—A Silver Council Medal is offered by the Pharmaceutical Society for the best herbarium collected in any part of the United Kingdom between May 1, 1880, and June 1, 1881; and should there be more than one collection possessing such an amount of merit as to entitle the collector to reward, a second prize, consisting of a Bronze Medal, and also Certificates of Merit, will be given at the discretion of the Council. In the event of none of the collections possessing sufficient merit to justify the Council in awarding medals or certificates, none will be given. Competitors must be Associates, or apprentices, or students of the Society, and under twenty-one years of age. The collection must consist of phanerogamous plants and Ferns, arranged according to the natural system of De Candolle, or any other natural method in common use, and be accompanied by lists, arranged according to the same method, with the species numbered.

—— Cattleya Skinneri.—Mr. Parsons, gardener to W. J. Blake, Esq., Danesbury, Welwyn, has sent us a fine spike of flowers of this showy Orchid, one of nine cut from a plant growing in a 6-inch pot. That there are good and poor varieties of this as of most other Orchids, is proved by the example before us, which is not nearly so bright in colour as Mr. Boscawen's, nor so large in the size of the flowers, though very beautiful for all that.

—— Graft Hybrid Pear. — At p. 53 of our present volume we were enabled to give illustrations of a Pear shown before the Scottish Horticultural Association by Mr. Burns, of The Gardens, Thingwall Hall, near Birkenhead. It appears that a tree of Aston Town was headed down, and a graft of Beurré Clairgeau worked on it. In due time a fruit was produced which in size, form, colour, speckling, and in the nature of the core and pips, was curiously intermediate between the two varieties mentioned. Mr. Burns has now obligingly furnished us with flowering spurs of the three kinds. Although the intermediate character of the supposed graft hybrid is not quite so readily discernible as was the case in the ripe fruit, yet in hairiness of shoot, in size and form of leaf, in length of flower-stalk, in form of the flower-tube (the future fruit), in length of petal, and other characteristics, the hybrid is intermediate between the two others. The case is a very interesting one, and it is the more valuable from the accuracy with which Mr. Burns has observed and recorded what fell under his eye. In our former notice we threw out the suggestion that the intermediate character of the fruit might be due to graft-hybridisation, or to the influence of the pollen of flowers of Aston Town (stock) on those of Beurré Clairgeau (scion). That such an action of the pollen on the fruit does occur in rare instances there seems now no reason to doubt, but it is clear it would only affect the fruit. Now that we have flowering specimens before us showing similar intermediate characters, the pollen theory therefore falls to the ground. There remain two other theories—one, that it is due to natural variation, a consequence of mixed parentage; the other, that it is really and truly due to graft-hybridisation. In spite of the prevalent scepticism among gardeners as to this point, we incline to the latter view. How else can the intermediate character of the fruit in question be accounted for?

—— Erythronium giganteum.—In the bog-garden adjoining the rock-garden in the York Nurseries, this giant dog-tooth Violet is now finely in flower; its large blossoms, borne severally on stems 6 to 10 inches high, are very attractive. Not far from a colony of these we noticed another plant bearing a solitary pure white flower. This latter variety, if imported in quantity, would, we feel sure, prove a welcome addition to lovers of this beautiful class of early spring flowers.

—— Prunus (Cerasus) pennsylvanica.—For ornamental plantations this pretty spring-flowering tree—the wild Red Cherry of the Eastern United States—deserves to be more extensively planted. In the Arboretum at Kew a fine specimen is now one mass of umbels of white blossoms. The smooth, green, lanceolate, sharply-serrated leaves, are developed after the flowers have fallen; the colour of the bark is a light reddish-brown. In its native habitats it is a tree of 20 feet to 30 feet in height.

—— Hardy Herbaceous Plants at Kew.—One of the foremost in beauty as well as in interest amongst all the herbaceous plants now flowering at Kew, is Oxalis enneaphylla, of which there is a fine specimen in a cold frame. Its glaucous leaves and large snowy-white blossoms are particularly handsome;

it was introduced from the Falkland Islands four years ago by the officers of the *Challenger*. The prettiest of the Epimediums are the Japanese E. Muschianum with large white flowers; E. Perralderianum from Algeria, with smaller bright yellow ones; and E. pinnatum (and its variety elegans) from Persia—the type being less robust, with smaller flowers and with foliage not so striking as in the variety, which, of the two, is certainly the most desirable plant. The deep red form of the common E. alpinum is also decidedly worth notice; Alyssum podolicum deserves mention on account of its neat habit and very floriferous character; as a dwarf carpet plant for early spring bedding, it seems one of the best of white-flowering plants. A. montanum would make a charming companion to the last-named: it is equally dwarf in habit, but its compact, umbellate racemes of rather large flowers are a clear golden-yellow. The earliest of the perennial Geraniums is the European G. aconitifolium, a profuse flowerer of a dwarf habit—about 1 foot or 15 inches high. It has pretty palmated lilac and white blossoms. G. Wlassovianum, a native of Siberia, rather dwarfer than the last-named, is just beginning to open its charming pink blossoms. Amongst rock plants few are more striking than Geum pyrenaicum, a lovely plant with large golden-yellow flowers; it only grows from 4 to 6 inches in height. The fine upright racemes of Lupinus nutkaensis are very conspicuous; in colour the flowers are a dark blue, with the exception of the standard, which is a peculiar combination of whitish, blue and pink. The plant only attains the height of about a foot. Clintonia borealis is an interesting and pretty North American perennial of dwarf habit, with broad green entire leaves and upright scapes, bearing nodding bell-shaped yellow blossoms.

—— Ficus stipulata.—This hardy little climbing plant, best known in gardens under the name of Ficus repens, is made good use of in the Manchester Botanical and Horticultural Society's garden as a basket plant. It will grow almost anywhere, and any one in search of a good hardy evergreen plant for a basket to hang in an unheated house could scarcely do better than adopt it for such a purpose. It thrives well in an ordinary good potting compost.

—— The Fallowfield Orchids.—In Mr. William Leach's choice collection of Orchids at Oakley, Fallowfield, which is under the charge of Mr. Swan, we noticed in flower the other day a very nice assortment, which included a lovely variety of Odontoglossum Pescatorei, with branching spikes of flowers the sepals and petals of which are beautifully shaded and spotted with rosy-purple; an especially dark and fine form of Odontoglossum triumphans, rendered all the more distinct by contrast with some ordinarily good varieties by its side; a good type of O. Hallii with a spike 4 feet long; O. Andersonianum, with a fine four-branched spike; the pure white variety of O. Roezlii, Aerides affine superbum, with three good spikes; Masdevallia Veitchii, a fine type with broad flat flowers in which the purple shade is more intense than in the original form; O. cirrosum with three and four grand spikes on a plant; the pretty O. membranaceum; the lovely coloured and rare Epidendrum Frederici Guilielmi, with a grand spike; Oncidium leucochilum, with a long branched spike; Phalænopsis Luddemanniana, good masses obtained by laying the flower-spikes, which throw out young plants at the tips; Vanda gigantea, with a spike of thirteen large flowers. A trained specimen of Dendrobium Falconeri about 2 feet through, and the same in height, will shortly be in grand bloom. The collection also contains some notable specimens which are not now in bloom, amongst them being three good pieces of Zygopetalum rostratum, a rare Orchid about which Mr. Anderson recently made a pertinent question; the rare Aerides crassifolium, just coming into flower; a fine plant with two strong leads of the very scarce Cymbidium Parishii; and some grand masses of Cypripedium Parishii, C. Stonei, &c., as well as a number of seedlings which have yet to flower.

—— Pyrus salicifolia.—The Willow-like foliage of this species is so densely clothed with long, silvery, silky hairs as at the present time to give the trees the appearance—even at a rather short distance—of being covered with white blossoms. This species forms a wonderful contrast to the Pyrus sinensis noted elsewhere. In connection with either, Loddiges' remark is certainly worth quoting: "The contrast of colour is a pleasing point, which, as well as form, should never be lost sight of in the formation of ornamental plantation." It was discovered by Pallas in Siberia, just a century ago. At Kew it forms a small tree with somewhat pendulous branches, and its beautiful silvery leaves make a strange and striking contrast to the tender green of the foliage of many of its allies. Mr. Lynch sends it us also from Cambridge.

—— Schizanthus pinnatus.—It is not often that one meets with this fine greenhouse annual done well, and yet it is a plant worthy of every attention. Mr. Findlay grows it in admirable style in the Botanic Garden at Old Trafford, where a number of specimens will shortly be in full bloom. The seeds are sown here in September, the plants grown through the winter in small pots, and transferred in spring into 6-inch size, in a good rich compost.

—— Oncidium Kramerianum has large, very glossy yellow flowers, which are heavily blotched with a sort of olive-purple; the lip is handsomely frilled, and is densely spotted with yellowish-brown. We lately saw a specimen of this charming species in flower at Messrs. J. Backhouse & Son's nurseries, York.

—— A Paltry Objection to a Prize-winner.—We (the *Gardeners' Record*) learn that the rumour with regard to the Council of the Royal Horticultural Society of Ireland reversing the decision of the judges in the class for a group of exotic plants was quite correct. "The Council, however, had no option in the matter, the objection lodged being a purely technical one, namely, that one of Mr. Smith's plants (Medinilla magnifica) was growing in a tub and not in a pot, and as this clearly contravened the rules of the Society's schedule, the Council were compelled to entertain the objection, and finally to reverse the decision of the judges. At the same time we must say the objection was a paltry one, and of such slight moment that we are surprised to find a practical gardener lodging it when he was otherwise fairly beaten."

—— Pyrus sinensis.—In the Kew Arboretum this species is now conspicuous, owing to the warm reddish tints of its large glossy leaves. For foliage effect in spring it certainly deserves to be much more frequently used; it is quite unlike any of the other members of the genus in the large collection at Kew. It was originally introduced from China by the Horticultural Society in 1820, and was figured in *Botanical Register*, vol. xv., t. 1248. The species often met with in gardens under this name is a totally different plant—viz., P. spectabilis, also a native of China. It is known by the names Chinese Pear, Snow Pear, and, on account of its hard gritty fruit, Sand Pear. In the *Gardeners' Chronicle* for October 9, 1875, p. 457, a figure of the foliage and warted fruits is given from specimens supplied by Messrs. Lee.

—— "Flower" Sermon at Slough.—On Saturday last the Rev. Canon Farrar preached a "flower" sermon at the Slough parish church, at which about 1000 children, chiefly belonging to the parochial schools, were present. Every child brought a nosegay of flowers, and at the close of the service these were deposited on the steps of the chancel, the offerings being intended for the chidren who are inmates of the Westminster Hospital. The flowers, which formed a large bank and completely scented the chancel of the church, were afterwards taken to London by Canon Farrar. The Canon selected his text from Matthew vi., 26, "Consider the Lilies of the field, how they grow."

—— Messrs. William Paul and Son's Rose Show.—On Wednesday last this famous firm of rosarians opened a special exhibition of Roses in pots in the Royal Botanic Society's Gardens, Regent's Park. The display, and a very good one it is, will be found in the long corridor, where, on the glazed side, there is a row of small plants occupying the entire length, and on the opposite side, on a low stage, two rows of larger and finer plants, many of which are conspicuous for the grand size and rich colour of their flowers. There are about 500 plants on view, included amongst them being some of the newer varieties, such as Duchess of Bedford, not large but fine in colour; Countess of Rosebery, of the same type as the former, but rose in colour; Innocente Pirola, a white flesh-tinted Tea Rose, fine for bouquet-work, &c. Magna Charta is represented by flowers which rival in size those of the giant Paul Neron, while a few examples of Elizabeth Vigneron are but little inferior in size. The exhibition will be kept open till Wednesday next, and will be found well worthy a visit.

—— Lomaria obtusata.—From specimens which have been communicated by Messrs. R. P. Ker & Sons, of Liverpool, we are able to state that the Lomaria shown by them at Manchester on the 27th ult., and rewarded by a First-class Certificate, is the New Caledonian Lomaria obtusata, an elegant species, growing a foot or more in height, with a tuft of narrow lanceolate sterile fronds, attenuated towards both the base and apex, and with the close-set pinnæ or lobes, which diminish below into acute auricles, very strongly falcately curved above, so that the points of the lobes almost or quite overlap those in front of them. The erect fertile fronds are broader than the sterile, but resemble them in being narrowed to the base, through the abortion of the pinnæ, and attenuated at the apex, so that the extreme point is caudate. It is a Fern of evergreen habit.

—— Institution of Surveyors.—The next meeting will be held on Monday evening, May 10, when a Paper will be read by Mr. J. Potts, jun., entitled "Remarks on the Rating of Mines and Quarries." The chair to be taken at 8 o'clock.

—— Crops in the San Luis Valley, Colorado.—In his Report on the vegetation and agricultural capabilities of Colorado, Prof. Rothrock gives the following particulars, obtained from one of the most reliable men in the valley:—Oats per acre produce 40 to 50 bush., weighing 40 lb. per bush.; Barley, per acre, produces 50 bush., weighing 55 lb. per bush.; "Bald Barley," per acre, produces 50 bush., weighing 75 lb. per bush.; Wheat, per acre, produces 30 bush., weighing 65 to 68 lb. per bush.; Potatos, per acre, produce 300 bush.—of course an unusual yield. Turnips, Onions, Beet, Radishes, and Cabbages, yield well, and grow to an immense size. The foregoing particulars relate to a very fertile portion of the valley, the average produce being considerably lower.

—— The Weather.—General remarks on the weather during the week ending May 3, issued by the Meteorological Office, London:—The weather was generally fine, and for the most part bright, in all parts of the kingdom. On April 28 and May 3, however, the sky was very cloudy or overcast, and rain fell in a few places; a sharp thunderstorm, accompanied by hail, was experienced over our southern counties during the afternoon of the 3d. The temperature was below the mean for the time of year in all districts; over Ireland and Scotland the deficit was only 1° to 3°, but in England as much as 5° or 6°. The highest of the maxima (63° at Durham, and 67° at Loughborough) occurred on May 2, and the lowest minima on April 30. Several slight frosts were registered, and at many inland stations the thermometer fell to 28°—at Bawtry to 27°. The rainfall was much less than the mean in all districts, the largest amounts reported being two-tenths in "Ireland, W. and S." Bright sunshine shows some further increase in nearly all parts of the kingdom, the number of hours recorded being about half those during which the sun was above the horizon. The amount of sunshine was moderately equable over the country, but was rather larger in Ireland and the western parts of England than elsewhere. The wind was northerly to north-easterly during the first three days over the whole kingdom, but became westerly in Scotland, and easterly at the southern stations on April 30. During May 1 and 3 it varied greatly in direction over all parts of the country, and finally settled into the north on all our coasts. In force it was generally light or moderate, but blew rather strongly from the north-east on our southern coasts during the first half of the week, and rather stiffly from the southward in the west and north on the 1st and 2d inst.

—— Gardening Appointments.—Mr. J. Laine late gardener to W. H. Wilson Todd, Esq., Halnaby Hall, has been appointed gardener to Nathaniel Briggs, Esq., Rawdon, Leeds.

GARDEN GOSSIP.

By a Lady.—No. V.

A Bouquet from Bordighera.—Every one has heard of the beauty of the flowers of the Riviera, and in these days, when almost every one travels, many people have seen something of them; but a visit from old friends is generally at least as acceptable as one from new, and therefore I trust I may be pardoned for offering my readers a drawing made from flowers which reached me by post from Bordighera in the last week of March (fig. 104).

The Tulip in the centre (T. Clusiana) is white with a broad red stripe on the outside of the three outer perianth leaves, showing through on the inside as a faint pink tinge only; a dark purple spot in the centre sets off the dark stamens. The Narcissus (N. Tazetta) is white with a golden cup-shaped corona (does it thence take its name of Tazetta, Italian for a "little cup"?). The Orchis is one of several varieties found in the Riviera, all of which are, I believe, grouped together by Mr. Moggridge as Ophrys insectifera. I fancy it does not materially differ from our O. aranifera. The sepals, petals, and column of this specimen are all green, but the tip is of a purplish-brown with lighter stripes, and is very downy. These three flowers, though very common at Bordighera, were new to me; but Arum arisarum and Anemone stellata (the two lower flowers in the picture) recalled a visit to Nice, made one winter many years ago, and the intense delight with which we hailed the first Anemones that appeared in the Olive groves just above the town. Apparently, both the Anemone and Arum remain long in blossom, since we found them that year in the first week in January, though possibly they flower later at Bordighera than at Nice, the climate of the former being the colder of the two. My friends write of having been "none too warm" in winter clothing at Bordighera, though they had previously been oppressed by the heat of Cannes and Mentone; this, however, may have been partly due to the accident of their visit to Bordighera being ill-timed as to weather; for I am told they have seen but little of the "cloudless skies" of Italy, nearly every day being wet, although the first three weeks of their stay at Bordighera coincided with the bright sunny weather which we were all rejoicing in, in England, before the return of cold weather in April. But the flowers blossomed in spite of cloudy skies, and fresh ones were found after every shower. The first parcel of plants that reached us at home was greeted joyfully on its arrival, but our pleasure was damped when we learnt that two had been sent off, whereas only one arrived. The next morning, the label that had been attached to the second was delivered alone! As that second parcel had contained two Narcissi that are not common at Bordighera, one of which (the paper Narcissus) was described to us as of surpassing beauty, we were particularly vexed at its non-arrival. I have a strong suspicion that it was confiscated *en route*, and never left Italy. Why plants leaving the country should be interfered with is not very clear, unless the post-office officials have a fancy to keep any rare plants for themselves, but nearly every parcel that arrived gave me the impression of having been opened on the road, and but few flowers reached me fresh enough to draw. One tin box was an exception: it showed no signs of having been disturbed, and the flowers in it were as fresh as if just picked. The custom-house officers are very particular as to what flowers are taken into Italy just now, I believe for fear of the introduction of disease to the Vines and Oranges.

They examined and rapidly named each wild flower in a nosegay which one of the party carried in her hand, but allowed it to pass. They confiscated an Orange, but did not object to Roses and other garden flowers being taken through.

I heard that one gentleman who was bringing in a choice collection of dried flowers had it snatched from him and thrown in the fire before he had time to remonstrate. Every botanist will feel deeply for him. These distinctions seem capricious to the English, but doubtless are not so, though it is very likely that lack of time for careful examination may sometimes precipitate the fate of collections. *A. B.* [It is possible that by an overstrained application of the terms of the Phylloxera Convention the passage of the parcels mentioned were stopped on the frontier between France and Italy. We have just received a box of Roses from Mentone, which reached us in fair condition. Eds.]

Home Correspondence.

Roses.—We now begin to see the real effect the frost has had on the Rose trees, and it is, as I feared in the earlier part of the year, more disastrous than most people imagined. Two-thirds of the dormant buds, *i.e.*, those budded last autumn, are dead, hardly a Tea has survived. Standards have fared nearly as badly, and numbers of the dwarfs we have had to cut quite back to get any buds to start at all. The hot sun and cold winds of last week have told tales even on those Roses we hoped had escaped; branches are continually withering away, and necessitate the frequent use of the knife. Those trees that have stood the frost are breaking very unevenly, numbers of the young shoots are blind, and on the whole I never remember seeing Roses look worse. I am afraid that however favourable the weather may be, that fine show blooms will be few and far between, at least so far as this part of England is concerned. The Roses that have survived the best are Marquis de Castellane, Madlle. Marie Cointet, La France, Madame V. Verdier, Baroness Rothschild, E. Morren, Dupuy Jamain, Abel Grand, Abel Carrière, &c. The east winds have as usual brought thousands of the Rose maggots: these ought to be carefully sought for, and the leaf pinched between finger and thumb. If this is not done every Rose attacked by these pests will be injured, as they eat into the heart of the young Rose-bud. If the weather continues dry, a good soaking of manure-water will be most beneficial. I hope I am a false prophet, but I do not anticipate a good Rose year. *E. L. F.*

The Hyacinth at Home.—I visited the bulb farms about Haarlem on April 18 and following days, and saw the *Gardeners' Chronicle* there of the 17th, in which, on p. 498, your correspondent speaks favourably, and justly so, of the appearance of Hyacinths being better than last year. I simply write in case many of your readers, like myself, might have been impressed by what is stated, that the general failure in this country in Hyacinths may be attributed to our own fault in growing them, but this is not so; and Mr. Krelage, whom I had much pleasure in meeting in his own gardens, confirmed my own views, that the cold, wet season of last year failed to perfectly ripen the bulbs, and consequently they would not bear the "forcing" that they are subjected to with us, and hence the reasons that their own flowers growing in the open ground are above the average quality. I was also much charmed with the Tulips, as well as Hyacinths, both being in flower at one time, which is an unusual occurrence. I was told by several growers that such a thing had not happened for fifty years. I have never seen so gorgeous a display of colour, and if I say there was acre after acre of their brilliant hues and fragrance under an almost cloudless sky, some idea may be formed of the splendour of the sight. I hope we may have again a warm May and June, and develope the bulbs; if so, with ordinary

Fig. 104.—A Bouquet from Bordighera.

cultivation, we may see next year spikes of Hyacinths of such a size and quality as for the last two or three years we have failed to meet with, except in a few instances; but I shall advise, after the experience of the two wet seasons, that a later time be fixed for our spring exhibitions, at any rate for a year or two, for it is impossible, unless bulbs are thoroughly developed by Nature's own means, that a good bloom can be obtained under the hard forcing they are subjected to. I may by-and-by, if you think your readers would appreciate it, revert to the whole matter of Hyacinth culture, founded on my experience at home and in Holland. *James Cutbush, Highgate Nurseries, London, April* 29. [Mr. Cutbush's notes of experience would be highly appreciated. Eds.]

Fruit Prospects.—As you are supposed, Messrs. Editors, to be able to answer all kinds of questions satisfactorily, I have to ask what connection have the changes in the political world with open-air fruit prospects? The changes are certainly coincident, and I am fairly puzzled. Surely our fruit trees are not smitten with the Radical fever—I cannot entertain so awful a thought, and hence my appeal, which please not to spurn, seeing that I have exhausted all my own powers in attempts to unravel the mystery before applying to you. The facts of the case are these:—A few weeks ago fruit prospects in these gardens and districts were gloomy in the extreme; within the last fortnight this is certainly reversed, Peaches alone being a failure. Apples are moderately well blossomed, Pears ditto: on walls the trees are exceedingly well furnished with blossom. Plums and Cherries are literally covered with flower, and all small fruits grand. With a too vivid recollection of the abnormally sunless season of last year one has misgivings concerning the fruit setting, but even this fear is being rendered groundless, as some of the earlier Pears, Plums, and Cherries have already set well. To my mind the entire change (apart from politics, of course) is more than marvellous, and so I have been theorising anent the cause of it, and the only feasible solution at which I can arrive is that the severity of two winters consecutively has checked the flow of sap, and so done by natural means what we try to do by artificial, viz., by root-pruning and repression of growth during the summer season induced fruitfulness. This view of the matter receives confirmation from the fact that we have several trees now covered with blossom that have failed to fruit satisfactorily for years past, and this is rendered the more remarkable owing to the flower-buds being so small that no one a few weeks ago could with any certainty decide they were flower-buds. Whether or no my theory is the correct one I leave you, Messrs. Editors, to decide, feeling sure that, with myself, you will see that the facts are worthy of discussion. *W. W., Heckfield.* [Doubtless the accumulation of nutritive matter during the fruitless seasons favours the production of fruit when climatal circumstances permit any to be formed. Eds.]

Kidney Beans.—Your correspondent, "R. D.," does not trace the history of the Kidney Bean very far back—only to Carter's Seed List of 1842. I have a seed catalogue in my possession published in 1687, entitled "*A Catalogue of Seeds, Plants, &c.*, sold by Edward Fuller at the 'Three Crowns and Naked Boy,' at Strand Bridge, near the 'Maypole;' Theophilus Stacy, at the 'Rose and Crown,' without Bishopsgate; and Charles Blackwell, at the 'King's Head,' near Fetter Lane end in Holborn, London.'" The Beans offered in this list are—Windsor Beans, Sandwich Beans, white Kidney Beans, speckled Kidney Beans, Canterbury Kidney Beans. The *Gardening-Book* in which this list is advertised says, relative to Kidney Beans:—"Kidney Beans were as ancient a food as the other (*i.e.*, Broad Beans), and in great esteem with the old Italians, yet within the memory of man were a great rarity here in England, although now a known and common delicate food. *Systema Horticulture*, by J. Woolridge, Gent., 1688." The catalogue is very interesting, showing as it does the great advance in some of our common vegetables, and the little alteration in others. *Jno. Gould.*

Cucumbers.—These are much appreciated here, and as the demand on our indoor space by the future occupants of the flower garden is considerable, and as we cannot boast of a Cucumber-house proper, we have to cut and contrive to make the most of our small propagating stove. This is a span-roofed structure with slate and iron benches above the hot-water pipes and a brick pit in the centre. One side is occupied by Dracænas, Eucharis, Ferns, Stephanotis, &c., on the other we place four Cucumber plants, one to each light. We generally sow about the last week in December: this season's plants were sown last Christmas-Eve, but as we could not command a much higher temperature than about 55° at night and 60° by day, without an extravagant use of fuel, they came on rather slowly. With a higher temperature they are now fruiting abundantly, the first being cut on March 26. We give each plant about a hatful of soil to commence with, adding to it as the roots demand more, and train the shoots to wires near the roof. Each shoot is stopped close to a fruit, not one leaf beyond as usually advised. The compost used is good turfy loam and half decayed leaves, with a 6-inch potful of soot to a barrowload of soil. For later work plenty of frames become available. The variety most approved of here is Cuthbert's Favourite, an excellent variety, possessing a flavour far superior to that of the Telegraph, whilst equally hardy and prolific. *George Duffield, Winchmore Hill, N.*

The Past Winter and the Coming Summer.—The letter of mine which you published on September 29 last contained a warning relative to the then approaching winter. I predicted that we should have "sufficient very severe frost to justify more than usual precautions for the protection of plants, &c.," but, although I foretold a severe winter, I said that it would be "much shorter" than the previous winter was. My forecast has been fulfilled exactly. We had a very severe and destructive frost, but the winter severity was "nothing like so long as it was in the preceding season of 1878-79." Now with regard to the coming summer. It appears certain that we shall have a hot season. I reckon that a period of unusually hot weather will occur in the last fortnight or three weeks of June, and that July will be hotter, I believe considerably hotter, than the average. I reckon that we may look for a high maximum temperature in July as well as in June; in fact I expect glorious summer weather then. *George D. Brumham, Barnsbury, May* 1.

Claytonia sibirica.—I recently met with this pretty little plant flowering abundantly in a very smoky garden just outside Blackburn, where it seemed to be the only thing in flower not more or less spoiled. *C. W. D.*

Clianthus Dampieri.—This Glory Pea of the Antipodes is a highly ornamental and interesting plant when well managed, and is far less seen growing in our gardens than it deserves. One of the reasons is, that it is a bad wintering plant under glass, and requires to be reproduced from seed. It is also difficult to get it to vegetate, and fastidious to manage when young. I do not know whether it may be owing to the seed being imperfectly ripened or old seed, but year after year we have tried it all sorts of ways with imperfect success. There should not be any difficulty in getting into this country a good yearly supply of fresh seed from its native habitat, where it grows on sandy wastes and crawls along on the surface. In the year 1870 we managed to get up a good stock of it, and having more than was required for pot culture a few were planted out in the open borders, where they flowered even better than those under glass. They will even bear a few degrees of frost with impunity. On referring to the December number of the *Florist and Pomologist* of that year, where a short notice is given which I had sent to the editor regarding it, I see that it was fresh and flowering on November 10, having withstood 3° of frost. This is a strong inducement to more general cultivation, and I hope some of our spirited seedsmen will try through their friends to get home a large consignment of seed, that will be more easily managed. *J. Webster, Gordon Castle Gardens.*

Sparrows and Primroses.—I sympathise with Mr. Fish in his trouble caused by the sparrows. They used annually to demolish all my spring flowers, pecking out the hearts of the Primrose plants after pulling off all the buds, and this apparently for wanton mischief, as I never could discover that they swallowed any part of them. I used to console myself with an annual moan in the *Gardeners' Chronicle*, and was generally told in reply that the sparrows obeyed their instincts, given them for some good purpose, and that it was wicked to interfere with them. But with all due respect for those who deprecate an indiscriminate and useless destruction of animal life, I think there are limits beyond which mankind cannot be expected to endure the nuisance caused by vermin, whether feathered or furred; and I maintain, in spite of all the special pleadings of humane naturalists, that to the gardener and farmer sparrows are amongst the worst of vermin. I find by far the best remedy against them is a judicious use of a certain preparation of *nux vomica*; but it requires such great caution in its use that I by no means recommend its general adoption, unless those who employ it are willing to keep a responsible person constantly on the watch about the places where it is used. As for the dire consequences with which those who destroy their sparrows have often been threatened I have not yet been troubled by them. *C. Wolley Dod, Llanduno, May* 3.

—— The birds attacked my Primroses this spring, as in former seasons, and began amusing themselves by picking off the small buds of double Primroses and Polyanthus. To prevent this mischief I put some short sticks into the ground at intervals and attach some fine twine, allowing it to hang rather loosely; it is not at all noticeable or disfiguring, and serves effectually to keep the birds away. I suppose their claws catch in the twine and make them suspect a trap. For a single plant or a small group I place one short stick, round which two bits of twine are tied, so as to make four streamers, and the worms generally fix the ends in the ground. All the plants or lines protected in this way have been left entirely unmolested. Last year the birds took a fancy to Scilla sibirica and Crocuses, but have not touched them this spring. *G. H. W.*

The Weather and the Fruit Blossom.—The wind changed to the east on the 26th ult., and in the course of the afternoon the unsettled state of the sky indicated that a storm was pending. Later on there were several smart showers of hail, which left no doubt that a keen frost was not far off, and the result has been that our worst fears have been fully realised, the glass falling this (Tuesday) morning to 26°, or 6° of frost. Gooseberries and Currants are slightly browned, but the exact amount of damage done cannot be fully reckoned for a day or two. All other kinds of fruit trees that were hurriedly protected seem to have escaped, and one hopes and looks anxiously for the vane to point to some other quarter than the east. *W. Hinds.*

Salvia Schimperi.—For the last two or three years several of our leading seedsmen have advertised in their catalogues seed of this interesting species of Sage. In the spring of 1879 I bought a packet. I raised therefrom a strong stout-growing Labiate with spikes of bright lavender-blue flowers, which I at once saw could not possibly be the Salvia Schimperi figured in the *Botanical Magazine*, vol. 33, third series, tab. 6300, which has white flowers slightly tinged with pink. A few days ago I sent the plant for identification to Mr. Baker of Kew, and he informs me that it is Coleus barbatus, which, like S. Schimperi, is a native of Abyssinia. It is rather a pretty plant for winter decoration in a large conservatory, but too coarse in its growth for a small greenhouse. I shall be glad to hear if any one has the true Salvia Schimperi in cultivation, as I much wish to obtain a plant. *H. Harpur-Crewe, The Rectory, Drayton-Beauchamp, Tring, May* 3.

Stephanotis floribunda.—We have a plant that has been laden with flowers since March 23, at which time we began cutting, and have since cut over 500 trusses, some of which have ten and eleven flowers, and there are at present 200 trusses open and opening. The plant is the same from which we cut 1200 trusses last year, as I stated last autumn, and I believe it to be a better variety than is in general cultivation, as it sets flowers at nearly every joint of growth it makes. *H. Howard, Castle Malgwyn.*

Vanda Denisoniana.—This a very chaste and valuable addition to the Vanda family. This ivory-white Vanda is exalted above others as being the only white one yet discovered, and Lord Londesborough must feel proud in having such a beautiful Orchid named after him. Mr. Williams, in his *Manual*, speaks of the petals and sepals white and the lip white, but he does not speak of the yellow centre, or throat. Altogether this is a charming Orchid for flowering at this season, and worth a place in every collection of Orchids. It is, moreover, a good grower. *Henry Knight, Floors.*

Fritillaria lutea, Miller.—A few weeks ago I exhibited at the meeting of the Scientific Committee of the Royal Horticultural Society a large pale straw-coloured Fritillaria almost entirely destitute of tesselation, the bulbs of which I received from my kind friend, Dr. Regel, of St. Petersburg. Mr. Baker pronounces it to be F. lutea, Miller. F. latifolia of gardens is considered to be a variety of this species, but it appears to me a very different plant. *H. Harpur-Crewe.*

Pyrus japonica.—If this were a stove plant difficult to cultivate and get into flower what a deal it would be thought of, but as it is only a hardy shrub that will grow anywhere, it is seldom seen, and yet a more beautiful or striking object it is impossible to have. Effective as it is in the form of a loose bush, it is much more so trained on the surface of a house or wall built with white brick or faced with stone, the colour of which makes a fine background for the shining green foliage and brilliant blossoms that come in such profusion on the spurs and young wood. Being of a deciduous nature it can only be planted with safety during the autumn or winter unless it can be procured in pots, in which case, if got at once a season will be saved, as the plants will have time to make shoots and become established in their new positions before the summer gets far advanced. The soil that suits this Pyrus best is a loose sandy one, and a sunny aspect is necessary to ripen up the wood, which should be laid in so as to fill thinly whatever

space is allotted to the plant, and all that forms in front may then be stopped or pinched-in after the manner Apricots are treated, when the spurs so induced will come crowded with buds. I have never tried it for pots for forcing, but from its early flowering habit it ought to be valuable for that purpose, as in February or March one or two in a conservatory would quite brighten it up. *J. S.* [Both it and P. Maulei are fine plants for forcing. Eds.]

Yellow Orchids.—Those fond of yellow Orchids will find Phajus maculatus a very beautiful one, and being a winter-flowering species it will prove all the more valuable. The flower-spikes are not so long as those of P. grandifolius or P. Wallichii; sepals and petals golden-yellow, with a beautiful light brown lip, the two colours contrasting well, the combination is certainly most pleasing as well as rare. It is decidedly a plant as worthy of notice as those just named, and perhaps would be more to the taste of some persons. It is an easily-grown plant with the same treatment as P. grandifolius. The spike lasts long in beauty, and if cut on the first flower opening, and put in water, it will last two or three weeks. Mr. Williams in his *Orchid Manual* does not take notice of the lip, which I consider the chief beauty in this *recherché* Orchid; but he speaks of there being two varieties, so that the one may be all yellow while the other has this distinct brown lip in addition. *Henry Knight, Floors.*

The Fruit Crop.—Great as appeared the promise for Plums and Cherries, I fear the crop will not be more than an average one, for although the weather up till April 24 was favourable, the sap, so far as can be seen, is anything but good, the stalks and embryo fruit looking sickly and yellow. This no doubt arises in a great measure from the green and immature condition of the wood, and it is only natural that the blossom-buds should partake of the same character and lack finish, as may readily be seen in the crippled state of many; and if their outward form is such as to be apparent to the naked eye, the organs within are more than likely to be just as imperfect. The anthers, too, seem to be nearly barren of pollen, without which fructification is out of the question. To make matters worse, a spiteful north-east wind is blowing to-night, and this with a clear sky means mischief, so that the hopes and longings of gardeners for a favourable change in the spring are not likely to be gratified this year, and we shall have to see it out before the effects of the last vanish, as that has evidently left a legacy of evil that only the sun of the next few months can dissipate. Market-growers must have been sorely tried, and it shows the men they are, with all their heavy expenses and discouragement, to find them battling against all difficulties, and asking no help for agitating for reductions of rent, which, as is well known, in the majority of cases is so high as to leave little margin for profit after all the labour and attention they bestow on the land. *J. S.*

The Old Dusty Miller Auricula.—This is a floral beauty, though old in years. We have a row of it in full flower just now, 150 feet long and 18 inches broad, and it has a fine effect. The flowers, moreover, scent the air with their perfume. I do not know anything more *distingué* at this season out-of-doors than this old flower. It would be a grand flower for the London parks at this season, and even out of flower, for with its powdered foliage, it always looks well as an edging or broad band to any bed in summer. I send you flowers, as I am under the impression that it is somewhat different to what is known as the Old Dusty Miller, having a much larger truss of flowers. *Henry Knight, Floors.* [The flowers are large and showy, of a dark maroon colour, and very fragrant. The size of the truss is probably owing to good cultivation. Eds.]

Strawberries Flowering.—It is noteworthy as a contrast to last year that Strawberries were in bloom the last week in April this year. Many have, however, been injured by the late frosts. *C. L., Hounslow, May* 3.

Gardenias at Luton Hoo Gardens.—I recently had occasion to visit these gardens, situated about two miles from the town of Luton, in Bedfordshire, and was struck with the magnificence of the display of Gardenia intermedia planted out in a centre bed of 25 feet by 6½ feet, numbering thirty-six plants, of a uniform height of about 3 feet 6 inches. Not being accustomed to such an extraordinary display, I was at a loss to know what to say or what question to ask first: at length came all information required. The plants were planted out by Mr. Butters four years ago in the raised centre bed (about 4 feet high). The total number of blooms cut to the date of my visit (namely, April 27) was 2800, and the quantity cut from April 20 to April 26, inclusive, was 164 dozen. The number of blooms, counted as well as circumstances would permit, I calculated to be over 5000 still to be cut. Forty-five dozen were cut the day previous to my visit, and I was shown a photograph taken a week previous of one side of the bed only, showing about 400 expanded blooms, so that nearly 1000 blooms, counting the ends, would be out at once, and all of excellent substance. Most of the flowering points have two blooms, and many of them three; in short the whole bed is a perfect mass of bloom. Now just a word as to the foliage. It is in most glorious health, and has not the "unhappy" appearance usually found with these subjects, and there is not a mealy-bug to be seen, in fact it is not known among the plants. *J. A. F., April* 29.

Caladium argyrites.—I was surprised at seeing Caladium argyrites recommended for growing for decorative purposes during the winter, as it is about the most tender of all the kinds, and would flag immediately if removed from the hot, moist air of a stove—the only place it could be kept alive in at that time of the year; and as to scarlet Pelargoniums being associated with it there, to my way of thinking they would look more at home and succeed better in a house of another description, and with quite a different class of plants to Caladiums. Surely some of its own red-leaved congeners are more fitting companions to C. argyrites if contrast of that kind is needed, but there is an old saying that good wine needs no bush, and C. argyrites is so exquisite in itself that nothing can add to its beauty. There is one Caladium, however, that I have found particularly useful very late in the autumn, and that is Prince Albert Edward, which has stiff Alocasia-like stems and leaves of great substance, and these combined render it much more hardy and enduring as compared with the others. Its markings, too, are very lovely, and altogether it is second to none of the many fine things there are among the numerous sorts. *J. S.*

The Orchids at Porthgwidden, Cornwall.—Amongst a number of Orchids flowering in the Rev. Canon Phillpott's collection at Porthgwidden, near Truro, the following are particularly noticeable:—Aerides Fieldingii, a very fine plant; Vanda insignis, V. suavis and V. Batemanni; Calanthe veratrifolia, with twenty-four strong spikes of its beautiful white flowers; Cypripedium barbatum, with fifty flowers; C. barbatum nigrum; Oncidium altissimum, with seven spikes, 5 feet long, and beautifully flowered; and Odontoglossum bictonense, very strong. Of smaller specimens there are also in flower:—Cattleya Skinneri, Cypripedium niveum, C. hirsutissimum, C. Roezlii, C. caudatum, C. javanicum, C. Pearcei, C. insigne, Dendrobium moschatum, D. Pierardi, D. albo-sanguineum, D. nobile, D. nobile cœrulescens, D. densiflorum, Epidendrum elongatum, Lycaste Skinneri, Odontoglossum Pescatorei, O. Alexandræ, O. triumphans, Oncidium aureum, Sophronites grandiflora, Phaius Wallichii, Lælia majalis, and others are coming into flower. *W. R.*

Maréchal Niel Rose.—A young half-standard on the ordinary Brier stock of Maréchal Niel Rose was planted against the back wall of a cool conservatory, south aspect, at the residence of Captain Mills, Norton Grove, near Malton, on April 17, 1877. The plant when planted had a liberal dressing of half-inch bones given to it, and since has occasionally had applications of liquid manure. The present spring it has attained to the following dimensions—its branches extending for 10½ yards wide on the wall, which is about 14 feet high. It has been for the past month in magnificent bloom, and has produced upwards of 350 very fine blooms, specimens of which are enclosed. I called upon the gardener, Mr. Winn, the other day, and observing the magnificent growth and fine display of flowers on the plant, thought a short notice of it worth recording. *Matthew B. Slater, Malton.* [The blooms sent are magnificent examples of this splendid variety. Eds.]

Alexandra Park, Manchester.—Manchester and Salford are well circumstanced for public parks, the former having four and the latter the same number, all kept up by the two corporations, and in as good a condition as climate and situation will permit. For some years the different parks have been embellished in the spring-time by a display of Dutch flowering roots, consisting of Hyacinths, Tulips, Crocus, and Snowdrops, but principally Tulips. The parks committees deserve great credit for their endeavour to please the public by requesting the curators of the several parks to plant a portion of the flower-beds in the autumn for early spring bloom, and this can now be done at a limited cost as the price of many leading Tulips is exceedingly moderate. What is more cheerful to the pent-up citizens in the early spring months when they take their daily walks through these open spaces and find for their admiration the beautiful combined with healthy recreation. Having heard of the display in previous years that Mr. Manderson, the enterprising curator of the park above-named has had, I was led the other day to visit and inspect the great show of Tulips now in flower. Entering the principal gateway I observed a long vista of colours carefully harmonised, and on closer inspection I found the beds tastefully planted, some with different varieties, others with self colours. To particularise a few of the most striking sorts that have the greatest effect, and the varieties most suitable for the climate, may be doing a service to those who may wish to see them and also to those who may desire to take note for a coming season to plant such varieties as do well under similar or better circumstances. Taking the semicircular walk to the left on entrance I found a number of different sized and shaped beds nearly all filled with Tulips, amongst which I note the most striking—Kaiserkroon, orange and scarlet, which makes a most attractive bed; Prince of Austria, buff-orange, excellent for beds; Cottage Maid, rose and white, dwarf, the best light coloured variety for bedding purposes. Reaching the central walk, which runs to the terrace, I found fifteen to twenty circular beds on each side, filled with Tulips, each corresponding in colour to its opposite neighbour, and tastefully blended; of these the most prominent were Dussart, dark crimson, dwarf in habit, good foliage, and flowers of great substance: this is without doubt the best bedding Tulip amongst the dark colours; Crimson King, brilliant scarlet, very effective; White Pottebakker, white, rather tall, and easily soiled in a smoky atmosphere; Van der Helst, scarlet and white, very good; Chrysolora, bright yellow, the best yellow grown; Scarlet Van Thol, dwarf and effective in colour, but rather too early, being past its best. Returning to the point of departure from the footpath, and taking the semicircle again, I found the same number of beds planted with the same varieties, running up to the end of the terrace. There are numerous other varieties in flower, but to enumerate them all would take up too much of your valuable space. I may remark that severals of the beds have been filled with Hyacinths; the season however has been much against them, and the curator informed me that he found Tulips much more effective than Hyacinths, lasting longer, and consequently he had not planted many. In a few weeks all the beds on the terrace will be planted with bedding plants; and from the resources at command in this department the public may expect a rare treat in the course of the summer months, worthy the well known reputation of the curator. Many alterations have been carried out of late for the improvement of the park, in an artistic point of view. *A Visitor.*

Slugs.—I am quite sure, from painful experience, that severe winters have not the slightest effect in diminishing these pests. Last year I flattered myself that the supply of slugs was diminished, but as soon as a few warm showers fell, they came swarming out with unabated voracity. I suspect the severe cold had induced them to burrow deeper below the surface, so that they came up rather later than usual. This spring they are again in great force, and I can only hope to rear tender plants by waging an incessant warfare against them. I have no doubt a great many slugs fall victims to lime, which I always use in digging and planting vegetables—but its virtue is lost the moment it gets wet. The most effectual trap I find to be grains from the brewery. A handful of grains, covered with a bit of slate or board, is an irresistible attraction, and the slugs must smell it from a considerable distance, for I have sometimes caught nearly a hundred in one place. My gardener has had the curiosity to keep an account of the slugs trapped this season, and the number already amounts to about 13,000. "The cry is still, they come," but at all events there are 13,000 mouths less to feed, and so many more chances of escape for the young plants. I have heard orange-peel highly recommended as a slug-trap, but to supply a garden of the moderate extent of mine it would be necessary to employ all the parish school boys to suck Oranges for the purpose. [They would not be sluggish in the matter.] *G. H. W., St. Mary Church, Devon.*

Removing Tree Stumps by Tonite.—The removal of tree stumps is being carried on here on an extensive scale, with the object of improving the landscape, and also to bring the land into cultivation, in preference to replanting it with timber. Before commencing operations the most reliable authorities were consulted as to the best method of getting the stumps out of the ground, and nearly all agreed that the most economical and expeditious method was to blow them out with dynamite, or some other powerful explosive. Tonite was selected, as it is a very safe and also a very powerful explosive. It is exploded in the same manner as dynamite. A piece of ground was marked out, the stumps counted, and the men set to work in exactly the same manner and with the same tools described by Mr. Smith, of Mentmore, on p. 531, a gentleman experienced in the use of the explosive being present to instruct the men. Nearly all the stumps were blown out in a most satisfactory manner; in a few instances, however, the soil was blown

out from under the stump, and the stump itself split up through the centre, which rendered it an ugly customer to deal with. It could then only be got out by placing some large stones in the hollow, and laying a few cartridges on them close up under the least injured portion of the stump, and firing again. After the number of stumps to be experimented upon had been blown up, such roots as remained were dug out, and the ground cleared; the cost was calculated, and everything was so satisfactory that it was decided to go on with the use of explosives. But before doing so it was decided that digging them out should have a trial, and accordingly a few good labourers were set to work, who, as they went on, found out the best way to do the work, and also the most suitable tools; and in the end it was discovered that they could be got out in a more economical and efficient manner by digging than by blasting. The work has since been done by contract. The conditions were that the stump was to be dug out with all the roots that were near the surface, and the hole refilled, and it was found that it could be done at about half the cost of blowing them out. Of course when dug out entire they are not so convenient for handling as when blown to pieces, but the smaller stumps can be carted away, and the larger ones rolled on to a trolly, and so drawn to somewhere out of the way, as they cannot very well be utilised for fuel. I may add that our soil is deep, light, and sandy, and in a soil of that nature an explosive would not have the same effect on a stump as it would in a soil that was closer and more retentive. *G. Griffin, Slebeck Park Gardens, Pembrokeshire.*

Double Zinnias.—Those who have never grown these or seen them in masses can have no idea of the grand display they make, or of the great service they are for filling large beds, where, if mixed judiciously so as to blend the various colours, they produce a most striking effect and are perfectly dazzling to look on. Unlike Asters that get much injured by heavy rains, Zinnias are all the brighter and better for the washing, their stiff stems being sufficiently strong to hold the flowers erect, and as the petals are thick and throw off water readily, wet does them no harm. Not only are they grand in beds, but they form fine groups in borders arranged in patches of three placed triangularly about 6 inches apart, grown in which way it is best to have each patch of the same colour so as to appear as one plant. Being rather gross feeders and fond of good soil, the situaions chosen for them should be specially prepared by breaking the ground well up and digging into it some thoroughly rotten manure, keeping the same down that it may be buried out of reach of the tender roots for a time till they become more active in response to a corresponding movement taking place in the tops. When I first took up the culture of Zinnias, I found they suffered much by being raised too soon. We never sow the seed now till the end of April or beginning of May, which is quite early enough, as the plants are very tender and are sure to become stunted by being kept about, or, what is quite as bad or worse, if long under glass they get drawn and have attenuated shoots, too feeble to stand. To prevent this, the best plan is to sow very thinly in boxes or pans, which, as soon as the young plants are up, should be elevated so that they can have plenty of light, for during the early stages the stems elongate at a great rate, especially if there is a deficiency of air or too much heat at the time, which often happens if the boxes are not at once removed from the positions they are first placed in to induce the seed to germinate. A gentle hotbed is the most suitable situation for this, but when fairly up and hardened a little the plants may be pricked out in any frame, where, if protected till towards the end of May, they will be quite strong enough for transferring to the summer quarters. To afford them plenty of room, the rows ought not to be nearer than 1 foot, and the plants should have the same distance allowed from each other, as then they branch freely and continue to flower till destroyed by the frost. As they are fond of heat, it is important that the site chosen should be a sunny one, and if sheltered from wind all the better, for when exposed the weight of their heads renders them liable to be knocked about by its force. *J. S.*

The Outlook from a Garden Point of View.—The excitement of the election is now over, I am glad to say. Let us now turn to what interests horticulturists and floriculturists. I never saw the Peaches and Nectarines under glass, without fire-heat, better, nor worse out-of-doors. Out-of-doors the blossoms are few and weak, but the trees are finely in foliage with scarcely a sign of blister (the number is 121). The following are good under glass, namely, Early Silver, Barrington, Early Louise, Early Alfred, Grosse Mignonne, Royal George. The failure out-of-doors arises chiefly from immaturity of wood. So cold and unfavourable was the weather that the trees did not form blossom-buds, but the trees (small) are most healthy. I believe that unhealthiness in these trees arises from the disbudding of the Peach trees, during the time the sap is rising in tides. Disbudding should be done gradually, and should not be done till every leaf is unfolded. Then a blistered shoot can be taken off, and a sound one left on! If trees are rigidly disbudded, there may not be foliage left on sufficient for deportation; hence a gummy residuum left in the tree, and when the sap rises the next spring the gummy residuum is carried up with the sap, and cannot find outlet at the leaves. Though my garden is open to the east, south, south-west, in a most severe part of the Vale of Blackmoor, except on certain trees given to blister I see no such thing. I have a volume more to say of these interesting fruits, but I must pass on. Pears have but few blooms: most varieties have none. Apples will, I fear, be a short crop, as they formed but few bloom-buds. They looked last summer (aqueous summer) as if fire had passed over them. I thought many orchard trees were dead, but I am glad to see that they put forth leaves, though blossoms are few. Gooseberries, Raspberries, Currants, red, white, black (Black Naples is excellent), Strawberries (Rivers' Eliza—the only one I keep), are grand. Cherry trees are well-bloomed, they look like pyramids of Snowdrops, and as the poor little marauders are dead I may hope to get a bite. Plums are not forward enough to judge. My best culinary trees are Diamond, Mitchelson, Dove Bank, Belle de Septembre—the late much beloved Mr. Rivers' selection. Violette de Galopin and Reine Claude Rouge are delusions. Peas are excellent and a good successional selection—Ringleader, Princess of Prussia, British Queen. Carrots are a failure. Parsnips and Onions, and Broad Beans (Johnson's Wonderful), are very good. Asparagus is not yet up; Seakale very fair. People had better make new beds of these, as, unless protected, the severe winter must have injured them. I consider Seakale, Asparagus, Turnip-tops, Watercress and Rhubarb are our best early vegetables. Watercress may be grown in frames with a water-saucer under the pots. I have a little pond about 20 feet in diameter (circular), in front of my drawing-room window. I tried eels and trout, which failed; so I threw in some stems and roots of river Watercress, which took well, and I am now eating the capital result. People should utilise it; it is surprising how much natural wealth is lost by bad cooking, waste, and non-utilisation of such things as Watercress. The Roses are alive and have broken well, but, as yet, are universally blind. The shoots must be cut back gradually to within half-an-inch of the branch. *W. F. Radclyffe, April 26.*

Autumn Strawberries. — It would be well for the inexperienced in Strawberry culture to use caution in adopting or following the system recommended by Mr. Hinds in a recent *Gardeners' Chronicle*, as to obtaining a crop of fruit through and late in the autumn. Mr. Hinds gives the most favourable views as to obtaining such results, but he does not state the drawbacks to be considered. That spring forced plants planted out carefully, and tended through the summer as to watering, keeping clean, blooms and runners kept picked off, &c., will produce enormous crops of fruit the following year, is well known. The planting out of such is a practice to be highly recommended; but those self-same plants if allowed to flower and carry a crop of fruit through the autumn would to my mind produce so much the less the following year. Neither would the results be worth the trouble, at least on a large scale, as plants planted out, if allowed to go on flowering and fruiting, would be exhausting the little vitality left in them, unless continually fortified by feeding with manure-water, mulching, &c. Then, considering the necessary labour, and the loss of crop that must result the following year, I fear the experiment would end in disappointment. Further, the fruit produced would be small, as the plants not being well established in the ground would lack the necessary vigour to swell up and ripen off such fruit as we get from well established plants planted out and tended through the summer as above described. The process also of ripening such fruit in the autumn outdoors is so slow that between birds (the most plentiful and most ravenous after fruit) and slugs, a grower would get but a poor return for his trouble. To carry out Mr. Hinds' recommendation on a small scale for the sake of having a dish or two of Strawberries at that time of year, may be advisable; but further than that, so far as my own observation and experience of Strawberry growing has gone, it could not be worth the trouble. Success in obtaining autumn Strawberries would very much depend upon a nice open dry time, and the needful assistance to attend to the plants' requirements. *E. Williams.*

Phlox Nelsoni and Lithospermum prostratum.—Of all the procumbent-growing Phloxes this is the most desirable, as plants of it flower with such freedom as to appear a mass of white, pure as driven snow, which seen as we have them here, behind a row of the lovely cobalt-blue Gentiana acaulis, produce a most pleasing effect. Being of a close trailing habit, they are just the thing for mounds or depending over rock, where they associate well with Lithospermum prostratum, a plant that should be in every garden. One I saw lately covers more than a square yard of ground, and will soon be a fine sight, as it is smothered with blossom-buds, which when expanded will afford choice bits for working up in bouquets. Leschenaultia biloba used to be thought much of, but here is a plant quite hardy rivalling it in the beauty of its flowers and yet almost unknown. What a splendid thing it would be in a basket hanging down a foot or two over the sides, clothed with those deep intense blue flowers, of a shade so rare among the plants. To grow this and the Phlox well they should have a sunny spot and deep light sandy soil, in which they soon spread and form thick masses of verdure. *J. S.*

Notices of Books.

Les Orchidées, &c. Par E. de Puydt. Paris: Rothschild; London: Dulau & Co. Large 8vo, pp. 348, woodcuts 244, coloured plates 50.

It is not long since we had occasion to comment on the elegant volume of M. de Kerchove on the Palms, and now we have the pleasure of bringing under the notice of our readers a companion volume devoted to the Orchids. The chapters comprise an historical sketch, details of structure and classification, indications of geographical distribution and climatology, treatment and cultivation, injurious insects, and a slight account of the principal genera cultivated in Europe. This is an ample programme—one, moreover which could not be fully dealt with in one, nor indeed in many volumes. All that can be looked for is a general outline, and if this be done correctly and in an agreeable form, the Orchid lover and the general reader should be content, as those whose predilections and studies demand fuller information generally know where to look for it. Hence it is not to be wondered at if some of the chapters we have mentioned are rather meagrely treated. But while we assent to this as a matter of necessity we have a right to demur to diffuse and long-winded paragraphs intended, so we are told, for definitions. It is thus when we are invited to enter upon a more scientific order of ideas, as no definition of what an Orchid is has hitherto been given, that we meet with a rhapsodical effusion about the advent of spring and the flowering of the spotted Orchis, not very long in itself, it is true, but followed by a long descriptive paragraph or series of paragraphs without anything that can be called a definition. By the general public, who have no love for precise definitions, this defect will not perhaps be noticed, but to us it is the more noteworthy, inasmuch as in the sub-divisions of the order neat definitions, adopted from Lindley, are very properly given. The morphology of the Orchid flower—one of the most interesting studies in this most interesting family—is hardly more than touched on, and Darwin's book on the *Fertilisation of Orchids*, with its wealth of accurate detail and interesting statement, might never have been written for all the mention made of it by M. de Puydt. Again, although the polymorphic flowers of Catasetum are mentioned, not a word is said as to the explanation given by Darwin of a fact which attracts the attention even of the most incurious. The geographical distribution and climatal surroundings of Orchids are more satisfactorily treated, and then follows a brief account of the collecting of Orchids in their native country, and of the proper way of unpacking and managing recently imported Orchids. The best modes of constructing and heating Orchid-houses are discussed in a chapter all too brief, though it must be admitted that English cultivators have little to learn in the matter of Orchid culture from their Continental brethren.

The second portion of the work consists in an alphabetical list of the principal genera in cultivation, with a brief and by no means diagnostic account of

their characters, and an indication of the more important species. Lastly come the fifty coloured plates of leading Orchids with a minimum of descriptive text, but with fuller directions as to culture. The figures are well and correctly drawn, but the colours are often not happily rendered. The work is also profusely illustrated with woodcuts, a considerable number of which have appeared in our columns, and the use of which is duly acknowledged. To the beginner and to the dilettante student this book may be recommended as an introduction to more complete and thorough studies.

Forestry.

Now that the planting season may be regarded as over there are various little things requiring attention, which should, as far as possible, be done before barking and other important works are commenced.

The Pinetum.—All the ornamental trees and others in the policies should be carefully gone over and examined individually. All broken, and decayed, and damaged branches should be removed, and the wounds carefully and artistically dressed. Any trees that have supports to them or ligatures upon them should be closely examined to see that the bark is not galled or unduly compressed, or likely to be so, before the annual growth is completed. Any trees that have been wholly or partially uprooted by the wind during winter and are capable of being set erect with a view to establishing and perpetuating their growth should be so operated upon as to accomplish that end. Small trees, and even medium sized ones, may be raised and re-established with only a rope attached and the efforts of a few strong men. Large trees, however, such as Lime, Sycamore, Elm, and Oak frequently require mechanical appliances to raise them, the best of which is the new patent block and tackle apparatus, which is capable of raising an immense weight with the aid of a few men. It is often advisable, and not unfrequently indispensable, to lop off a portion of the top branches before raising the tree. This operation, though apparently objectionable on account of disfiguring the tree, is yet of immense advantage in several respects. It so far lightens the top of the tree as to render its erection quite a simple and easy matter compared with what it would otherwise have been. Another advantage of reducing the weight of the top of the tree is that it reduces its liability to be blown over again after being set up, which it would naturally be inclined to do unless very strongly secured by anchorage.

Hedges also require to be carefully looked over, young and tender ones protected by means of palings, wire netting, &c. Old ones that have not been pruned or cut over should be so with as little delay as possible. All drainage should be attended to, so that no stagnant or superfluous water be allowed to injure their roots. Cleaning, but especially digging, should be prosecuted with all diligence, and in doing this work care should be taken to avoid injuring, by cutting, the roots of the hedge plants. Many ornamental and rare trees are planted in the pleasure grounds in soils altogether uncongenial to their nature; such trees require, from time to time, to have a trench dug round them a little within the radius of their branches, and the trench filled up with suitable soil. After a few years, the roots will have occupied and to some extent exhausted the soil, and therefore another trench must be dug beyond the last one, and it also should be in like manner filled with earth. Such work requires to be finished as soon as possible, as the roots have in many instances already prolonged their fibres, and therefore any disturbance or abrasion of them now is very hurtful.

All trees that had been planted when of advanced growth or large size are very liable to sink too deep into the ground after the earth subsides, the tree being thereby placed, as it were, in the centre of a concavity or basin. Trees in that position never succeed well, but, on the contrary, are short-lived, and always sickly. All such trees should be raised up by means of levers, and sufficient earth put in below them to keep them considerably above the level of the surrounding ground.

The general state of health of all trees, but especially ornamental and rare ones, should be carefully examined into and remedies applied, according to what appearances suggest. In damp situations, where the soil is clayey, there is a strong tendency and disposition of the trees to become covered with moss and lichens. Now, while there is no real and reliable cure for this, more than for anything else that does not remove the cause of the disease, yet the moss and lichens, though possessing in an eminent degree their own peculiar beauties and attractions, may, and probably do to some extent, injure the growth of the trees by choking the air-cells of the bark, and engender bark diseases, just as filth in the animal engenders skin diseases with their accompanying maladies. To prevent or cure this moss and lichen complaint, a very simple remedy is found in R. Davidson's composition, recommended for preventing game injuring the bark. Having used the composition rather extensively, not to kill moss and lichens, but to protect the trees from game damages, I am happily surprised to find the appearance of the bark of the trees so greatly improved that the idea is suggested of anointing the whole surface of the bark of the trunks and stems of the rare and ornamental trees where much covered with moss, &c. The composition is simply rubbed over the bark with a brush or with the hand, and is evidently productive of very pleasing and satisfactory results in the way of cleaning the bark and imparting to it all the appearance of a young, healthy, and vigorous growth. *C. Y. Michie, Cullen House, Cullen, April* 27.

Reports of Societies.

Spring Flower Show at Chiswick: *April* 29.—A Fellow of the Royal Horticultural Society of thirty years' since, revisiting the favoured site of the Society's most famous exhibitions, might well have imagined on the 29th ult. that something akin to the palmy days of old Chiswick had come again. 'Tis true the day was cold, as April days in the time of the Blackthorn winter will be, but the sun shone out gaily, and tempted many hundreds of the residents of the marvellously expanded neighbourhood to brave the wind, and enjoy at once the delightful gardens and the strains of music which emanated from the splendid band of the Scots Guards stationed near to the old Council-room. It was not, however, the Horticultural Society that was *en fête*. Some of the residents in and about Turnham Green, feeling that the absence of any flower show in that locality, so famous in the memories of a past generation as the scene of the origin of floral exhibitions, was a misfortune, thought something should be done to remove it, and taking Mr. Barron, of the Horticultural Gardens, into their confidence, a way was soon found to establish that which was so ardently desired. Just by the entrance to the gardens, or rather close to the new entrance (for Chiswick is fast being improved in some of its exteriors beyond the knowledge of ancient *habitués*) stands the new and commodious Vestry Hall, and this presented exactly the place in which to hold a spring flower show. The matter was so experimental that it was resolved, in order to invoke the aid of the residents of the locality, that any profits after all expenses were paid should go to the West London Hospital, a very worthy local institution; and either this benevolent object or the inspiring prospect of a flower show so far acted upon the breeches pockets of the good folks of Chiswick that a large sum was subscribed beforehand, and so much was taken at the doors that it will quite make the treasurers of provincial and indeed metropolitan horticultural societies mouths water to learn that, having regard to the means, a very considerable sum will be handed over to the hospital. Doubtless through Mr. Barron's kind intervention the Council of the Royal Horticultural Society permitted the Chiswick Gardens to be thrown open free to all visitors to the show, and these, including the band, presented attractions of an unusual character. The gardens were in excellent order, the houses well furnished and full of interest and some of great beauty; and it will be indeed a surprise if a large number of the near residents do not as a result of their visit, and seeing the many advantages offered, soon become Fellows. Perhaps the Council may some day think that it is hardly worth while longer casting their floral pearls before the thankless South Kensington people, and with a vast and new population grown up around their Chiswick Gardens, will see if it is worth testing how far some of the glories of the old days may be revived. Of the show itself, as an exhibition of tender and hardy spring flowers, it is difficult to write in too high praise. The hall might well for the purpose have been larger; but as it was not, the plants so liberally sent by many of the leading London nurserymen had to be somewhat crowded, none the less the glowing colour, tempered by luxuriant ornamental foliage, was all that could be desired. From the Chiswick Gardens came a quantity of fine decorative plants which, in conjunction with a very handsome lot of Conifers in pots, sent by the Messrs. Fromow & Sons, of Turnham Green, lent an air of elegance and beauty to the entrance vestibule. Inside a very prominent feature was the collection of six foliage plants, consisting chiefly of Palms staged in the orchestra recess by Mr. Hudson, gr. to H. J. Atkinson, Esq., of Gunnersbury House, and to which the 1st prize in the class was awarded. Below these, arranged in semicircular shape on the floor, was a group of hybrid perpetual standard Roses in pots, sent by Messrs. Veitch & Sons, of Chelsea. These were edged and dressed with the charming cut-leaved varieties of the Japanese Acer, and made a brilliant display. A notable group at the other end of the hall, consisting of Palms and various variegated foliaged plants, with many small baskets of miniature Palms and Ferns just suited for drawing-room tables, came from Mr. Herbst, of Richmond Road, Kew, and were greatly admired. Messrs. Hooper & Co., of Covent Garden; Mr. B. S. Williams, of Holloway; the General Horticultural Company; Mr. Aldous, Gloucester Road; and Messrs. Osborn & Sons, of Fulham, all had fine decorative groups of plants that were most useful in making the show. Messrs. Paul & Sons, of Cheshunt, sent three boxes of cut Roses, two of these being grand flowers of Maréchal Niel; from Messrs. Barr & Sugden a large collection of cut Narcissus and border Tulips; and from Messrs. J. Standish & Co., of Ascot, a box of splendid bloom of Gardenias. Of collections of plants from other sources, perhaps the finest was from the gardens at Gunnersbury Park—Mr. Roberts, as one of the show committee, supporting the exhibition with a splendid group and many plants of great excellence. Mr. May, gr. to the Marquis of Bute, Chiswick House, sent some good things, including several noble Callas, and a box of cut Camellias. Mr. R. Dean staged a large group of hardy plants, including Auriculas, Primulas, Wallflowers, &c. Mrs. Hudson had a charming dinner-table arrangement, and Mr. Hudson was a successful exhibitor in several classes. The chief of the other competitors were local residents, but owing to the newness of the show these were not large in number.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, May 5, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest	Temperature of the Air: Range.	Temperature of the Air: Mean for Day	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions: Degree of Humidity. Sat = 100.	Wind: Average Direction.	Rainfall.
April	In.	In.	°	°	°	°	°	°	°		In.
29	30.14	+0.37	55.7	38.0	17.7	45.2	— 3.9	37.9	76	E.S.E.: E.N.E.	0.00
30	30.20	+0.43	60.4	36.0	24.4	46.0	— 3.4	40.4	82	E.S.E.	0.00
May 1	29.99	+0.22	58.8	34.2	24.6	45.4	— 4.4	39.8	81	E.S.E.: E.N.E.	0.00
2	29.69	—0.08	65.0	31.9	33.1	46.7	— 3.4	44.0	90	E.N.E.	0.00
3	29.56	—0.21	61.0	36.1	24.9	45.9	— 4.5	44.0	93	ENE: N.E.	0.04
4	29.80	+0.03	55.4	45.2	10.2	48.6	— 2.6	44.0	85	NNE: N.E.	0.00
5	29.80	+0.10	49.5	42.7	6.8	44.7	— 6.5	42.1	91	NNE: N	0.13
Mean	29.89	+0.12	58.0	37.7	20.3	46.1	— 4.1	41.7	85	ENE: N.E.	sum 0.17

April 29.—A fine day, partially cloudy. Windy. Cold day. Cloudless, and raw cold at night.
— 30.—Overcast till 11 A.M., fine and bright after. Very cold and cloudless at night.
May 1.—A fine bright day. Cloudless, and very cold at night.
— 2.—A very fine, bright clear day. Slight frost in early morning.
— 3.—Fine, but dull and cloudy till 3 P.M. Smart showers and slight thunderstorm, 3.30 to 4.30 P.M. Fine and bright after 6 P.M.
— 4.—A dull, cloudy day, though fine. Cold. Gleams of sunshine at intervals.
— 5.—Overcast and dull throughout. Occasional rain. Cold and windy.

London: *Barometer.*—During the week ending Saturday, May 1, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.98 inches at the beginning of the week to 30.20 inches by the morning of April 27; decreased to 30.05 inches by the afternoon of the 28th; increased to 30.44 inches by the morning of the 30th; and decreased to 30.08 inches by the end of the week. The mean reading for the week at sea level was 30.17 inches, being 0.19 inch above that of the preceding week, and 0.22 inch above the average.

Temperature.—The highest temperatures of the air

observed by day varied from 60½° on April 30, to 50° on the 26th; the mean value for the week was 54¾°. The lowest temperatures of the air observed by night varied from 33° on April 27, to 44° on the 25th; the mean value for the week was 37½°. The mean daily range of temperature in the week was 17¼°, the greatest range in the day being 24½° both on April 30 and May 1, and the least 11°, on April 26.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—April 25, 49°.2, + 1°.1; 26th, 43°.3, — 5°.2; 27th, 41°, — 7°.7; 28th, 43°.5, — 5°.4; 29th, 45°.2, — 3°.9; 30th, 46°, — 3°.4; May 1, 45°.4, — 4°.4. The mean temperature of the air for the week was 44°.8, being 4°.1 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 145° on April 29, 143° on May 1, and 125° on April 25 and 30; on the 28th the reading did not rise above 66°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 22¾° on May 1, 26½° on April 26 and 30, and 30° on the 25th and 27th; the mean of the seven lowest readings was 28¾°.

Wind.—The direction of the wind was N.E.E. and N.E., and its strength strong generally.

The weather during the week was fine and bright, but cold, especially the mornings and nights.

Rain fell on April 26, the amount measured was 0.05 inch.

England: *Temperature.*—During the week ending Saturday, May 1, the highest temperatures of the air observed by day were above 62° at Truro, Leicester, Cambridge,, and Sheffield, and below 57° at Norwich, Leeds, and Bradford; the mean value from all stations was 59¾°. The lowest temperatures of the air observed by night were below 31½° at Truro, Cambridge, Wolverhampton, Nottingham, Sheffield, and Hull; and above 36½° at Plymouth, Norwich, and Sunderland; the mean value from all places was 32¾°. The extreme range of temperature in the week was above 33¼° at Cambridge and Sheffield, and below 22° at Plymouth, Norwich, and Liverpool; the mean range of temperature from all stations was 27°.

The mean of the seven high day temperatures was above 55° at Truro, Plymouth, Leicester, Cambridge, Nottingham, and Sunderland, and below 53° at Brighton, Norwich, Wolverhampton, Liverpool, and Bradford; the general mean from all places was 54°. The mean of the seven low night temperatures was below 36° at Bristol, Wolverhampton, Nottingham, Sheffield, and Hull; above 40° at Plymouth and Norwich; the mean from all stations was 37½°. The mean daily range of temperature in the week was above 19° at Leicester, Cambridge, and Nottingham, and below 13½° at Brighton, Norwich, and Liverpool; the mean daily range from all places was 16¾°.

The mean temperature of the air for the week from all stations was 44¼°, being ¾° higher than the value for the corresponding week in 1879. The mean temperature was above 46° at Plymouth and Sunderland, and below 43° at Wolverhampton and Hull.

Rain.—The falls of rain were small everywhere, At Leicester, Cambridge, Hull, Bradford, and Leeds a little over two-tenths of an inch was measured, but at Bristol 0.01 inch only fell; at Wolverhampton no rain fell. The average fall over the country was 0.12 inch.

The weather during the week was generally fine and bright, with cold north-east and east winds.

Scotland: *Temperature.* — During the week ending Saturday, May 1, the highest temperatures of the air observed by day varied from 63° at Dundee, Greenock, and Perth to 56¾° at Aberdeen; the general mean from all places was 60½°. The lowest temperatures of the air observed by night varied from 31° at Edinburgh, Paisley, and Perth to 34½° at Glasgow and Greenock; the mean from all stations was 32¼°. The mean range of temperature from all places was 28¼.

The mean temperature of the air for the week from all stations was 45¾°, being 2¾° higher than the value for the corresponding week in 1879. The mean temperature was above 47° at Glasgow, and below 45° at Aberdeen and Perth.

Rain.—The heaviest fall of rain was 0.65 inch, at Aberdeen; and the least fall 0.05 inch, at Dundee. At Greenock no rain fell. The average fall over the country was 0.18 inch.

Dublin.—The highest temperature of the air was 62¾°, the lowest 30¾°, the extreme range 32°, the mean 43¾°, and the amount of rain 0.02 inch.

JAMES GLAISHER, F.R.S.

Variorum.

The Telephone in the Nursery. — To expedite the needful constant communication hitherto carried on by means of messengers Messrs. James Dickson & Sons, of Chester, have now established permanent telephone communication between their chief office, 108, Eastgate Street, and their nurseries at Newton. The convenience of this instantaneous communication not only to the Messrs. Dickson in daily carrying out their multifarious internal business arrangements, but to their customers and others who, calling at Eastgate Street, may wish to make an inquiry at the Newton Nurseries, or *vice versâ*, cannot be over-estimated. This is, we believe, the first telephone established in the district.

The Dahlia Trade. — If the Dahlia is less grown than it was a few years ago for show purposes, it is quite certain it is in very large demand for general decorative uses, and the leading nurserymen who make a speciality of this popular flower have to propagate enormous quantities for a season's consumption. The work of propagation commences in February, and a house or two is devoted to it. The roots are placed in soil spread on a bed heated with hot-water pipes and partly covered with fine soil. A number of shoots are put forth round the neck of the root at that point where last year's stalk was cut away, and when these are some 3 to 4 inches long they are inserted in pots, so many in a pot, according to the size, and the pots placed in close pits heated with dung or hot-water, and where there is a brisk moist heat. Here they put forth roots in ten days or a fortnight, when the rooted cuttings are potted singly into thumb-pots, and again returned to a brisk heat. They are next removed to a warm frame, but of a lower temperature; then air is gradually given, and the plants finally removed to a cold frame, which is kept covered by night, to avert danger from cold, while air is given by day on all favourable occasions. In this way the plants are kept dwarf, stocky, and vigorous. At propagating time each pot of cuttings is carefully numbered, and when the plants are potted off singly a number is put in each pot answering to that under which each variety is kept in the nursery room, for it is much easier to write a number than a name. As the cuttings produced from the various varieties are taken off when ready, it is obvious that they get much mixed up together, and during the month of April it is necessary to get the different varieties separated for the execution of orders. Advantage is taken of a fine morning to do this: a number of hands set to work and get each variety into groups, and when sorting is accomplished they are returned to the frames, beginning with the lowest number and going on to the highest. The plants are then sprinkled overhead, the lights shut down close, and orders can now be executed with rapidity. Unless the plants have been shifted into larger pots, they become quite pot-bound, and all that is required in the way of packing for transit is to put a stake to each plant, secure the stem to it, and they are ready for packing. A very large number of plants can be put into a willow hamper: the pots are laid along close to the wide sides, the heads of the plants being in the middle, and all is made tight and secure with layers of soft moss. A basket of Dahlias carefully packed in this way will go for a long distance without injury to the plants, and when they reach their destination are soon recoverd by placing them in a cold frame, sprinkling them overhead, and keeping them close for a time. Thousands are sent far and near in this way with but a very small percentage of accidents. The plants that remain unsold are kept in the frame, well watered during the summer; turned out in the autumn when the plants have dried off, and then sold during the winter as pot roots. Some varieties show better exhibition flowers when grown from pot-roots, instead of from cuttings taken in spring from ground roots; but that is one of many points of interest concerning the Dahlia that is taught by experience.

The Adulteration of Artists' Materials. —The system of adulteration which in these days is carried to such extremes, appears not only to affect our food, our drugs, and our articles of clothing, but even artistic productions; the pictures of artists of the first reputation suffer from this crying evil of our time, and we think artists, properly so called, are greatly indebted to Mr. W. Holman Hunt for his excellent paper on "The Present System of Obtaining Materials in Use by Artist Painters as compared with that of the Old Masters," which was read before the Society of Arts on the 21st ult. Mr. Hunt points out the deterioration generally, not only of pigments or colouring matters, but also of varnishes, oils, and even of the canvas itself, the effects of which are prejudicial to the picture either in point of colouring, cracking, or some other change, all of which were guarded against by the old masters. On the subject of oil alone, which Mr. Hunt refers to as an important one, he says that before the Crimean War the Linseed for making oil came principally from ports of the Black Sea. The practice which then prevailed in the trade was to empty into the hold of the vessel one measure of Hemp or other common seed to thirty-nine of Linseed. This was called legitimate adulteration. The war destroyed this trade, and Linseed was subsequently brought from India, where the quality was inferior and where carelessness in planting and reaping the crops caused the seed to be much more extensively mixed, but in addition to this inferiority the trade had thought it well to advance its legitimate adulteration to the extent of one measure to every nineteen. Mr. Hunt further says that it was impossible to find pure linseed-oil in all England, and to procure it the seeds had to be "carefully sorted out one by one by the fingers." It is a well-known fact that unadulterated Linseed is most difficult to obtain, various other seeds, oleaginous and otherwise, being largely mixed with Linseed from all the ports of shipment. Some kinds are, of course, much purer than others, and we should imagine that by a system of careful screening really pure linseed-oil might be obtained easily for artists' use. The question of the genuine nature of artists' materials is one of really great importance, inasmuch as it affects the character of the works of our greatest painters in this generation in future ages, as well as the reputation of the artists themselves.

"Poetry of a Root Crop." — We take the following, by the late Charles Kingsley, from the pages of *Macmillan*:—

"Underneath their eider-robe
Russet Swede and Golden Globe,
Feathered Carrot, burrowing deep,
Steadfast wait in charmèd sleep;
Treasure-houses wherein lie,
Locked by angels' alchemy,
Milk and hair, and blood and bone,
Children of the barren stone;
Children of the flaming air,
With his blue eye keen and bare,
Spirit-peopled smiling down
On frozen field and boiling town—
Boiling town that will not heed
God His voice for rage and greed;
Frozen fields that surpliced lie,
Gazing patient at the sky;
Like some marble carven nun,
With folded hands when work is done,
Who mute upon her tomb doth pray,
Till the resurrection day."

Answers to Correspondents.

Alternantheras: *A. B. C.* The marked one is A. paronychioides major; the other is. A. amœna.

Auricula: *W. P.* Your double Auricula is of no particular value, though interesting, its defect being the dull dirty yellow colour. Were it bright and equally double, it would make a good border variety.

Auriculas, &c.: *A. M.* For Auriculas, Mr. Turner, of Slough; for Polyanthuses, Mr. Dean, of Ealing.

Cape Colony: *E. W.* Mr. W. C. Burnet, 10, Blomfield Street, E.C., is the Cape Colony Emigration Agent.

Cucumbers: *J. W. M., York.* Your plants are suffering from the well-known disease called gumming, the cause of which has not yet been established. The most efficient remedy is a complete change of seed and soil.

Fungus in Cellar: *H. R., Penzance.* This is a mere rudimentary state of some fungus. It may belong to the dry-rot, or one of numerous similar or dissimilar fungi.

Fungus on Sempervivum: *J. D. S.* The name of the fungus on Sempervivum is Endophyllum sempervivi. Hitherto it has, I believe, kept to the Houseleek, and has been rare. *W. G. S.*

Heating: *J. S.* We do not see any objection to the arrangement you propose to adopt.

Insects: *E. A.* The insect found feeding at night on your Odontoglossum citrosmum is an immature speci-

men of a pretty green grasshopper (Conocephalus, sp.), from tropical America, which must have been imported in the egg state with the plant. *I. O. W.*—*J. L. S.* The grubs at the roots of your Lettuces and Strawberry plants are the larvæ of the common Daddy Longlegs (Tipula oleracea). Set children to catch and kill the flies when they appear in numbers in your garden. The grubs are nearly full-grown, and will not do much more mischief. *I. O. W.*

MEALY-BUG ON GRAPES: *York House.* Very little can be done beyond removing the bug by means of a small brush and a solution of soft-soap. You might also try syringing hard with clean water, one person holding his hand behind the bunch, but in this case take care you do not scatter the insect with the spray.—*L. H. J.* The above is the best reply we can make to your enquiry. We do not recommend you to use insecticides now the fruit is swelling.

MIGNONETTE: *P. D. E.* Tree Mignonette, as it is called—that is, Mignonette plants grown on into tree-like shape—will go on blooming for a long period in a genial greenhouse temperature. Send the particulars of the case you refer to, and if of sufficient interest we will publish them.

MYOSOTIS: *W. Divers.* We have not met with a white variety of M. dissitiflora. The white form of M. sylvatica is plentiful.

NAMES OF PLANTS: *F. B.* 1, Cantua dependens; 2, Ruscus androgynus; 4 and 5, Chrysanthemums—send better specimens when in flower; 7, Amelanchier vulgaris; 8, Pulmonaria officinalis, var. alba; 9, P. officinalis; 10, Pyrus japonica. Please only send six another time, better specimens, and properly packed. —*D. P.* 1, Spiræa chamædrifolia; 2, Tellima grandiflora; 3, Saxifraga hirta; 4, Pulmonaria virginica, one of the prettiest of herbaceous plants. Could you oblige us with a small plant?—*J. T. B.* Juniperus virginiana.—*C. W. D.* The Grecian Saxifraga Sibthorpia, Boissier.—*W. P.* Your plant is Chrysosplenium oppositifolium, not Saxifraga oppositifolia, which is rightly described as having purple flowers. —*W. T. R.* 1, The Paris Daisy—Chrysanthemum frutescens. The others are Mesembryanthemums, which we cannot name without the flowers.—*J. G. M.* Fritillaria nigra, *alias* pyrenaica.—*R. Williams.* Not recognisable from the leaves only.—*G. W. G.* Asplenium adiantum-nigrum. — *John Smith.* Agrostis alba, var. stolonifera.—*W. Bishop.* 13, Dendrobium Guiberti; 14, Maxillaria tenuifolia; 15, Dendrobium Devonianum; 16, Odontoglossum citrosmum, white var.—*S. M. & A.* The pod of a Gleditschia, probably of G. triacanthus. — *Inquirer, Haydock.* 1, Dendrobium densiflorum; 2, Vanda suavis; 3, Dendrobium Farmeri; 4, Passiflora Impératrice Eugènie, a garden hybrid.—*H. King.* Gaultheria shallon.—*W. W. Morse.* All three are but trifling varieties of Cypripedium pubescens, which varies much in colour. —*James Vert.* Chrysanthemum frutescens, var. A yellow seedling in the way of Etoile d'Or, but not so large.

PELARGONIUMS: *R. Williams.* The cause of the leaves turning yellow and falling off cannot be determined without more information than we possess. Probably the evil lies at the roots, which are either in a generally unhealthy state, or the soil has been over-dosed with manure.

POLYANTHUSES: *W. Divers.* A large-flowered and showy strain of ordinary border varieties, adapted for shrubbery and wilderness walks, but of no other merit.

RATING NURSERYMEN'S GREENHOUSES: *R. M., Sissinghurst.* See an article on the "Principles of Rating," in our number for September 1, 1877.

RHODODENDRON: *G., Portsmouth.* We are not able to name seedling varieties.

STRAWBERRY: *E. P.* We have failed to identify the variety; the berries were so much bruised when received.

THUYA, &C.: *T. M., Ealing.* The principal distinction between Thuya and Cupressus lies in the fact that in the latter genus there are several seeds to each of the fertile scales, while in Thuya there are 2—3, or rarely five seeds to each fertile scale. Retinospora is now made a section of Thuya. You will find the distinctions given in the present number, under the head of T. Standishii.

TUBEROSES: *Novice.* Pot the roots in a compost made up of equal parts of peat, loam, and manure; give one good watering, and plunge them in the hottest part of a stove. Withhold water from them until they begin to grow, and remove to a cooler house as they show for flower.

VINES: *Lanark.* Yours is a common enough case. Young Vines which are growing very freely are very liable to similar injury. It is due to what may be termed scalding—a sudden gleam of sunshine and rise of temperature whilst the young shoots, &c., are fully charged with moisture. Careful ventilation is the only preventive, but it is very difficult to avert at certain times.—*A Constant Reader.* We scarcely understand you, whether your Vines are in their first or second year's growth; but if the eyes of this year's growth are all breaking, as you state, it is due to your stopping them, and the excessively moist close atmosphere you are growing them in.—*H. Clerk.* We see nothing particularly the matter with the Vine leaf sent—certainly no Phylloxera. It is merely wanting in vigour.

VIOLET: *W. H.* Send some flowers and leaves packed in damp moss, and we will do our best to identify the variety. A couple of withered blooms is hardly enough for this purpose.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

COMMUNICATIONS RECEIVED:—R. Johnson (many thanks).—J. A. F.—E. L. F.—G. H. W.—G. G.—C. W. D.—J. L. S. —E. P.—W. P.—W. K.—W. H.—H. K.—R. D.—W. T.—J. T. M.—J. F.—T. L.—Philanthes—C. & R.—W. H. - J. D.—S. L.—Dr. Bennet, Mentone.—T. S.—M. W.—G. P. —W. K.—J. A. H.—E. B.—D. P.—E. F.—Constant Reader. —H. P.—J. W.

Enquiries.

He that questioneth much shall learn much.—BACON.

ASPHALTE.—I should be much obliged if any of your readers would give me the details of the best method of asphalting garden paths, that will not become soft under the heat of the sun? *G. G.*

FOSTER'S WHITE SEEDLING GRAPE.—Has Foster's Seedling Grape ripened in the open air with any of your correspondents? If not, I claim credit as being the first one to ripen it—three years in succession, on a south wall—in 1876, 1877, and 1878, fine in bunch and berry. On the last date I cut them the first week in November, hung them up in the fruit-room, and some of them kept till January, 1879. Last year it did not come to perfection, the only Grape which ripened here in the open air being Royal Muscadine, or Chasselas de Fontainbleau. *W. Divers, Wierton, Maidstone.*

SCOTCH FIR TIMBER. — What time of the year is most suitable for cutting down plantations of Scotch Fir for timber? *A. C. W.*

YELLOW-BERRIED IVY.—Has the yellow-berried Ivy fruited in this country? We have some strong plants here about fifteen years old: I raised them from seeds brought here with other things from Rome. It blooms very freely but does not fruit. I think it is not quite so hardy as other sorts, but it has very beautiful foliage, of a fine glossy green, and is a strong growing variety. *W. D., Maidstone.*

Markets.

COVENT GARDEN, May 6.

Prices remain much the same, forced goods being with difficulty cleared. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Lemons, per 100	6 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– 1 6	Pears, per dozen	4 0– 8 0
Gooseberries, green, per quart	0 6– 0 9	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb.	4 0–10 0	Strawberries, per oz.	0 4– 0 9

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— English, p. 100	5 0– 6 0	Mint, green, bunch	1 0– ..
— French, per bun.	3 0– 6 0	Mushrooms, p. baskt.	1 6– 2 0
Beans, French, p. lb.	1 6– ..	Onions, per bushel	10 0–12 0
Beet, per doz.	2 0– 4 0	— Spring, per bun.	0 6– ..
Cabbages, per doz.	1 0– 2 0	Parsley, per lb.	0 9– ..
Carrots, per bunch	0 8– ..	Peas, per lb.	1 0– ..
— French, per lb.	0 6– ..	— French, per qt.	5 0– ..
— New, per bunch	1 6– ..	Potatos (new), per lb.	0 3– 0 9
Cauliflowers, per doz.	2 0– 5 0	Radishes, per bun.	0 2– ..
Celery, per bundle	1 6– 4 0	Rhubarb (Leeds), per bundle	0 4– 0 9
Chilis, per 100	3 0– ..	Seakale, per punnet	3 0– ..
Cucumbers, per doz.	8 0–12 0	Small salading, pun.	0 4– ..
Endive, per 2 doz.	1 6– 3 0	Spinach, per bushel	2 6– ..
Garlic, per lb.	1 0– ..	Tomatos, per dozen	4 0– 6 0
Herbs, per bunch	0 2– 0 4	Turnips, new, bunch	0 6– ..
Horse Radish, p. bun.	4 0– ..		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 170*s.* to 190*s.* per ton. German, 2*s.* 6*d.* to 7*s.* per bag; Channel Islands, 4*d.* to 6*d.* per lb.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Foliage Plants, various, each	2 0–10 6
Azaleas, per dozen	18 0–60 0	Fuchsias, per dozen	9 0–15 0
Bedding Plants, various, per doz.	1 6– 2 6	Genista, per dozen	9 0–18 0
Begonias, per doz.	6 0–18 0	Lilium eximium, doz.	30 0–60 0
Bouvardias, per doz.	12 0–24 0	Lobelia, per dozen	6 0– 9 0
Calceolaria, per doz.	8 0–12 0	Mignonette, per doz.	5 0– 9 0
— Herbaceous, doz.	6 0– 9 0	Myrtles, per doz.	6 0–12 0
Cinerarias, per doz.	6 0–12 0	Palms in variety, each	2 6–21 0
Cyclamen, per dozen	9 0–24 0	Pelargoniums, dozen	9 0–24 0
Cyperus, per dozen	4 0– 9 0	— Ivy-leaved, doz.	4 0– 8 0
Dracæna terminalis	30 0–60 0	— Tricolor	4 0–12 0
— viridis, per doz.	12 0–24 0	Roses, Hybrid Perpetual, per doz.	18 0–36 0
Erica various, per dozen	12 0–30 0	— Fairy, per dozen	6 0–10 0
Euonymus, various, per dozen	6 0–18 0	Spiræa, per dozen	6 0–18 0
Ferns, in var., doz.	4 0–18 0	— palmata, doz.	18 0–30 0
Ficus elastica, each	1 6– 7 6	Stocks, per dozen	4 0– 8 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Pansies, 12 bunches	2 0– 6 0
Anemone, 12 bun.	3 0– 6 0	Polyanthus, 12 bun.	1 6– 4 0
Arum Lilies, per dozen	3 0– 6 0	Pelargoniums, 12 spr.	0 6– 1 0
Azalea, 12 sprays	0 6– 1 0	— zonal, 12 sprays	0 3– 0 9
Bouvardias, per bun.	1 0– 4 0	Primroses, 12 bunch.	0 9– 1 0
Camellias, per doz.	1 0– 6 0	— double, white, 12 bunches	1 6– 3 0
Carnations, per dozen	1 0– 3 0	Primula, double, per bunch	1 0– 1 6
Cowslips, 12 bunches	1 0– 1 6	Roses (indoor), doz.	1 0– 9 0
Daffodils, various, 12 bunches	4 0– 9 0	— Roses, Fr., doz.	2 0– 6 0
Eucharis, per doz.	4 0– 6 0	Spiræa, 12 sprays	1 0– 2 0
Euphorbia, 12 sprays	3 0– 6 0	Stephanotis, 12 spr.	2 6– 4 0
Forget-me-not, 12 bunches	3 0– 9 0	Tropæolum, 12 bun.	1 0– 3 0
Gardenias, 12 blms.	2 0– 8 0	Tuberoses, per dozen	3 0– 4 0
Heliotropes, 12 sp.	0 6– 1 0	Tulips, 12 bunches	4 0– 8 0
Hyacinths, 12 bun.	4 0–12 0	Violets, French, per bunch	1 6– 2 6
Lily of the Valley, 12 bunches	6 0–18 0	— English, p. bun.	1 0– 2 0
Mignonette, 12 bun.	6 0– 9 0	Wallflowers	4 0– 9 0
Narcissus, various, 12 bunches	4 0– 9 0	White Lilac, Fr., per bundle	4 0– 8 0

SEEDS.

LONDON; *May* 5.—The attendance of buyers on the market to-day was most meagre, and such business as took place was quite of a retail character. Small country orders for Alsike, white Trefoil, and other descriptions still come to hand, which are executed at the moderate rates current. As regards American Clover seed increased firmness is observable. This is owing to trustworthy reports received from Canada and also from the States, as to the poor prospects of next year's crop. Moreover, the stocks remaining in this country prove to be very light. The depressed quotations now ruling for Italian Rye-grass attract attention. There is a good sale for white Dutch Runner Beans; these are now extraordinarily cheap, whilst scarlets have suddenly become very scarce and much dearer. Hemp seed sells at 31*s.* per quarter. Sicilian Canary seed, of handsome quality, is now exceedingly cheap. The supply of good blue Peas is short. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday was quiet, and as regards Wheat prices were decidedly lower. English Wheat was in small supply, and a fall of 1*s.* per quarter, and occasionally more, was submitted to, to conclude sales. Foreign produce was from 1*s.* to 2*s.* per quarter cheaper on the week. Barley changed hands slowly at about late rates. Malt was quiet and unchanged. Oats were steady, the better sorts at rather higher prices. Maize was inactive, and rates were about 6*d.* per quarter lower than on Monday se'nnight. Beans and Peas were scarce, and prices firm. The flour trade was dull, and quotations favoured buyers.—On Wednesday trade was somewhat firmer. As regards Wheat quotations were more firmly supported. Barley showed no change in value. Malt remained dull; Oats were in moderate request, and sound corn was firm. Maize was slender, while as respects Beans, Peas, and flour rates were fully as high as on Monday.—Average prices of corn for the week ending May 1:—Wheat, 45*s.* 9*d.*; Barley, 33*s.* 6*d.*; Oats, 23*s.* 6*d.* For the corresponding period last year:—Wheat, 40*s.* 9*d.*; Barley, 30*s.* 1*d.*; Oats, 21*s.* 9*d.*

CATTLE.

At Copenhagen Fields on Monday prices for beasts on the average were higher than at the close of last week. For sheep prices are gradually advancing. Trade was not so brisk for lambs as of late, and our top quotation was only realised for choicest qualities. There was a large supply of calves, but choice qualities, being scarce, made high prices. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 6*d.* to 6*s.* 2*d.*; calves, 5*s.* 6*d.* to 6*s.* 6*d.*; sheep, 5*s.* 8*d.* to 6*s.*, and 6*s.* 6*d.* to 7*s.* 4*d.*; lambs, 8*s.* to 9*s.* 4*d.*; pigs, 4*s.* 6*d.* to 5*s.* 4*d.*—On Thursday trade was quiet. Beasts were in short supply, but sufficient for the demand, which ruled inactive, at barely noted rates. Sheep and lambs were dull and weak, especially the latter. Calves sold at previous quotations.

HAY.

The Whitechapel Market report for Tuesday states that with a large supply trade was dull, and prices were not very well supported. Quotations:—Prime Clover, 100*s.* to 132*s.*; inferior, 80*s.* to 95*s.*; prime meadow hay, 80*s.* to 102*s.* 6*d.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 38*s.* per load.—On Thursday there was a fair supply of hay and straw on offer. The trade was dull at the above rates.—Cumberland Market quotations:—Superior meadow hay, 97*s.* to 105*s.*; inferior, 45*s.* to 75*s.*; superior Clover, 126*s.* to 132*s.*; inferior, 75*s.* to 100*s.*; and straw, 36*s.* to 40*s.* per load.

POTATOS.

The Borough and Spitalfields Markets reports state that the supplies have been good. The demand remains slow. Quotations:—Scotch Regents, 140*s.* per ton; Champions, 150*s.* to 160*s.*; Lincoln ditto, 140*s.* to 160*s.*; Victorias, 150*s.*; German reds, 5*s.* to 7*s.* per bag; Belgian kidneys, 5*s.* 3*d.*; French whites, 4*s.* 3*d.*; Dutch whites, 4*s.*—The imports into London last week comprised 51,862 bags from Hamburg, 15,773 bags Stettin, 4043 bags Danzig, and smaller consignments from various other ports.

Government Stock.—The closing price of Consols on Monday were, for delivery, 99¼ to 99⅜, and for the account, 99 7/16 to 99 11/16. The final quotations on Tuesday, Wednesday, and Thursday, were, for delivery, 99¼ to 99⅜, and 99⅜ to 99½ for the account.

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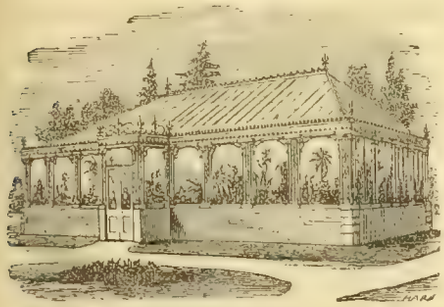

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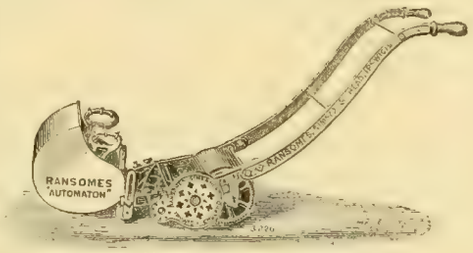

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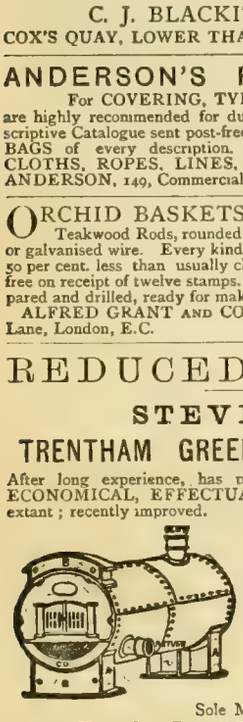

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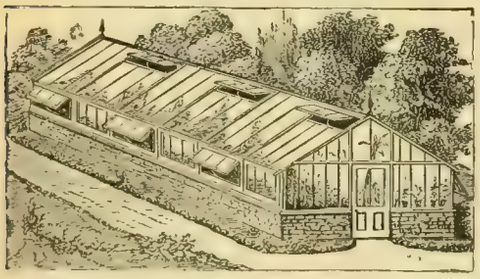

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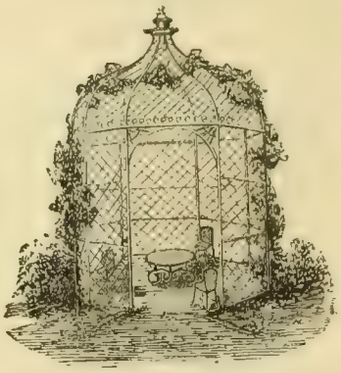

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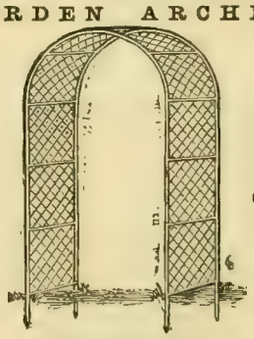

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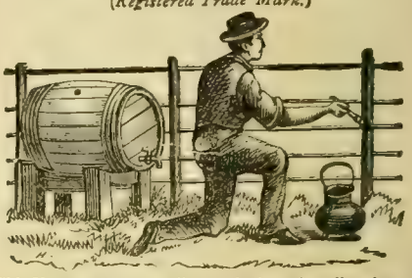

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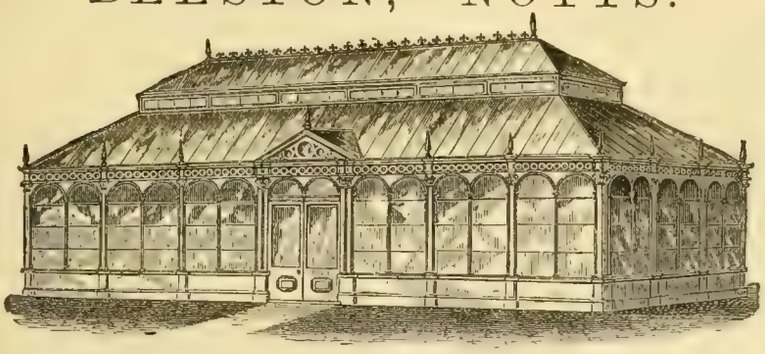

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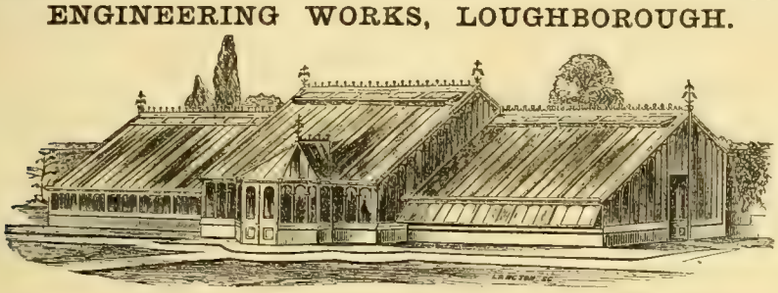

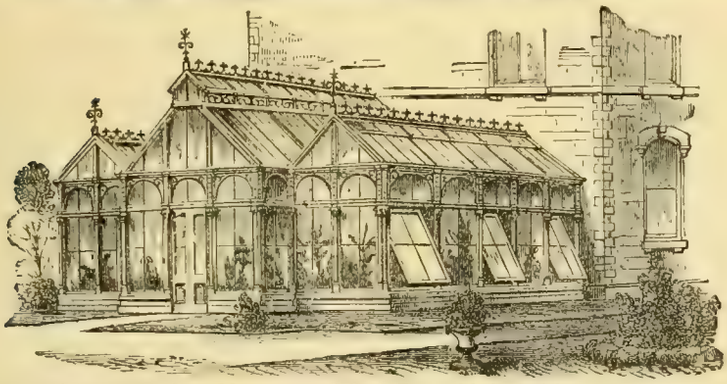

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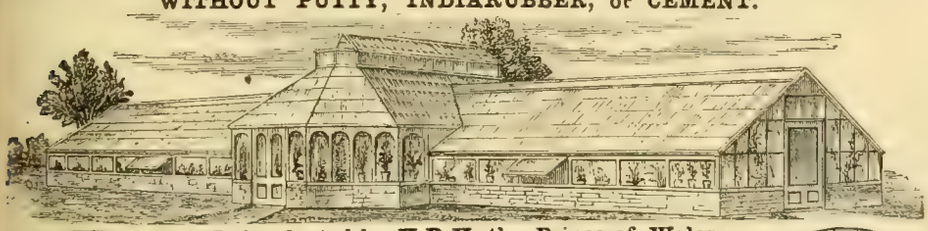

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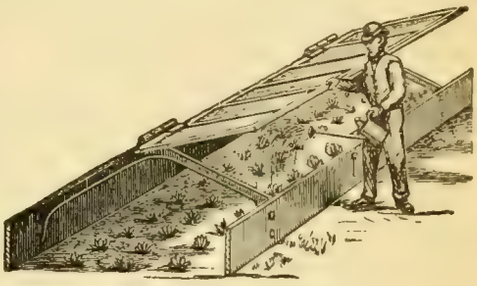

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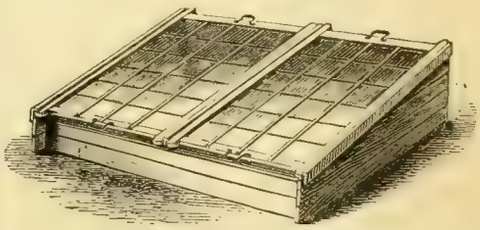

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And Hundreds of unsolicited Testimonials have been received testifying to their superiority over all others.

They have been submitted to numerous practical tests in Public Competition, and in all cases have carried off every Prize that has been given.

The following are the advantages over all others :—

1st. Simplicity of Construction—every part being easily accessible. 2d. They are worked with much greater ease than any other. 3d. They are the least liable to get out of order. 4th. They make little or no noise in working. 5th. They will cut either long or short Grass, wet or dry.

Single-handed Lawn Mower.

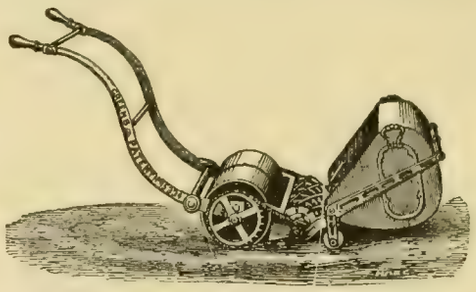
To cut 6 inches ... ... Price £1 15 0
Can be worked by a Lady.

To cut 8 inches 2 10 0
Can be worked by a Lady.

To cut 10 inches 3 10 0
Can be worked by a strong Youth.

To cut 12 inches 4 10 0
Can be worked by a Man.

To cut 14 inches 5 10 0
Can be worked by a Man.



Double-handed Lawn Mower.

To cut 16 inches ... ... Price £6 10 0
This can be worked by One Man on an even lawn.

To cut 18 inches 7 10 0
By a Man and Boy.

To cut 20 inches 8 0 0
By a Man and Boy.

*To cut 22 inches. By Two Men ... 8 10 0
* If made stronger, suitable for Donkey, 30s. extra.

*To cut 24 inches. By Two Men ... 9 0 0
* If made stronger, suitable for Donkey, 30s. extra.

Prices of Donkey, Pony, and Horse Machines, including Patent Self or Side Delivery Box, Cross-stay complete, suitable for attaching to Ordinary Chaise Traces or Gig Harness :—

DONKEY and PONY MACHINES.

To cut 26 inches	£14 0 0
To cut 28 inches	16 0 0
To cut 30 inches	18 0 0
Leather Boots for Donkey	1 0 0
Leather Boots for Pony	1 4 0

HORSE MACHINES.

To cut 30 inches	£22 0 0
To cut 36 inches	26 0 0
To cut 42 inches	30 0 0
To cut 48 inches	34 0 0
Leather Boots for Horse	1 9 0

The 26 and 28 inches can easily be worked by a Donkey, the 30 inches by a Pony, and the larger sizes by a Horse ; and as the Machines make little noise in working, the most spirited animal can be employed without fear of it running away, or in any way damaging the Machine.

Delivered, Carriage Free, at all the principal Railway Stations and Shipping Ports in England, Scotland, and Ireland.

No Lawn Mower Manufacturer keeps so large a stock of Mowers as is to be found at our London Establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, of Hand, Pony, and Horse Power, and have their Orders executed the same day they are received.

The above Machines are Warranted to give entire Satisfaction, otherwise they may be returned AT ONCE, free of cost to the Purchaser.

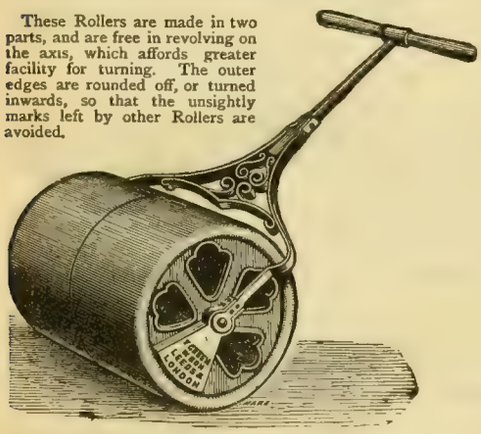
N.B.—Those who have Lawn Mowers which require repairing should send them to either our Leeds or London Establishment, where they will have prompt attention, as an Efficient Staff of Workmen is kept at both places.

GREEN'S PATENT ROLLERS

For Lawns, Drives, Bowling Greens, Cricket Fields and Gravel Paths.

SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks left by other Rollers are avoided.



Diam. Length	£ s. d.	Diam. Length	£ s. d.
16 in. by 17 in.	.. 2 15 0	24 in. by 26 in.	.. 5 0 0
20 in. by 22 in.	.. 4 0 0	30 in. by 32 in.	.. 9 0 0

PRICE OF ROLLERS IN TWO PARTS,

Fitted with Shafts for Pony or Horse.

Diam. Length	£ s. d.	Diam. Length	£ s. d.
30 in. by 32 in.	.. 13 10 3	30 in. by 48 in.	.. 17 0 0
30 in. by 36 in.	.. 14 0 0	30 in. by 60 in.	.. 19 10 0
30 in. by 42 in.	.. 15 10 0	30 in. by 72 in.	.. 22 0 0

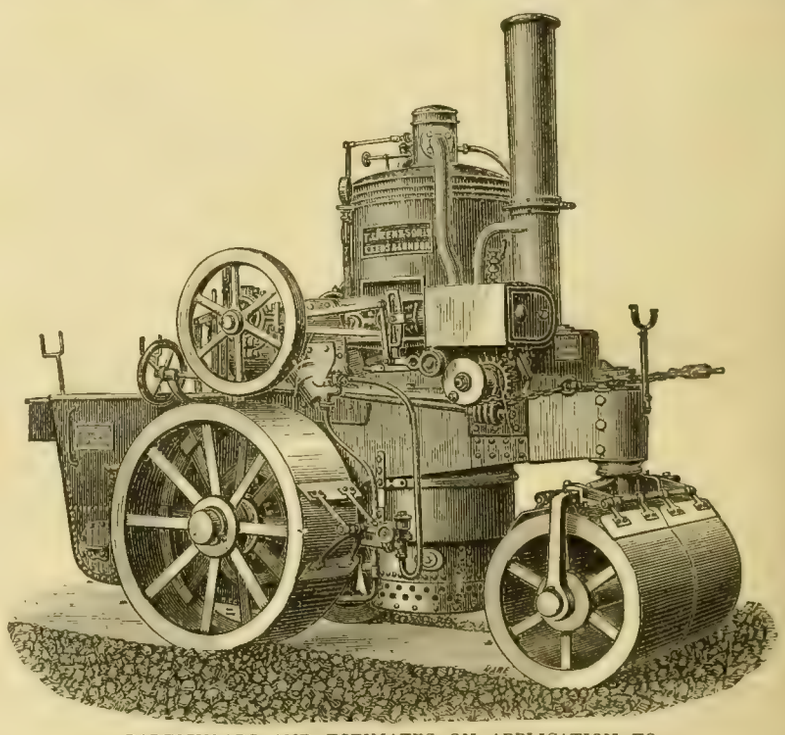
Weight Boxes extra, and Special Quotations made for Rollers 3, 3½, and 4 feet diameter, fitted with Shafts for One or Two Horses.

Delivered, Carriage Free, at the principal Railway Stations and Shipping Ports in England and Scotland.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

GREEN'S PATENT STEAM ROAD ROLLER and TRACTION ENGINE COMBINED

Suitable for Rolling Carriage Drives, Park Roads, Walks ; Rolling Lawns, Cricket Flats, Parks, &c. They can also be used as Stationary Engines for Stone Breaking, Wood Sawing, Pumping, Farm Purposes, and other various work.



PARTICULARS AND ESTIMATES ON APPLICATION TO

THOMAS GREEN & SON (Limited), Smithfield Ironworks, Leeds ; and 54 and 55, Blackfriars Road, London.

ILLUSTRATED PRICE LIST FREE, AND

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Editorial Communications should be addressed to "The Editors ;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 333.—Vol. XIII. {New Series.} SATURDAY, MAY 15, 1880. {Registered at the General Post-office as a Newspaper.} Price 5d. {Post Free, 5½d.}

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 *to the end of* 1878," *to secure them at once.*

The following is a List of those already published:—

1879.—October 11.	1880.—January 10.
,, 25.	,, 24.
November 8.	February 7, 21.
,, 15.	March 20, 27.
,, 29.	April 3.
December 13	May 8.

Price 5d. each, post free 5½d.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

GREAT POPULAR FLOWER SHOW, on WHIT-MONDAY, May 17, in the Arcades. Band of the Royal Horse Guards (Blue) and the Duke of York's School from 12 o'Clock. Gardens open at 10 o'Clock, Flower Show at 11 o'Clock. Distribution of Prizes at 4 o'Clock. Admission, 2*d.*

N.B.—Entrance for Exhibits, School of Cookery, Exhibition Road.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EXHIBITION of PLANTS and FLOWERS, WEDNESDAY, May 19, from 2 to 7 o'Clock. Tickets to be obtained at the Gardens only, by Vouchers from Fellows of the Society; price, 5*s.* each, or on the day of the Exhibition 7*s.* 6*d.* each. Two Military Bands will be in attendance.

CRYSTAL PALACE.—GREAT FLOWER SHOW of the SEASON, SATURDAY, May 29. Entries close Saturday, May 22. For Schedules apply to Mr. W. G. HEAD, Crystal Palace, S.E.

HANTS and BERKS ROYAL COUNTIES AGRICULTURAL SHOW will be held at Portsmouth, JUNE 22, 23, 24 and 25.

Under the Patronage of HER MAJESTY the QUEEN.

The Floral and Horticultural Department open to all. No entrance fees. A large amount offered in PRIZES for PLANTS, CUT FLOWERS, FRUIT and VEGETABLES. Several Special Prizes offered in addition to the Schedule. Application for Schedules and Forms should be made to the Honorary Secretaries,

J. TAPLIN, Havant.
SAM. KNIGHT, Portsea.

HANTS and BERKS ROYAL COUNTIES Agricultural Show, to be held at Portsmouth, June, 1880. Messrs. SUTTON AND SONS, of the Royal Berks Seed Establishment, and Seedsmen to Her Majesty the Queen, have engaged to present THREE Additional PRIZES for COLLECTION of FRUITS, and also THREE PRIZES for COLLECTION of VEGETABLES, in addition to the printed Schedule

RICHMOND HORTICULTURAL SOCIETY.

President, H.S.H. the Duke of TECK, G.C.B.

The SIXTH ANNUAL EXHIBITION of Plants, Flowers, Fruit, &c., will be held in the Old Deer Park, Richmond Green, on THURSDAY, July 1. Schedules can be obtained of ALBERT CHANCELLOR, Honorary Secretary, 1, King Street, Richmond.—April 27, 1880.

AYLESBURY FLORAL and HORTICULTURAL SOCIETY.

SUMMER SHOW, THURSDAY, July 8.

Schedules of Prizes, and any other information may be obtained of G. A. JEFFERIES, Secretary.

Aylesbury, May 5.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit.

CARTERS, the Queen's Seedsmen, High Holborn, London.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.

CATALOGUES free. The Trade supplied.

AURICULA SEED. Saved from named flowers only—Stage and Alpine. 2*s.* 6*d.* per packet.

CHARLES TURNER, the Royal Nurseries, Slough.

HARDY PERENNIALS and FLORIST FLOWERS.—The above Two New CATALOGUES are now in circulation, and may be had Post-free by applying to THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London, N.

PELARGONIUMS, Show and Fancy, best varieties, good plants, in 48-pots, coming into flower, 8*s.* per dozen, 50*s* per 100.

JAS. GARAWAY AND CO., Durdham Down, Clifton, Bristol.

VERBENAS and CALCEOLARIAS.—Strong, well-rooted Cuttings of White Verbenas, Boule de Neige, Eclipse Scarlet, and Purple King, the best purple, 6*s.* per 100, free for cash, safely packed. LOBELIA Bluestone, intense blue.—WILLIAM FIELD, Tarvin Road Nurseries, Chester.

Verbenas—Verbenas.

VERBENAS.—Strong, healthy, well-rooted Cuttings, free from disease, guaranteed to give satisfaction, at 6*s.* per 100, 50*s.* per 1000, of Purple, White, Crimson, and Pink, or Rose. Package free. Cash with orders. Sample dozens, post-free, 1*s.* 2*d.* per dozen.

T. FLETCHER AND SON, Florists, &c., Chesterfield.

Seeds—Seeds—Seeds.

WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

Gardenias.

MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24*s.* per dozen to 21*s.* each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.

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H. AND F. SHARPE have still to offer the following varieties of SEED POTATOS at greatly reduced prices, to clear out, viz.:—American Early Rose, Paterson's Victoria, Snowflake, Extra Early Vermont, and Pride of Ontario. Seed Growing Establishment, Wisbech.

CABBAGE PLANTS.—200,000 Red Pickling, at 5*s.* per 1000. Good strong healthy plants. Cash or reference from unknown correspondents.—Apply to W. VIRGO, Wonersh Nursery, near Guildford, Surrey.

EDMOND CARON, POTATO MERCHANT, La Mailleraye-sur-Seine, Seine-Inférieure, France, offers to BUY on COMMISSION all kinds of Fruits of Normandy. Living in the centre of producing country, he can make purchases under the best conditions, and forwards many times each week, by London, Southampton, and Littlehampton Steamers.

Floral Commission Agency.

WANTED, GARDENIAS, Crimson and Maréchal Niel ROSES, CARNATIONS, choice ORCHIDS. Best quality only. Letters and consignments to W. CALE, 4, Tavistock Row, Covent Garden, W.C.

WANTED, good Plants of Golden Gem CALCEOLARIA. Lowest cash price per 1000.

W. AND J. BROWN, Stamford.

WANTED, Crimson and Maréchal Niel ROSE BUDS, GARDENIAS, BOUVARDIAS, &c. TURNER BROS., Florists, 2, Parker Street, Liverpool.

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WANTED, round, clean, straight YEW TREES. WILLOW and POPLAR bought.

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WANTED, 200 or 300 strong CLEMATIS JACKMANNI; also 200 strong AMPELOPSIS VEITCHII. State lowest cash price to

CARTER PAGE AND CO., 53, London Wall, London, E.C.

WANTED to PURCHASE, a few hundred Roots of GLOBE ARTICHOKES. Apply to Mr. W. DEEDMAN, Gardener, Titchfield, Hants.

SUTTON'S HOME-GROWN SEEDS, &c. PARIS, 1878.

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To the Trade and Amateur Rosarians.

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Special LIST, now being prepared, will be sent gratis and post-free to applicants.

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To the Trade.

ROSES.—Maréchal Niel, Gloire de Dijon, Madam Berard, on Seedling Brier, in 5-inch pots, good stuff, all last year's working, 75*s.* per 100.

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HOLLIES.—Standard Gold and Silver, perfect specimens, from 10*s.* 6*d.* to 31*s.* 6*d.* each. Pyramids, 3½ to 4 feet, from 7*s.* 6*d.* to 10*s.* 6*d.* each. Green, for hedges, 1½ to 2 feet, at 40*s.* per 100; 2½ to 3 feet, at 75*s.* per 100.

RICHARD SMITH AND CO., Nurserymen, Worcester.

New Lilies.

TWELVE LILIUM SPECIES, good bulbs, 12*s.* This is a fine, new, and as yet unnamed species from the Rocky Mountains. The flowers are large, brilliant red, with yellow stamens; a grand addition to its class. Only a few have been imported by J. H. L. Carriage free on receipt of Post-office Order. LIST of other choice Lilies free.

J. H. LEY, Royal Nursery, Croydon.

New Dwarf Silver Variegated Geranium, "VISCOUNTESS CRANBROOK."

WM. POTTEN will send out the above on and after May 17, as advertised in the *Gardeners' Chronicle*, April 24, 1880.

Camden Nursery, Sissinghurst, Staplehurst.

MESSRS. BECKWITH AND SON are now sending out their GENERAL COLLECTION of DECORATIVE PELARGONIUMS, in upwards of 100 varieties; most of which may be had either fully in, or just coming into bloom. Price, £5 per 100, delivered to any Terminus in London. No charge for packing.

Tottenham Nursery, London.

To the Trade.

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JAS. McRONALD begs to offer a quantity of clean Seed, at 2*s.* per pound.

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GLOXINIAS (Carriage Paid).—Strong healthy, young plants (will bloom in August and September), of the best crassifolia varieties. 3*s.* per dozen, 20*s.* per 100. Terms cash.

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Sixty Thousand

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To the Trade.

DAHLIAS 40,000, in 400 varieties, now ready. CATALOGUE and Price on application to KELWAY AND SON, Langport, Somerset.

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THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.

Lion Walk, Colchester.

PENZANCE EARLY WHITE BROCCOLI PLANTS. Good plants, free by post, at 1*s.* 3*d.* per 100.

J. G. MITCHINSON, Seed Stores, Penzance.

Gentlemen's Gardeners, Amateurs, and Others REQUIRING

GARDEN POTS of best quality, are requested to send their orders to J. MATTHEWS, Royal Pottery, Weston-super-Mare. Price List on application.

SALES BY AUCTION.

Specimen Stove and Greenhouse Plants, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 19, at half-past 12 o'Clock precisely, a fine collection of Specimen STOVE and GREENHOUSE PLANTS, including many fine varieties of Ferns, Palms, Anthuriums, Marantas, &c., many of them having taken Prizes at the various Horticultural Shows in Kent; also a collection of ESTABLISHED ORCHIDS, many of them in flower, including fine specimens of Odontoglossum vexillarium, O. Andersonianum, O. triumphans, O. gloriosum, Dendrobiums, &c.

May be viewed the morning of Sale, and Catalogues had.

Cattleya Mossiæ and its varieties.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, May 19, at half-past 12 o'Clock precisely, a large importation of CATTLEYA MOSSIÆ and its varieties, just arrived from South America in good condition, many of them in fine masses that would make good exhibition plants; the leaves are as fresh on most of these Cattleyas as if they had only travelled a few miles. C. Mossiæ, being one of the most beautiful of Cattleyas and so easily grown, is especially worthy of notice.

May be viewed the morning of Sale, and Catalogues had.

The Collection of Established Orchids formed by the late J. B. Cockerell, Esq., of Cheshunt.

MR. J. C. STEVENS has received instructions from the Executrix to offer for SALE by AUCTION, without the least reserve, on THURSDAY and FRIDAY, May 20 and 21, at half-past 12 o'Clock precisely each day, the entire COLLECTION of COOL and other ORCHIDS, formed by the late J. B. Cockerell, Esq., comprising beautiful specimen plants of Odontoglossum Alexandræ, triumphans, vexillarium, Andersoni, &c.; Masdevallia Veitchii, Harryana, Lindeni, ignea, all nice healthy plants; Cattleya Mendelli, labiata, lobata, Trianæ, Mossiæ, &c.; Dendrobium Wardianum, crassinode, nobile, and other good varieties; Oncidiums, Calanthes, Epidendrums, &c.

May be viewed the mornings of Sale, and Catalogues had.

Phalænopsis grandiflora on blocks, received direct from Borneo.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, May 21, at half-past 12 o'Clock precisely, a magnificent consignment of PHALÆNOPSIS GRANDIFLORA, received in a first-rate semi-established condition. Also CYPRIPEDIUM NÆVIUM, ANÆCTOCHILUS DAWSONI, a new VANDA, &c.

May be viewed the morning of Sale, and Catalogues had.

Importations from Ceylon of Dendrobium McCARTHIÆ, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, May 21, at half-past 12 o'Clock precisely, a fine lot of DENDROBIUM McCARTHIÆ; also an importation of DENDROBIUM MACROPHYLLUM, CŒLOGYNE ASPERATA, C. PANDURATA, ANÆCTOCHILUS LOWII, &c.

May be viewed the morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS has received instructions from W. Turner, Esq., Over Hall, Winsford, Cheshire, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 2, and following days (instead of the days previously announced), at half-past 12 o'Clock precisely each day, without the least reserve, the entire COLLECTION of ESTABLISHED ORCHIDS. Amongst other grand things will be found Lælia Warneri, Saccolabium Turneri (spikes nearly 2 feet long), Cattleya Skinneri alba, C. Morgani, C. Wagneri, Lælia Williamsi, and many other rare and valuable plants.

May be viewed the morning of Sale, and Catalogues had.

Catford.

Unreserved Sale, by order of the Executors.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, Park House, Southend, Catford, Kent, on WEDNESDAY, May 19, at 1 o'Clock precisely, the whole of the STOVE and GREENHOUSE PLANTS—50 fine grown specimen Camellias and Azaleas; 2000 Bedding Plants in variety; capital Farm Cart and Effects.

May be viewed. Catalogues had on the Premises, and of the Auctioneers and Estate Agents, 98, Gracechurch Street, E.C., and Leytonstone, E.

Important Sale of about 15,000 beautifully grown GREENHOUSE and BEDDING PLANTS, comprising about 5000 fine Scarlet, Zonal, Tricolor and Variegated Geraniums in variety; thousands of Verbenas, Calceolarias, Lobelias, and the usual assortment of Plants for Bedding, fine Pelargoniums, Azalea indica, and Greenhouse Plants in variety in flower, &c.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION the above, on the Premises, American Nurseries, Leytonstone, adjoining the Railway Station, on SATURDAY, May 22, at 2 o'Clock precisely.

On view the day prior and morning of Sale. Catalogues had on the Premises, and of the Auctioneers, 98, Gracechurch Street, E.C.

Hornsey, N.

TWELFTH ANNUAL BEDDING PLANT SALE.

IMPORTANT UNRESERVED SALE of about 80,000 unusually well-grown GREENHOUSE and BEDDING PLANTS, in rich assortment, consisting of Verbenas, Fuchsias, Heliotropes, 25,000 choice Geraniums, the whole of which are wintered plants, including Mrs. Pollock, Madame Vaucher, Vesuvius, and other well-known varieties; 10,000 Lobelias, 4000 Calceolarias, 5000 Alternantheras, of sorts; choice Roses in pots, Spiræas, Pelargoniums, Fuchsias, Heliotropes, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above Stock, on the Premises, The Nursery, Hornsey, N., on TUESDAY, May 25, at 12 o'Clock, by order of Mr. J. Page (successor to Mr. Cleall).

On view three days prior to Sale. Catalogues, post-free, from the Nursery, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Established Orchids.

MESSRS. PROTHEROE AND MORRIS will SELL, at the Mart, Tokenhouse Yard, E.C., on MONDAY, May 24, 400 Lots of ESTABLISHED ORCHIDS, the greater portion of which are from Private Collections—for Sale without reserve. Also an assortment of IMPORTED ORCHIDS.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Hammersmith, W.

In the Fulham Road, opposite the Convent of the Good Shepherd, and near the Broadway, District, Metropolitan, and South-Western Railways.

To GENTLEMEN, FLORISTS, NURSERYMEN, BUILDERS and OTHERS.

CLEARANCE SALE.

MR. J. A. SMITH is instructed by Mr. F. Herridge, to SELL by AUCTION, on the Premises, The Nursery, Fulham Road, W., on MONDAY, May 17, at 1 o'Clock, about FORTY THOUSAND PLANTS, well selected for Bedding and Greenhouse, in splendid condition, comprising about 13,000 Geraniums (very choice), including Princess of Wales, Grand Duchess, Czarevna, Miss Herridge, Gloire de Corbeny, Mrs. Pollock, Lady Plymouth, Model, Flower of Spring, Bijou, Madame Vaucher, Master Christine, Duke of Wellington, Rose Rendatler, Madame Mezarde, l'Elégante, Lucius, Vesuvius, and many other very choice varieties in pots, ready for safe removal; 2000 Calceolarias, Golden Gem, &c.; 6000 Mesembryanthemums, Heliotropes, Iresines, Alternanthera, Pyrethrum, and Coleus; 4000 Lobelias, Blue Gown, speciosa, pumila magnifica, &c.; thousands of Pelargoniums, Fuchsias, and others of the best varieties, splendid growth, and most approved selection.

May be viewed the day prior and morning of Sale. Catalogues on the Premises; and at Mr. J. A. SMITH'S Auction, Land and Estate Offices, 58, King Street East, Hammersmith, W.

Brentwood Nursery, near the Railway Station.

WITHOUT RESERVE.

GREAT SALE of BEDDING PLANTS, comprising 40,000 fine, healthy, choice new Zonal, Silver, Golden, Tricolor, and Bronze Geraniums, from the best Raisers; Verbenas, Calceolarias, Heliotropes, Tropæolums, Lobelias, Coleus, Alternanthera, Mesembryanthemum, Golden Feather, Ferns, and a capital assortment of the most popular Window Plants; also a lot of splendid named Dahlias, tuberous Begonias, &c.

MR. C. BURLEY will SELL the above by AUCTION, opposite the Bank, High Street, Brentwood, on THURSDAY, May 20, at 1 o'Clock punctually. Arrangements can be made for goods being packed for railway at a nominal rate.

Catalogues may be had at the principal inns in the neighbourhood, and of the Auctioneer, High Street, Brentwood.

London, N. (4946).

FOR DISPOSAL, an old-established NURSERY, comprising nearly an acre of Ground, five Glass Erections, Pits, Shed, Cottage, and Shop. Price 600 guineas. Stock at a Valuation.

Details and order to view of Messrs. PROTHEROE AND MORRIS, Horticultural Auctioneers and Valuers, 98, Gracechurch Street, E.C.

TO BE SOLD, a NURSERY BUSINESS, in a leading thoroughfare; 3000 feet of Glass, heated by hot water. Miscellaneous stock of 7000. Good Dwelling-house. Price for whole, £400.

A. ABBOTT, Belsize Nursery, South Hampstead, N.W.

FOR IMMEDIATE DISPOSAL, in consequence of the death of Proprietor, an old-established NURSERY and SEED BUSINESS in Warwickshire, in full working order, with every facility for doing a large trade.—For particulars address M. W., 3, Dungannon Terrace, North End Road, Walham Green, London, W.

Grange Nursery, Heaton Mersey, near Manchester.

TO BE DISPOSED OF, by Private Treaty, Grange Villa, Heaton Mersey, with the site thereof and adjoining Land used as a Nursery, and containing together by admeasurement 14,520 square yards or thereabouts. The house comprises Dining, Drawing and Breakfast-rooms, with Kitchen, Scullery, Six Bed-rooms, Dressing-room, Water-closet, and Store-room, and is Cellared throughout. The Outbuildings consist of Stabling for Three Horses, Coach-house and Harness-room, with large Loft and Store-cupboard, Cow-house, Piggeries, Pigeon-house, and Hen-house. There is a Greenhouse attached to the house. On the land there is erected a range of Glass 225 feet long, consisting of Vineries, Fernery, Greenhouse, and Propagating Pit. There are materials on the ground requisite for Erecting another Range of Glass, the foundations for which are already laid. There is a good Stock of Rose Trees, Shrubs, Fruit Trees, and other Plants, Flowers, &c. The Premises have for some time been used as a Nursery by the late proprietor, Mr. Thomas Studd deceased, and are replete with every convenience for carrying on the Business of a Nurseryman. The situation is healthy, and the premises command an extensive view of the Derbyshire Hills, Alderley Edge and Bowdon.

The Premises can be inspected on application at the House, and any further information can be obtained from Mr. W. R. MINOR, Solicitor, 26, Brown Street, Manchester.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

J. T. DEANE, LANDSCAPE GARDENER.—Planting by Contract or Otherwise, Ornamental Lakes, Rockwork, &c. References kindly permitted to Noblemen and Gentlemen — places already carried out. Plans and Estimates furnished.—Wellesley House, Wellington Road, Orpington, Kent.

To the Seed Trade.

BENJAMIN CROSLAND has a few bushels of CANADIAN WONDER DWARF KIDNEY BEAN to offer, at 24s. per bushel. Cash with order from unknown correspondents.

Norfolk Market Hall, Sheffield.

SAMUEL AND JAMES SMITH, Tansley Nurseries, near Matlock, have to offer:—

RHODODENDRON STOCKS, for grafting, 80s. per 1000.
,, mixed hybrids, 9 to 12 inches, 80s. per 1000.
,, ferrugineum, 12 inches, 80s. per 1000.

To the Trade.

CINERARIA SEED, 1880 Crop.

F. AND A. SMITH can supply the above (saved from their well-known collection) by weight. Price on application.

The Nurseries, West Dulwich, S.E.

Grapes this Year.

JAMES DICKSON AND SONS can still supply a few strong FRUITING CANES of BLACK HAMBURGH and other VINES, also PLANTING CANES.

Newton Nurseries, Chester.

Vines—Vines—Vines.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, has still on hand a fine Stock of Fruiting and Planting CANES of Muscat of Alexandria, Bowood Muscat, Mrs. Pince, Gros Guillaume, Burchardt's Prince, and Madresfield Court. Also Planting Canes of several other varieties. CATALOGUE free. The Trade supplied.

SPRING SOWN VEITCH'S AUTUMN GIANT CAULIFLOWER.—Fine plants, 5s. per 1000, including packing. Cash with order.

WM. E. DAVIS, Market Gardener, Whetstone, Middlesex.

Flowering Pelargoniums.

F. AND A. SMITH can supply the above in fine plants, and best sorts only. Prices (which are low) on application.

Also splendid SPIRÆAS and a few CYTISUS.

The Nurseries, West Dulwich, S.E.

CHRYSANTHEMUMS, very choice collection, 3s. 6d. per dozen.
COLEUS, new and grand varieties, 2s. per dozen, 10s. per 100; with names, 3s. per dozen.
FUCHSIAS, choicest varieties, 2s. per dozen; twelve named ditto, 3s.
LOBELIAS, thirteen choice, from 2s. 6d. per 100.
Send for CATALOGUE of the above, which includes 100,000 choice Double and Single Geraniums.
GEO. GUMMOW, 114, Loughborough Road, Brixton, S.W.

Verbenas—Verbenas.

JOHN SOLOMON offers White, Scarlet, Purple, Pink, Crimson, Rose, and other good Bedding and Exhibition varieties, good strong spring-struck cuttings, well rooted, at 6s. per 100, 50s. per 1000, for cash with order.

Queen's Road Nursery, Markhouse Common, Walthamstow.

MADAME THIBAUT.—This is the best Pink Geranium extant. Strong plants, 16s. per 100; ditto, Market Specimens, in 48's, 4s. per dozen.
SCARLET GERANIUMS.—Vesuvius and Wonderful, strong plants, 16s. per 100; ditto, Market Specimens, in 48's, 4s. per dozen.
GEO. POULTON, Florist, Angel Road, Edmonton, London.

THE BEST PLANTING SEASON.

THE LAWSON SEED AND NURSERY COMPANY (Limited) respectfully invite attention to their Extensive Stocks of FOREST, ORNAMENTAL, and FRUIT TREES, Dwarf and Standard ROSES, Vines, &c., all in splendid condition. Where personal inspection is not convenient, special offers will be made, and CATALOGUES sent on request.

Special Railway Tickets to and from the New Nurseries, Granton Road, may be had gratis, at 1, George IV. Bridge, Edinburgh.

F. AND A. SMITH'S BALSAMS.—Seed of the above can be had from most Seedsmen throughout the world in 1s. and 2s. packets, mixed, and in 2s. 6d. collections of nine colours. Also CINERARIA, PRIMULA, and CALCEOLARIA, in 1s., 2s. 6d., and 5s. packets, or direct from F. AND A. SMITH, West Dulwich, S.E.

BEDDING PLANTS, &c.
GERANIUMS, Bedding, Zonal and Nosegay, in choice sorts, our selection, 2s. 6d. and 3s. per dozen, 16s. and 20s. per 100.
GERANIUMS, Bedding, Bicolor varieties, 3s., 3s. 6d., and 4s. per dozen.
,, choice, for pot culture in summer or winter, twelve fine varieties, 4s. and 6s.
Our collection is second to none, including the best sorts from all raisers, home or foreign.
AGERATUMS and LOBELIAS, strong, and well hardened off from stores, 1s. per dozen, 5s. per 100.
,, ,, in pots, 2s. per dozen, 12s. per 100.
CALCEOLARIA, Golden Gem, 2s. per dozen.
DACTYLIS ELEGANTISSIMA, GOLDEN PYRETHRUM, SEDUMS of sorts, for Carpet Bedding, 1s. per dozen, 6s. per 100.
HELIOTROPES, COLEUS, TROPÆOLUMS, and SALVIAS, fine named sorts, 2s. per dozen, 12s. per 100.
ANTIRRHINUMS, PHLOXES, PANSIES, and PINKS, fine named sorts, 3s. per dozen; 12 of each, 48 in all, 1s.
ALTERNANTHERAS and IRESINES, of sorts, 2s. 6d. per dozen, 15s. per 100.
BEGONIAS, Tuberous, in great variety, 4s., 6s., 9s., and 12s. per dozen.
CENTAUREA RAGUSINA, 3s. 6d. per dozen.
CHRYSANTHEMUMS and FUCHSIAS in variety, 2s. 6d. per dozen, 15s. per 100
HERBACEOUS and ALPINE PLANTS, 12 in 12 sorts, 4s.; 50 in 50 sorts, 12s.
DELPHINIUM, fine sorts, to name, 6s. per dozen.
PANSIES and VIOLAS, for bedding, in great variety, 9s. per dozen, 12s. per 100.
PLANTS, Stove, in great variety, 6s., 9s., and 12s. per dozen, our selection.
,, Greenhouse, 6s., 9s., and 12s. per dozen, our selection.
FERNS, Stove or Greenhouse, 9s. and 12s. per dozen, our selection.
CATALOGUES post-free.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

HELLEBORUS NIGER, the Christmas Rose. This beautiful white flower, coming to perfection at Christmas time, is already much too little grown, being hitherto too scarce and dear. Millions of its fine blossoms should be ready for the markets in mid-winter, where only hundreds are now to be found, and would always prove the most profitable thing it is possible to grow. It requires no heat nor care. We are prepared to supply for immediate orders any quantity of fine roots at one-sixth the usual prices, and we believe that investment in them will prove the finest speculation possible. For terms apply to

HOOPER AND CO., Covent Garden, London, W.C.

To Nurserymen, Seedsmen, and Florists.
Copy from *London Gazette*, Feb. 27, 1880.

NOTICE is HEREBY GIVEN that the PARTNERSHIP heretofore subsisting between Joseph Rains, Marcus Rains, and Morris Isaacs, carrying on business as Dealers in Dutch Flower Roots and Bulbs, at 62, Tenter Street South, Goodman's Fields, Whitechapel, in the County of Middlesex, under the style or firm of M. ISAACS, RAINS AND CO., was DISSOLVED, by an order of the Chancery Division of Her Majesty's High Court of Justice, on November 27, 1879, as from that date.

MR. MORRIS ISAACS, for fourteen years the Senior Partner in the above late Firm, will for the future carry on the Business of IMPORTER of DUTCH FLOWER ROOTS, in PARTNERSHIP with his Son, Mr. LEWIS ISAACS, at their New Warehouse, 3, Victoria Warehouses, Mansell Street, Goodman's Fields, London, E.C.

Bennett's Pedigree Roses
Should be in every Collection.

GEORGE COOLING has pleasure in offering fine plants, coming into bloom, of these desirable varieties, viz. :—

Beauty of Stapleford	Jean Sisley
Duke of Connaught	Michael Saunders
Duchess of Connaught	Nancy Lee
Duchess of Westminster	Pearl
Honourable George Bancroft	Vicountess Falmouth

The complete Set, 25*s*, basket and packing free for cash with order.
New LIST of Roses in pots, Clematis, &c., post-free.
The Nurseries, Bath.

Valuable Plants, Carriage Paid.
New Mode of Packing.

PELARGONIUMS.—ZONAL, new and choice, 30*s*. per 100, 5*s*. per dozen.
GOLDEN TRICOLORS, in fine variety, 4*s*. per dozen.
SILVER TRICOLORS, in choice new sorts, 5*s*. per dozen.
Older varieties, 4*s*. per dozen.
SILVER-EDGED Fancy-flowering varieties, 4*s*. 6*d*. per dozen.
BRONZE, choice, in fine variety, 4*s*. per dozen.
DAHLIAS in all the best kinds, 3*s*. 6*d*. per dozen, or 21*s* per [100.
PHLOX, all the best, at 3*s*. 6*d*. per dozen.
TUBEROUS BEGONIAS, 5*s*. per dozen.
The above are all first-class varieties and true to name, for cash with order to
CHARLES BURLEY, Brentwood.

New Japanese Azalea.

AZALEA ROSÆFLORA.—This beautiful species, which is now offered for the first time, differs from every other Azalea in cultivation. The flowers in the bud resemble those of a miniature Tea Rose, whilst as they expand they regularly imbricate like those of a Camellia. These qualities, combined with the fact that it does not fall off, render it invaluable for coat flowers, bouquets, as well as for exhibition and general decorative purposes. It is compact and free in growth, and much branched; colour deep rosy-red.
First size, 6 inches high, some in flower, 10*s*. 6*d*.
Second size, 6 to 9 inches high, some in flower, 21*s*.
Third size, 1 foot high, many in flower, 31*s*. 6*d*.
WM. HUGH GOWER (Manager to the late Wm. Rollisson & Son), The Nurseries, Tooting, S.W.

Primulas — Primulas — Primulas.
Eleventh Year of Distribution.

WILLIAMS' superb strain, 1*s*. 6*d*. per dozen, 10*s*. per 100; package and carriage free.
CINERARIAS, choicest assortment, same size and price.
The above are quite equal to those I have sent out in previous years. Cash with order.
JOHN STEVENS, The Nurseries, Coventry.

Verbenas—50,000 Now Ready for Sale.

S. BIDE can now supply, as he has done on previous occasions, really good strong spring-struck Plants of Purple, Scarlet, White, and Pink VERBENAS, at 6*s*. per 100. Good Exhibition Varieties, 8*s*. per 100. IRESINE LINDENI, 6*s*. per 100. HELIOTROPE, 6*s*. per 100. COLEUS VERSCHAFFELTII, 8*s*. per 100. MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATA, 8*s*. per 100. Package free for cash with order.
Also strong healthy CUTTINGS of the above at half-price, free by post.
S. BIDE, Alma Nursery, Farnham, Surrey.

Uninjured by Frost.

EVERGREENS.—In splendid condition for safe removal; having been regularly transplanted and growing in a very exposed situation, are very hardy and robust, thus having withstood the past excessively severe winter without injury.
With reference to the hardy nature of the Trees and Plants reared in these Nurseries, a customer in Yorkshire writes:—
"*I am very well satisfied with the Roses you sent—the frost has not hurt them, whilst a lot I got from the South have suffered very much.*"
CATALOGUES on application.
JAS. DICKSON & SONS, "Newton" Nurseries, Chester.

TWELVE Beautiful and New CALADIUMS, 21*s*.; strong plants, about 1 foot high, in 4-inch pots, fit for 8-inch pots at once, selected from twenty finest and most distinct sorts, such as Beethoven, Belleymei, Albert Edward, &c.; carefully packed to travel any distance. Hamper and packing gratis and carriage paid to any railway station in England for cash with order. Dry roots (carriage free), 10*s*. 6*d*., 21*s*., and 42*s*. per dozen, according to size.
J. H. LEY, Royal Nursery, London Road, Croydon.

To the Seed Trade.

W. CROWDER has to offer to the Trade:—
SWEDE, Crowder's Improved Purple-Top.
,, Hartley's Short-Top.
TURNIP, Heanley's White Globe.
,, White Stone.
,, Crowder's Improved Green Globe.
,, Green-Top Yellow Scotch.
MANGEL WURZEL, Wroxton Orange Globe.
Price on application to
The Thimbleby Nurseries, Horncastle.

Alternantheras from Stores.

WM. BALCHIN begs to offer the following varieties:—Amœna, spathulata, versicolor, amabilis latifolia, magnifica, paronychioides; also LOBELIA BRIGHTON and MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATUM, 8*s*. per 100, or 70*s*. per 1000. MENTHA PULEGIUM and HELIOTROPES, 6*s*. per 100. Terms cash.
Hassock's Gate Nursery, Keymer, Sussex.

Verbenas—Verbenas—Verbenas.

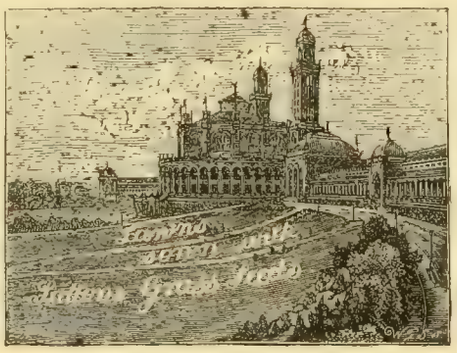
STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6*s*. per 100; 50*s*. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8*s*. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

FUCHSIAS, 100 nice young plants, in 12 splendid varieties, 8*s*.
HELIOTROPES, of sorts, 6*s*. per 100.
AGERATUM, Imperial Dwarf, strong young plants, 5*s*. per 100.
CALCEOLARIA, Golden Gem, 6*s*. per 100. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

JULES DE COCK, NURSERYMAN, Ghent, Belgium, offers to the Trade, PALMS, per 100, in store pots:—Areca rubra, 30*s*.; Bactris Binotii, 60*s*.; Chamærops excelsa and humilis, 8*s*.; Cocos insignis, 40*s*.; Cocos Weddelliana, 100*s*.; Corypha australis, 12*s*.; Geonoma Schottiana, 80*s*.; Latania borbonica, 10*s*.; Pandanus utilis, 20*s*.; Phœnix reclinata, 10*s*.; Phœnix tenuis, 10*s*.; Seaforthia elegans, 25*s*.; and Aralia Sieboldii, 6*s*. FERNS, in small pots:—Adiantum cuneatum, 30*s*.; Cibotium regale, 80*s*.; Lomaria gibba, 30*s*.; Nephrodium cristatum, 40*s*.; Pteris serrulata and cristata, 30*s*. PRIMULA, acaulis alba plena, luteo plena, lilacina plena, and Arthur Dumoulin, 100 strong plants, twenty-five of each sort, at 50*s*. ARUNDO DONAX, arg. var., twenty-five for 15*s*.

ADIANTUM FARLEYENSE.—Six beautiful large plants for 21*s*., very fine strong fronds from single crowns. Grown this way the pinnæ are double the size usually seen. All fine for immediate decoration, in 5-inch pots, £10 10*s*. per 100. Package gratis for cash with order.
J. H. LEY, Royal Nursery, Croydon.

SUTTON'S
LAWN GRASS SEED



PRODUCES

THE BEST LAWNS.

Price 1s. per pound; 20s. per bushel; Carriage free.

For full particulars see

SUTTON'S PAMPHLET
ON
Laying Down and Improving Lawns, &c.,
Gratis and post-free on application.

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

MATRICARIA INODORA PLENA
(NEW DOUBLE MAY-WEED).
Figured in *Gardeners' Chronicle* of December 13, 1879.
Will bear the severest winter without protection. If grown in a rich border it will flower in the greatest profusion from June till October, and the flowers, which are pure white, are equal to those of a Pompon Chrysanthemum. It is invaluable for cutting. 1*s*. 6*d*. each, 12*s*. per dozen, 75*s*. per 100. Engraving sent with three plants. The usual discount to the Trade.—Messrs. DICKSONS AND CO., 1, Waterloo Place, Edinburgh.

MEXICAN ORCHIDS, PALMS, TREE FERNS, &c.—The undersigned has for several years past collected Orchids, Arborescent Ferns, &c., for some of the largest European and United States Nurseries. He is prepared to furnish price LISTS upon application by mail. The best season for collecting Orchids is now at hand, and will terminate with the month of May. Large orders can be filled at very low rates for cash in advance, or upon satisfactory references.—HUGO FINCK, Cordoba, Mexico

Cheap **Orchids.**

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

FERNS.—100 Rare and Beautiful, 42*s*., or fifty at the same rate—pretty plants in small pots, to grow on for Winter Decoration or Cutting. Many varieties rarely to be met with except at 3*s*. 6*d*. or 5*s*. each, including Adiantum Farleyense, Pteris Leyii, &c. Packages gratis for cash with order.
JOHN H. LEY, Royal Nursery, Croydon.

ALTERNANTHERAS and other CARPET BEDDING PLANTS.
ALTERNANTHERA, amœna, 8*s*. per 100, 70*s*. per 1000.
,, amœna spectabile, 8*s*. per 100, 70*s*. per 1000.
,, magnifica, 8*s*. per 100, 70*s*. per 1000.
,, amabilis latifolia, 8*s*. per 100, 70*s*. per 1000.
,, paronychioides major, 8*s*. per 100, 70*s*. per 1000.
,, versicolor, 8*s*. per 100, 70*s*. per 1000.
,, spathulata, 8*s*. per 100, 70*s*. per 1000.
MESEMBRYANTHEMUM, cordifolium variegatum, 8*s*. per 100, 70*s*. per 1000.
COLEUS, Verschaffeltii, 8*s*. per 100, 70*s*. per 1000.
IRESINE, Lindeni, 8*s*. per 100, 70*s*. per 1000.
LEUCOPHYTON, Brownii, 8*s*. per 100, 70*s*. per 1000
HERNIARIA, glabra, 5*s*. per 100, 40*s*. per 1000.
LOBELIA, Brighton Gem, 5*s*. per 100, 40*s*. per 1000.
MENTHA, Pulegium gibraltaricum, 5*s*. per 100, 40*s*. per 1000.
All the above are well established plants. LIST of other kinds free on application. Liberal allowance to the Trade.
WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers the following Plants, of which he has a very large stock:—
VERBENAS—Purple, White, Scarlet, Pink, Crimson, well-rooted cuttings, clean and healthy. Best bedding sorts, 6*s*. per 100, 50*s*. per 1000; 100, in 12 choice sorts, 8*s*.; or in 25 sorts, 10*s*.
LOBELIA—Bluestone and pumila magnifica (true), from cuttings, 2*s*. 6*d*. per 100, 20*s*. per 1000, good stuff.
PELARGONIUMS—Vesuvius, Jean Sisley, and Lucius, 10*s*. per 100; Madame Vaucher and Virgo Marie, two best whites, 12*s*. per 100; Master Christine, best pink, 12*s*. per 100; White Vesuvius and New Life, 20*s*. per 100; Dr. Denny, nearest to blue, fine, 5*s*. per doz. Pelargoniums, in 12 best varieties, 5*s*. per doz., 30*s*. per 100.
,, TRICOLORS—Mrs. Pollock, 2*s*. 6*d*. per doz., 18*s*. per 100; Sir R. Napier and Sophie Dumaresque, 3*s*. per doz., 20*s*. per 100.
,, SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 12*s*. per 100; Princess Alexandra and Prince Silverwings, 15*s*. per 100.
,, GOLD-LEAVED Crystal Palace Gem, 12*s*. per 100 Happy Thought, 15*s*. per 100.
,, DOUBLE—Smith's Wonderful (scarlet), Madame Thibaut (best pink), 12*s*. per 100; Madame Amelia Baltet, very fine white (the best), 20*s*. per 100.
,, BRONZE—Maréchal McMahon, the best for bedding, 18*s* per 100.
CALCEOLARIA—Golden Gem, rooted cuttings, 5*s*. per 100, 50*s*. per 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, 6*s*. per 100, 50*s*. per 1000.
AGERATUM—Imperial Dwarf and Duchess of Edinburgh 5*s*. per 100, 40*s*. per 1000.
TROPÆOLUM—Mrs. Treadwell and Vesuvius, the best scarlets, 10*s*. per 100.
Packing included. Terms cash.
Cemetery Nursery, Gravesend.

Gloxinias.

TWELVE GLOXINIAS (new and beautiful), 12*s*., selected from sixty of the finest novelties of the last three years. Fine bulbs to produce plenty of flowers in two months if potted at once. A few extra strong, 21*s*. per dozen. One-year-old small bulbs, 6*s*. per dozen. All carriage paid.
JOHN H. LEY, Royal Nursery, Croydon.

Special Cheap Offer of Good Plants.
All for Exhibition or Garden Decoration, and fine named varieties of our selection.

PANSIES, PINKS, PHLOXES and DAHLIAS, 3*s*. per dozen, 20*s*. per 100, or 12 of each for 11*s*.
CHRYSANTHEMUMS, FUCHSIAS, COLEUS, SALVIAS, 2*s*. 6*d*. per dozen, 15*s*. per 100, or 12 of each for 9*s*.
LOBELIAS and AGERATUMS, best sorts, from store-pots, 1*s*. per dozen, 4*s*. per 100.
CATALOGUES of all Indoor and Outdoor Plants for the largest or smallest Gardens, Conservatories, &c. Very comprehensive. Prices very reasonable. Plants true to name.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

To the Trade,
HOME-GROWN TURNIP SEEDS.

H. AND F. SHARPE invite the attention of the Trade to their fine selected Stocks of TURNIP SEEDS, which comprise, amongst others, the following excellent varieties, viz.:—

Sharpe's Improved Large Swede	Sutton's Mammoth Purple-top
Sharpe's West Norfolk Swede	Devonshire Grey Stone
Sutton's Champion Swede	Pomeranian White Globe
East Lothian Swede	Lincolnshire Red Round
Green-top Yellow Aberdeen	Stratton Green Round
Golden Yellow Aberdeen	White Stone or Stubble

The quality is very fine, and the prices will be found very advantageous to purchasers. For further particulars apply to
Seed Growing Establishment, Wisbech.

VIOLAS, 20,000 fine strong plants:—
,, cornuta, white } 5*s*. per 100, 45*s*. per 1000.
,, Queen of Blues, }
LOBELIA, Emperor William, strong autumn-struck, from stores, 2*s*. 6*d*. per 100, 20*s*. per 1000; from single pots, 5*s*. per 100, 45*s*. per 1000.
Cash only. Carriage and package free.
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TWELVE, Graceful, 21*s*.; strong healthy plants, fit to pot on at once into 5-inch pots, of Cocos Weddelliana, Euterpe, Areca lutescens, A. rubra, Corypha, Latania, Seaforthia, Chamærops, &c., usually sold at 3*s*. 6*d*. and 5*s*. each. Double size, for immediate decoration, 1½ to 2 feet high, 42*s*. and 63*s*. per dozen. Package gratis for cash with order.
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FROM what and how I am saving my new SEEDS of PRIMULAS, CINERARIAS, and CYCLAMENS.

No possible mistake or doubt as to its being the best.

CINERARIA, choicest of the choice ..	per packet	2s. 6d.
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LILACINA (white suffused with purple)	per packet,	2s. 6d.
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Is a great Preventive of the Potato Disease.

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Write for our NEW PAMPHLET, post-free.

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One teaspoonful of the Florvita to each gallon of water. The plants should be watered with it at the roots two or three times a week or more.

WATER YOUR PLANTS WITH

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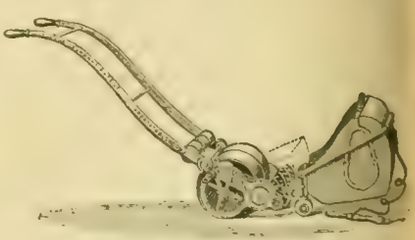

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The coloration of the foliage is varied and striking. The younger leaves are rosy-crimson, suffused with scarlet and edged with golden-yellow. In the older leaves the crimson is deeper and shaded with blackish-maroon, and the gold edging is changed to a bright green.

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Both of these varieties are pure white, of great substance, free and continuous bloomers.
Will be very valuable for Cut Flowers.
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ALBA PERFECTA.—Pure white flowers, very dwarf and free flowering. Will prove one of the very best white bedders, as the flowers have no shade of pink in them.
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The above three semi-doubles are very distinct, and quite new in colour, and will be invaluable to cut from—in fact, would make a lovely bouquet by themselves.

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ONE PLANT of EACH, PACKAGE or POST-FREE, for 12s. 6d.

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Over those of all other Makers is universally acknowledged.

They will Cut
Either Short or Long Grass, Bents, &c., Wet or Dry.

These advantages no other Lawn Mowers possess.

They have been in constant use for upwards of twenty years in

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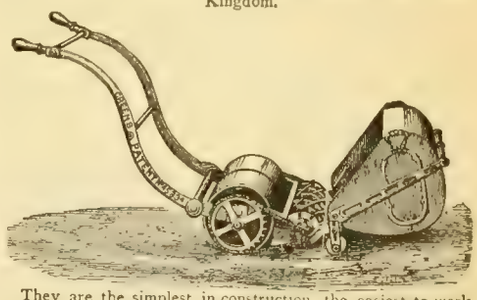
And in most of the Principal Parks and Squares in the United Kingdom.



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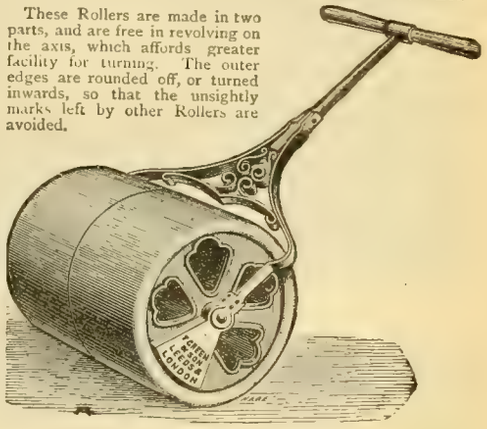

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Having recently purchased a quantity of SPECIMEN ORCHIDS from several Collections has them now on view at Meadowbank, where he will be happy to show to intending Purchasers.

There is also a quantity to offer of *Established Plants of the Best Varieties of Species*, comprising VANDAS, AERIDES, SACCOLABIUMS, CATTLEYAS, LÆLIAS, DENDROBIUMS, ODONTOGLOSSUMS, ONCIDIUMS, MASDEVALLIAS, &c., the principal of which are described in CATALOGUES about to be issued, and which will be sent to Applicants.

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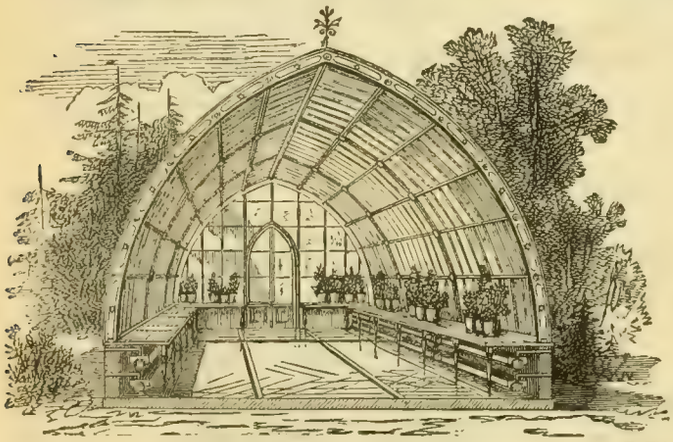

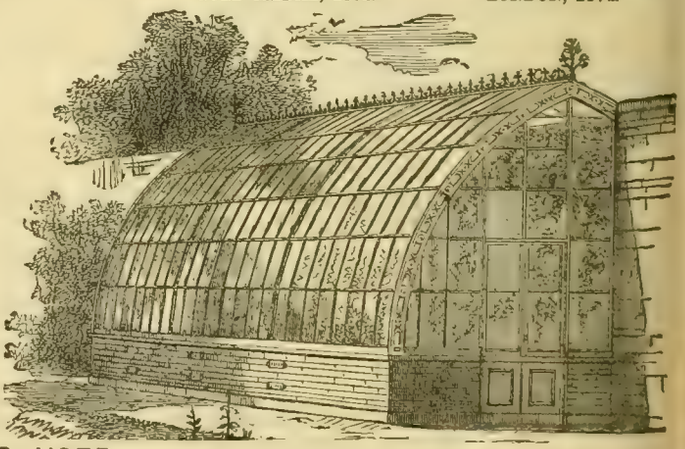

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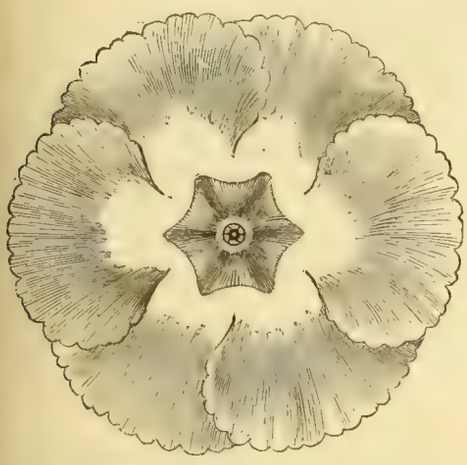

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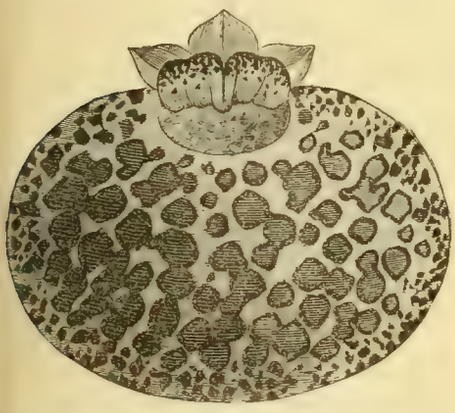
"The Primulas from your seed I have never seen equalled.—Mr. A. BIRT, *Rodborough.*



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THE

Gardeners' Chronicle.

SATURDAY, MAY 15, 1880.

BOTANICAL GARDENS.*

FROM the beginning Botany has always been a thoroughly practical science. It is my object to-night to show to you that it is as true to its traditions to-day as it was three centuries ago. All that we ask as scientific men is free scope for using the organisation which is a necessity of any intelligent attempt to turn the resources of the vegetable kingdom to account, for purely scientific as well as for useful and commercial ends. Our aim is to make this organisation do a double duty, and I hope that I shall succeed in satisfying you, whether as administrators or as merely practical men, that in botanical pursuits such a combination of interests, while it adds enormously to the scope of scientific activity, is also of the greatest service to the community from a merely material point of view.

As my object in this paper is not so much to give a history of the work which Kew has done as to describe the position which it occupies in an extensive system, I shall not occupy your attention with an enumeration of the successes which Kew has met with in plant distribution in various parts of the world. I may, however, say that besides the regular routine system, occasionally larger operations are undertaken in connection with plants of special importance. I must not pass over without notice in this connection what has been done in such matters as Cinchona, Caoutchouc, Liberian Coffee, &c. With regard to the first, I may quote a paragraph from Sir William Hooker's report for the year 1861:—Upon the Royal gardens devolved the duties of receiving and transmitting the seeds and plants to India, of raising a large crop of seedlings, of nursing the young stock, lest those sent on should perish or the seeds lose their vitality, and of recommending competent gardeners to take charge of the living plants from their native forests to the hill country of India, and to have the care of the new plantations there. Further, with the sanction of the Indian and Colonial Governments, it was arranged that our West Indian Colonies and Ceylon should be supplied with a portion of the seeds. Of the success of Cinchona in India and Ceylon it is not necessary to speak. In Jamaica the sales of bark from the Government plantations will this year reach £5000, and some of the consignments have fetched the highest price in the London market. In Trinidad, on the other hand, where the enterprise at first promised well, nothing seems to have come of it; while in St. Helena, which by this time Cinchona

* The extracts above given are taken from a very comprehensive address delivered by Mr. W. T. Thiselton Dyer before the Royal Colonial Institute on the 11th inst. The main purport of the lecture was to make more generally known the scope and object of what was termed "The Botanical Enterprise of the Empire." To this end a general review of the work done at Kew, as the central establishment, of which the Colonial gardens are, as it were, the branches, was given. At the risk of breaking the continuity of the history, we have been obliged to omit much relating to Kew for the sake of inserting the much less well known details relating to the several Indian and Colonial gardens.

planting might have restored to prosperity, the Cinchona plants sent out from Kew have merely grown into trees, unseen and uncared for, and choked with vegetation. They have obstinately persisted in living, notwithstanding the determined protestations to the contrary of the colonists, who prefer to occupy themselves with New Zealand Flax. While India owes of course to its own Government the initiation and the payment of the cost of the measures taken at Kew for the introduction of Cinchona into that country, it is entirely to Kew that must be given the credit of early and successfully introducing it into Ceylon and Jamaica.

An essential feature in any botanical establishment such as Kew is a herbarium and library. The object of the former deserves a few words of explanation. It is of course obvious that in dealing for industrial purposes with any particular kind of plant or any useful vegetable production, it is very important that there should be no ambiguity about its identity. This seems such a truism as to be hardly worth mentioning. But as an actual fact it is far easier to fall into error in the matter than might be supposed. The commencement of the great Tea industry of India actually hung for some years in suspense in consequence of a fierce controversy as to whether the indigenous Tea plant of Assam was or was not identical with that of China. And it is well known that the Dutch introduced at great cost into Java a worthless species of Cinchona (C. Pahudiana), the cultivation of which they had eventually to abandon.

It is, therefore, of great consequence to have some central standard of reference, by means of which doubtful points can be cleared up. It might be supposed that this could be done by consulting books, and if our knowledge of the earth's vegetation were more complete than it is, a great deal could be done in this way. But in practice at the present time this is not always possible. As I have remarked on another occasion, "It is not always easy in foreign countries for even botanists to correctly name their plants, and it requires the resources of a central establishment, such as we possess in Kew, to accomplish this with any certainty, more especially if the material to work upon is, as is too often the case, fragmentary."

Colonial Botanic Gardens.

I shall now ask your attention to a very rapid sketch of the principal external seats of the botanical work of the empire. The first and foremost of these is, of course, India; and even a paper wholly devoted to this part of my subject would do it but the scantiest justice. I must mention, in the first place, the Forest Department, and which is a model of thorough and efficient organisation, well adapted to the purely business aspects of forest administration, and at the same time, under its present distinguished head, thoroughly scientific in character. Some of our most accomplished Indian botanists have worked in its ranks. Cleghorn, Dalzell, Kurz, Stewart, Beddome, Mann, and Gamble, are names of which the botanical service of any country might be proud.

Calcutta.

The Calcutta Botanic Garden, which should be the headquarters of botany in India, has somewhat lost ground in becoming little more than the botanical department of the Bengal Presidency, and the superintendent is pretty well overwhelmed with purely local duties, including taking part in Calcutta medical education, managing the Sikkim Cinchona plantations, and even selling as well as fabricating the Government febrifuge. I do not mean it to be inferred that I deprecate or think lightly of any part of these most important duties; but they absorb the attention of Dr. King, to the complete exclusion of any time or indeed official scope for those larger functions of botanical adviser to the Government of India, of the need of which we are continually sensible at Kew. At Calcutta are deposited the chief herbarium and botanical library for the whole of India; I believe at this present time there is no subordinate European officer in charge of either. This should be the seat, however, of a botanical intelligence department, where an officer possessed of business capacity and scientific qualifications, and with proper assistants, should study the botanical capacities and needs of different parts of India, and lay down a policy by which they might be developed and supplied.

Saharunpore.

At present, besides the Calcutta Botanic Garden, there are two other important establishments, as well as minor ones, with which Kew corresponds. On the North-west Provinces, the important garden at Saharunpore, with its dependencies, is under the superintendence of an able botanist, Mr. Duthie, who was selected by the authorities of Kew for the post. And to show you what important functions such an institution can perform, I will quote from the review by Mr. Buck, the Director of Agriculture and Commerce, of the condition of the garden on the retirement of Dr. Jameson, Mr. Duthie's predecessor:—"Through his position in charge of the gardens, Dr. Jameson was enabled to develope what has proved to be the most successful and remunerative enterprise which has been carried out in India under the British Government, viz., the cultivation of Tea. The wealth acquired by India, through Dr. Jameson's efforts in the development of the Tea industry, has repaid Government over and over again for any outlay which has been expended on these botanical gardens." This splendid achievement, which I think will be only paralleled by the success which will accrue to the Sikkim Cinchona enterprise, associated with the Calcutta Botanic Garden and with which the name of Dr. King will doubtless be similarly connected, did not prevent Dr. Jameson's developing the usefulness of the Saharunpore Garden in other directions. He founded and maintained a museum, "one of the finest rooms to be met with in Upper India," and with contents the excellence of which is not unworthy of it, and which have supplied the materials for several useful publications. He also accumulated an important herbarium, which his successor has done much to reduce to working order. It is to be hoped that this herbarium will be limited as far as possible to the representation of the local flora of North-west India, and will not be allowed to compete with the Calcutta herbarium, which should always be the chief establishment of the sort in India.

Almost any kind of fruit trees can be raised at the Saharunpore gardens, and there are to be seen three "rows of Plum trees bearing magnificent crops of fruit, though they had received but little special treatment." Kew has for years past regularly corresponded with them. When possessing but four Ipecacuanha plants it gave two of them to Dr. Jameson, who successfully accomplished the difficult feat of conveying them from Kew to Saharunpore.

The Agri-Horticultural Societies, etc.

The garden of the Agri-Horticultural Society at Madras, though only partially subsidised by Government, accomplishes much excellent work, and maintains an active correspondence with Kew, to which its monthly publications afford much extremely valuable information. This garden is "the only place of its kind on the plains of Southern India."

The Agri-Horticultural Society of India, the seat of which is at Calcutta, also publishes excellent papers, and notices, but in so far as these are of a scientific kind, they appear to me to somewhat compete with the functions of the Calcutta Botanic Garden, and with what should be the Indian Botanical Department. Besides these there are numerous other similar bodies scattered throughout India, as well as gardens and model farms, at all of which some amount of botanical work is prosecuted. Time would not permit of my attempting a general view of the combined operations of all these, even if I had the materials for the purpose. The Forest Department is also organising a system of forest gardens, which doubtless, especially in the more outlying territories of India, will be of great usefulness. But what, I must repeat, is particularly apparent, especially from the correspondence which reaches us at Kew, is the want of co-ordination between the different fragments of a great machine, and the absolute ignorance of the plants that have been introduced and the work that is being done in different parts of India amongst the official residents there. This may be a necessary incident of a decentralised system of government, but from the point of view of scientific and economic enterprise, it involves a conspicuous waste of energy and resources.

(*To be continued.*)

New Garden Plants.

Eria merguensis, *Lindl.*

Once more a scarcely known old Orchid appears in England through Mr. Low's enterprising zeal. It is no grand thing, but is a lovely little gem, collected hitherto only by Griffith, Lobb, and the Rev. C. Parish. Bulbs clavate, 2 inches high, half an inch in greatest breadth. Leaves two, parchmenty, ligulate, blunt and unequal at apex. The peduncle is clothed with white short hairs. Raceme very dense, flowers to all sides, light sulphur-coloured at beginning of expansion inside, later more ochroleucous. The Rev. C. Parish has observed some brownish-purple zone around the disk of the lip. This I do not see in Mr. Low's fresh plant. It may not always be the case. The oblique calli over the sinuses of the lip are deeper sulphur-coloured. The flowers are woolly outside. Dr. Lindley's diagnosis is excellent. I have only to urge that the learned author says the hairiness is grey ("spicis lateralibus elongatis griseo tomentosis"). This may be the consequence of specimens having been much advanced when collected (as those of Dr. Griffith were decidedly), or to the specimens having been kept long and submitted to unavoidable London dust, or, as I suspect, in consequence of the specimens having been washed with a certain concentration of solution of corrosive mercury. I have the strong belief of having seen some such changes in the colours of hairs. Mr. Low was so kind as to send a very good specimen.

Dr. Lindley takes as next neighbour Eria stricta, Lindl., an elegant species, with one-sided woolly inflorescence, which I have twice recently received from Dublin—first from Mr. F. W. Burbidge, and then from Mr. Moore. *H. G. Rchb. f.*

Chysis Sedeni, *n. hybr.* (Limminghii × bractescens).

This is a curious thing. It bore an upright two-flowered pedicle, with flowers much like those of bractescens, generally white, but with smaller bracts, though those organs are larger than in C. Limminghii. The petals have a few mauve streaks at apex. The lip is light ochre-coloured to white with keels on the disk, downy at the base, just as in C. Limminghii: the side laciniæ with elevated purple or stronger yellow keels inside; the middle lacinia painted with mauve-coloured streaks. The column is purple, rather rhomboid, light ochre-coloured with red streaks and lines in front. Thus the lip is of Chysis Limminghii, though the colour is that of C. bractescens. This is one of the numerous products of Mr. Seden's skill, in whose honour it is named at Mr. Harry Veitch's hint (March 15). Mr. Harry Veitch wrote "The mother is C. Limminghii; habit of plant much more like that of this species than like that of C. bractescens. The bulb from which the blooming growth is produced is 6 inches long." *H. G. Rchb. f.*

Dendrobium scabrilingue, *Lindl.* (hedyosmum, *Bat.*)

This plant is an old favourite with amateurs, not so much for its form as for its perfuming the air in a most delightful manner. Its ivory-white flowers show a lip with a yellow middle area, and red asperulous veins on the lateral segments. It was sent over in 1862 by the excellent Rev. C. Parish, from Moulmein, to Mr. Stewart Low, under the name of Dendrobium alboviride—a name given because the flowers when expanding have this tint, which soon gives way to the above-mentioned colours. The name was, therefore, altered by Mr. Bateman, and this gentleman expressed (Hook., *Bot. Mag.* 5515) his hopes that the change would be approved by Mr. Parish himself. As to this delicate point I do not feel quite clear, the more so as I never spoke of it with the gallant explorer of Burmah; but what I know is, that the species was described earlier by Dr. Lindley himself as Dendrobium scabrilingue. The description is Lindleyan, short and acute, but the indication of Borneo as its origin may be founded on a mistake. Thomas Lobb, the dear old veteran, was the discoverer of the species; and having travelled both in Burmah and Borneo, a confusion may have originated in some way (see Lindl., *Journ. Linn. Soc.* iii. 15). Fresh flowers and plants were kindly sent me lately by Messrs Low. *H. G. Rchb. f.*

CARPET BEDDING.

Amongst the admirable examples of carpet bedding carried out by Mr. William Gibson in the Royal Hospital Gardens, Chelsea, last season, none were more effective that the bed of which we now give a plan and cross section, fig. 105. The outer margin, A, was composed of Echeveria secunda glauca filled in with Sedum glaucum. The lines B were planted with Pyrethrum Golden Feather; the spaces marked C with Alternanthera amœna, and D Mentha Pulegium gibraltaricum; the dot plants at E being Chamæpeuce diacantha carpeted with Sedum glaucum.

MORE LIGHT.

This has ever been the cry of the gentle art. Like the dying Goëthe when about to exchange the light of this world for that of the next, its cry has ever been for light—more light. The four elements of the ancients—earth, air, fire, and water—the originators of force, the semi-creators of matter, have been available for our use. We could use, reject, weaken, or intensify their energy at pleasure; but light was a limited quantity, varying with our geographical position, and its volume or energy was almost or altogether beyond the power of man. The qualifying words are used advisedly, for light could be intensified and virtually increased by mechanical construction and the application of the natural laws of refraction and reflection. It has long been known that the energy of the light brought to bear on the plants in a house is much modified by the angle it presents to the rays of the sun. Attempts have also been made to concentrate as much light as possible into a given area, and to use this light at second-hand for horticultural purposes. When a boy I remember seeing a large tin reflector that had been used at Methven Castle, in Perthshire, for augmenting or intensifying the solar light on a Pine-stove. It was out of repair at the time I saw it, but it had revolved on an axis so as to collect as many rays of the sun as possible at every hour of the day, and to bring them to bear on a Pine-stove. If I remember rightly a Mr. Bisset was gardener at the time this contrivance was in use, and if he, or any one who lived at the time of the solar reflector is now alive, a detailed account of it could hardly fail to be of interest. No doubt it would be possible to thus increase, to a great extent, the intensity of solar light, and could some simple means be adopted for this purpose during the late autumn, winter, or early spring, considerable benefit might be derived from the use of reflectors. But unfortunately, just when light is most needed for the early forcing of flowers, or ripening of fruits, there is the least amount of solar light to reflect; and as the summer advances solar light is sufficiently powerful, without being intensified by concentration or reflection.

The light wants of horticulture may be summed up in a sentence thus: light for a longer period than the sun gives us in our climate—an artificial light almost equal to that of the sun when he is weak or absent. All previous attempts to provide these dual wants have hitherto failed. It must, however, be admitted that the most has never been made of gas nor of mineral oils for horticultural purposes. Not till these and other illuminating agents have been thrown on the defensive by the electric light, have we, by the aid of new burners, been able to consume nearly all the combustible elements in these and other illuminating materials. The result is a luminous flame with hardly any darkness or opacity in it, and were these flames brought to bear properly on vegetation, it is probable that very beneficial effects might be obtained. A very powerful heat is also given out by these improved burners. Of course the more complete the combustion the greater the warmth. And it is probable that, even apart from the use of the coming light for horticultural purposes, electricity, lighting, and heating may be more closely related in horticulture in the future than they have been in the past. Why should all our heat be generated in dark, dirty stokeholes — cribbed, cabined, and confined in boilers or hot-water pipes—married to and fettered by sluggish wasteful water, while twenty lamps in the house itself or reflected upon its roof, would probably yield as much or more heat at less cost, and make the plant-houses almost as light as day into the bargain. But then the dry air, the gaseous products of combustion, the dangerous excitement of the plants, all would prove injurious or fatal. Why should not all these evils be avoided or so modified by science as to become in practice helps instead of hindrances? Take the last, for example: what do we really know about the over-excitement of plants under the influence of intense light? The example of the tropics seems to prove that the more excitement the better. The plants make short work in these regions from the start to the finish; nay more, unless arrested by drought or cold, few of them ever finish growing, flowering, or fruiting. Like Tennyson's brook they flow on and on for ever, and seem to thrive and grow into an ever-verdant condition under this species of vital perpetual motion. Even the rest of plants at night or in the dark is more of a myth than a fact. We keep them cooler at night than by day to prevent their too rapid extension in the dark; because of course rapid growth in the absence of the great plant builder and preparer of building materials, light, leads to depletion. But provide the necessary link or agent, light, and there seems no need for any cessation of growth. Artificial light will, therefore, become the greatest time-saver in horticulture. Horticulture already leads rather than lags behind in the race against time. The want of more and brighter artificial light, however, has hitherto handicapped her heavily; we therefore hail the electric and other pure lights as among the chief things needed to enable horticulture to consummate her triumphs by ripening two or even three crops a year instead of one. Seeds, plants, are virtually infinite in number. Time to the longest-lived is but short; time is, therefore, not only money, but additional pleasure and innocent luxury to millions; and if the electric light will give us double crops it will largely augment our national wealth, and greatly enhance human happiness. And if it should not accomplish so much, it may help us to turn winter into spring and summer with more certainty and ease. The experiments already made by Dr. Siemens, and described in your pages, are full of promise, and as the spectrum formed by the electric light is identical with the solar spectrum, there can hardly be a reasonable doubt but that its effects, if used of sufficient intensity and continued long enough, will prove almost identical. The successful experiments of Dr. Siemens and his able gardener, Mr. Buchanan (see pp. 404 and 432), have settled this point. Like solar, the electric light enables plants to build up structure, causes extension of parts without weakness, and enables them to transform crude sap into finished products. The saving of time will also probably be in the ratio of the energy of the light employed. Even the question of cost is well nigh solved. By what other force or energy would it be possible to obtain 1400 candlelight for 4*d*. or 6*d*. an hour? Considering also that the two great sources of the artificial production of electricity for lighting purposes are chemical combination and magnetic induction, the

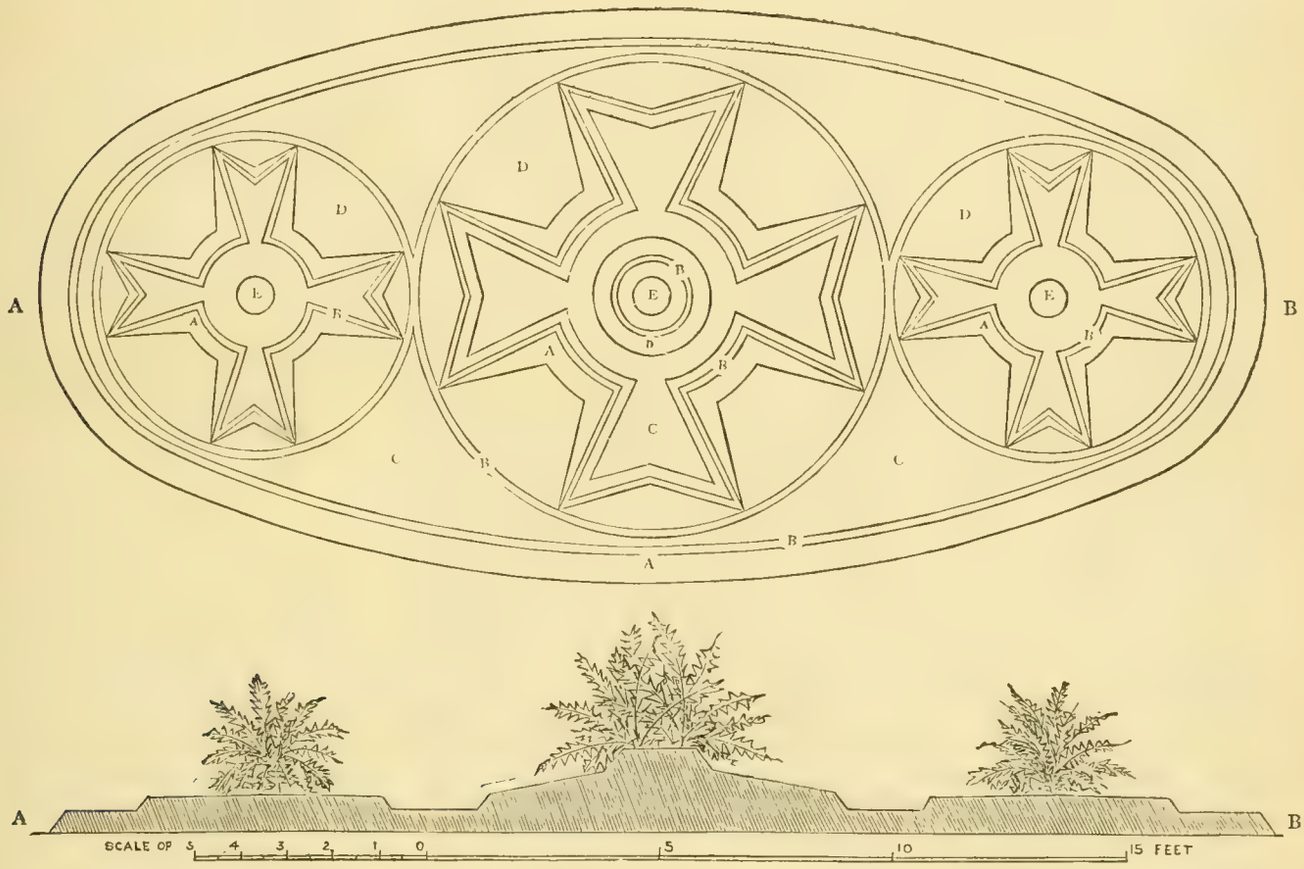

Fig. 105.—Plan of Carpet-beds at Chelsea. (see p. 616.)

cost of the production is likely to be still further lowered as discovery advances, and the application of electricity to horticultural and other purposes becomes better understood.

You have already remarked that the substitution of water for steam power or gas engines would lower the cost of production. In hundreds of gardens the wasted force of running water in rivers and rivulets might be utilised in the production of any amount of electrical force for illuminating purposes. Large forcing establishments might also be built on the banks of streams and rivers, and the force of natural waterfalls be utilised for horticultural purposes. Why, to say nothing about the greater falls, such as Niagara, &c., the falls of the Clyde alone would have sufficient force to light with electricity any number of flower or fruit factories between Lanark and Hamilton, in Clydesdale. The driving force of the wind, if more erratic in its motion, is everywhere available. True, it might not always be forthcoming when wanted, but then electric light is not always needed, and the winter and springs months are among the most windy in the whole year. And surely it will pay horticulturists to copy the example of the miller, who sets up steam engines to rest in peace while the wind continues to turn the sails, steam only doing the work of wind when the latter ceases to blow.

Besides these natural forces, there are artificial ones in most gardens, that a little constructive skill might convert to the service of electric lighting. For example, there is the draught up the chimney, which represents a very powerful driving force, that is now wholly wasted. If the draught in one kitchen chimney suffices to turn the spits that roast the joints of which we are so justly proud, surely the far stronger draughts in our furnace chimneys might afford sufficient mechanical power to furnish us with a portion at least of the electricity for horticultural lighting.

Again, a portion of our boiler force might surely be diverted to lighting purposes. Mechanical skill might even turn a portion of the energy of the circulation of our hot-water apparatuses to account in the production of electrical force. But if this were found impracticable, a portion of the boiler could be portioned off for this purpose. The terminal end, for example, at the mouth of the flue, could be devoted to the generation of electrical force and furnished with independent flow and return to act with sufficient energy for this purpose. This would add a new link to the chain of correlated force you so well describe at p. 432, viz., the diversion, or rather utilisation of force already in use in gardens for electrical purposes. True all this might be transitional, as it is quite possible that in the future our hothouses might be heated as well as lighted by electricity. Well, in that case, we have only to fall back on gas or common steam-engines for the production of our light and heat, and from the experiments already made it seems probable that horticultural structures may ultimately be warmed as well as lighted by electricity, gas, or even minerals oils, at less cost than that at which they are now very imperfectly warmed. For the present, however, we must look on electricity as an illuminating rather than a warming force. All other practical matters, such as the best distance of the electric light from the plants, the most perfect means of equally diffusing it over the area of an entire house, and the cheapest means of generating and adjusting the chemical or mechanical force needed to give it steadiness and uniformity of energy, may safely be left to the skill and energy of the many eminent scientists and mechanical inventors who are now engaged in perfecting the electric light for utilitarian purposes. As a horticulturist always on the outlook for more light, intellectual, moral, special, and general, allow me to express my pleasure at the advent of this new light within the domain of practical horticulture, as I firmly believe its sterling utility and solid advantages in this new sphere will ultimately overshadow and eclipse, as it were, its dazzling brilliancy, and semi-solar energy. A new sun has indeed arisen in our gardens, and though it may not arise in the East just yet, I hail with great gladness the brightness of its rising, as it will doubtless crown our useful and gentle art with richer plenty and higher beauty, and bring more light as well as sweetness to my brother workers, who have all along toiled hard through the darkness and semi-twilight of our winters and springs to reach that perfection in forced fruits, flowers, vegetables, and plants, which the new light will soon enable us to attain with ease. May our inventors and employers speed its dawning, so that should we, in direct contradiction to general anticipation, have another sunless summer, we may be able to supplement the paucity of the sunlight by electrical lamps this autumn to the ripening of our wood, in the plumping up of our fruit-buds, so that our fruit baskets may at last be filled in 1881. *D. T. Fish.*

KIDNEY BEANS.

(*Concluded from p.* 554.)

The Runner Beans are much larger in the seed than the dwarf varieties, and also of much stronger growth. The species of Runner Bean is regarded as Phaseolus multiflorus, and the varieties of it which we cultivate in our gardens are distinguished by the seedlings, leaving their cotyledons underground, in being of a perennial nature if protected from cold, and by the racemes of flowers being as long or longer than the leaves, while those of the others are generally much shorter.

The Scarlet Runner is the leading market Bean among the runners, and it is largely grown in many of the market gardens contiguous to London's rich and famous town. When grown for market the Scarlet Runner is very seldom poled, as in private gardens; but the leading shoot is pinched out after the plants have attained a certain height; this causes them to put forth lateral growth, which keeps the plants in longer bearing than when allowed to climb about supports. The Painted Lady is quite a distinct Bean from this, and being decidedly earlier is of more value in the market than the Scarlet Runner. In the West of England, where early vegetables are produced in great quantity, the Painted Lady Runner is largely grown, for the market gardeners there are fully alive to its value. The Bristol markets receive great quantities of this Bean. The Eclipse and New Zealand Runner Beans did not prove successes in this country, though some gardeners think very highly of them. The former came from Germany, the latter from France. The Dutch Runner, a white Bean, known also as the Giant White Runner, finds much favour with many, who regard it as a more abundant bearer and as superior to either the Scarlet or Painted Lady Runners in quality. Some of the London market gardeners are beginning to grow this Bean largely, and find it a productive variety. The German-grown seeds of this Bean are much smaller than those of English growth, though the same. Probably the best part of the seed is imported from Germany; one of our leading wholesale houses gets through some 500 bushels in a season.

A large number of Beans are grown in England, though many are imported from abroad, *i.e.*, France, Germany, Holland, &c. The great Bean-producing county in this country is Essex; in fact, it is the only county where they are grown to any large extent. The seedsmen make contracts with the growers, as in the case of Peas, sending out their own seed, and receiving back the produce at so much per quarter. When received from the seed farms they are sifted and picked over in the same way as Peas. It sometimes happens that a leading seed firm will have from 100 to 200 acres of Beans, and in a good season this quantity of land will produce from 2000 to 3000 bushels. But as Beans are a precarious crop in a bad season, such as that of 1879, when 100 acres did not return half the quantity of seed sent to be sown, it is necessary, as a precautionary measure, to have contracts with growers of Beans in France, Germany, and Italy. Beans are largely grown in America, but the dwarf varieties are very liable to run (much more so than those grown in Europe), and the seed houses buy from our Transatlantic brethren only when absolutely necessary to do so. The Dutch have produced a rather larger seeded Scarlet Runner than of English growth, but it has no other advantage. Scarlet Runners are largely grown in Germany and Austria. It can be stated as an ascertained fact that Beans of foreign growth retain their vitality longer than those of home growth.

In this country only the miniature pod of the Beans is used as a legume. The ripe seeds known by the name of Haricots are prepared in various ways as a favourite edible in France, where the dwarf white Kidney Bean is extensively cultivated as a field crop to furnish a supply of these seeds, which are in so constant demand. As a farinaceous seed for the food of man the Kidney Bean is considered by the French as being far superior to any other legumes, and next to, if not of equal importance, with Wheat. The seeds of the Dutch Runners, which are larger than the Haricots of the French, and of a superior quality, are made into a kind of soup, which is held in much esteem in Holland. The leaves likewise of the Kidney Bean afford, when boiled, a culinary vegetable which the Nubians consider an excellent esculent. In this country, however, notwithstanding that many of the earlier varieties might be grown to advantage on light, early soils, their culture has hitherto been scarcely extended beyond the gardens of the opulent; and even there Kidney Beans occupy but a small breadth comparatively, the pods being used in a green state when half grown. The humbler classes are cultivating them rather more than they did a few years ago; but, with the exception of the Scarlet Runners, but few Kidney Beans are cultivated by them.

How different it is in France, and other countries of Europe, as also in the Canadas and United States of America, and elsewhere, for in these Kidney Beans are not only used in a green state, to a much greater extent than in this country, but are cultivated in the fields and by every cottager who possesses a piece of garden ground, for their ripe seeds, of which they make various kinds of dishes, and consider them of as much importance in their domestic economy as the cottagers in this country do Potatos. Unlike the common Longpod and Windsor Beans, the kidney varieties do best in a light, sharp, and rather dry soil of medium fertility, and the produce, per acre, even of some of the dwarf varieties, is often more than double that of any other cultivated legume.

Some varieties of the Kidney Bean are found in cultivation throughout almost every civilised country of the western as well as the eastern hemisphere. The small black Beans, called *fricollis*, which are in general demand all over Mexico, are in all probability a kind of Kidney Bean. Travellers in that country relate that immense fields of these are under cultivation for the supply of the large cities, where they form a part of every meal, and are not only in great favour with the inhabitants, but are considered excellent even by strangers. *R. D.*

THE TRENTHAM YOUNG GARDENERS' MUTUAL IMPROVEMENT SOCIETY.

We are always pleased to hear of the success of the mutual instruction associations formed by the *employés* in private garden establishments. When well conducted, their tendency is altogether for good; their influences are indeed beneficial in many ways, apart from the direct professional advantage that must be derived by some or all of the members whenever a professional subject is broached and discussed. Young men (not young gardeners only), when freed from restraint, are often led innocently to spend their leisure hours in pursuits which by-and-by draw them into vicious habits, and the discipline of necessary attendance at such home meetings as these once or twice a week acts in all such cases as a salutary counterpoise. There is besides so much to be learnt before a young gardener can be considered well informed in the practice of his art that every moment which can be devoted to this object is a clear gain, and the information to be picked up by this interchange of information will go far to fill in the blanks in the experience of each individual, and thus help to prepare him for occupying the advanced position to which each one naturally looks forward. On this point our advice would be that at least the paper prepared on the subject for discussion should be confined to a statement of the writer's own experience, and should avoid theory, of which he is not likely to know much that is useful. Any one present qualified to do so might advantageously turn on the light of theory in the course of the discussion, but it is from each other's own practice and experience that the largest amount of useful information may be expected to be gleaned.

An association of the character referred to, called the Trentham Mutual Improvement and Debating Society, has been recently formed in the garden rooms at Trentham, and we have before us a list of the papers read during the first season, the meetings being now broken off for the summer months. Attention has been directed to a variety of interesting subjects, and we trust the young men who

have taken part in the enterprise will have had their reward in more expanded views on many at least of the subjects discussed.

We are glad to learn that the meetings throughout have been successful. The amount collected in fines was 11*s.* 10*d.*, which was made up to £1 1*s.*, and sent as a donation to the Royal Gardeners' Benevolent Institution—a very fitting appropriation. The meetings are intended to be resumed in the autumn.

COLOUR STATISTICS.

For some time past I have been accustomed to make notes of the seasons of the year at which flowers of different colours are obtainable. For convenience I have grouped them under nine headings, though it must be confessed that it has not always been easy to determine under which of two colours certain flowers should be placed. As, however, such instances form only a very small minority, I am in hopes that the remarks which I shall make will not be far from correct, even if there should be some trifling inaccuracies in the numerical statements upon which they are based.

My flower-colours are divided under the following headings :—

1. Blue.	4. Pink.	7. Orange.
2. Purple.	5. Crimson.	8. Yellow.
3. Lavender.	6. Scarlet.	9. White.

It will be noticed that the order of arrangement is consecutive. Under the term lavender I include mauve, magenta, and all the numberless shades which are formed by the mixture of blue or purple with pink or crimson. The difficulty of drawing a line between crimson and scarlet will readily be realised on examining a collection of Zonal Pelargoniums or tuberous-rooted Begonias.

The number of genera (for I have not gone into species or varieties), of which I have made lists, are as follows :—

Blue, 18.	Pink, 40.	Orange, 18.
Purple, 21.	Crimson, 41.	Yellow, 31.
Lavender, 19.	Scarlet, 21.	White, 72.

Had I attempted to enumerate florists' flowers, or even botanical species, it would have entailed greater labour than I could spare time for; but if any one likes to take up this subject on a broader basis they will, I expect, arrive at results not differing materially from mine.

These numbers might also have been considerably increased if I had included Orchids and rare plants generally, but I deemed it sufficient to confine my lists to those greenhouse and hardy plants which are commonly cultivated, and to those wild plants of distinctive colours which are generally procurable.

The number of kinds of flowers of each colour which are obtainable during the several months of the year is shown in the following table :—

Table Showing Actual Number of Flowers of Each Colour in Bloom in Each Month.

Colours of Flowers.	Jan.	Feb.	March.	April.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Actual Number of Genera.
Blue	3	4	6	9	10	11	12	11	10	5	1	2	18
Purple ..	4	5	6	[illegible]	11	11	8	9	8	5	3	3	21
Lavender ..	8	8	8	9	12	6	4	6	6	7	7	7	19
Pink	15	16	17	20	20	18	20	24	20	13	12	14	40
Crimson ..	10	9	11	14	17	16	19	23	17	13	9	11	41
Scarlet ..	9	9	9	8	10	10	13	16	14	9	6	[illegible]	21
Orange ..	5	5	7	8	9	8	8	10	9	8	4	4	18
Yellow ..	[illegible]	10	11	12	19	17	14	15	12	[illegible]	6	6	31
White ..	33	34	37	30	40	34	35	29	23	21	23	29	72

If the colours to be had in each month be added up the following result will be arrived at :—

Jan., 95.	May, 148.	Sept., 119.
Feb., 100.	June, 131.	Oct., 89.
March, 112.	July, 133.	Nov., 71.
April, 118.	August, 143.	Dec., 84.

From this it appears that the fewest flowers are to be had in November, whence month by month there is a gradually increasing number until April, and then there is a sudden advance to the highest point, when the greatest number are obtainable, in May. After this month the number suddenly diminishes, but rises again nearly to the maximum in August, whence the numbers rapidly decline until the minimum is reached (as before stated) in November.

An examination of the table in detail will show to what extent the separate colours follow or depart from the general results.

Maxima. — Four of the nine colours (purple, lavender, yellow, and white) present us with the greatest number of flowers in May; four other colours (pink, crimson, scarlet, and orange) have the greatest number in August; while the remaining colour, blue, has its maximum in July, and has nearly as many flowers in the two preceding and the two following months. Purple has the same number in May and June.

Minima. — Seven of the colours have their smallest number of flowers in November; these are blue, purple, pink, crimson, scarlet, orange, and yellow. White has the fewest in October; while lavender presents the anomaly of having its minimum in July. Purple has the same number in November and December; and crimson has the same number in February as in November. *W. T. T.*

SIR TREVOR LAWRENCE'S ORCHIDS.

(*Concluded from p.* 520.)

No. 9 House.

This is a portion, cut off, so to speak, of the house we have been descanting upon, only it is treated, or was at the time of my visit, to the full influence of solar light. Doubtless, it was a proper system for bringing renegade Cattleyas into flowering condition, only the experiment might be carried a step farther than the person in charge might be able eventually to correct. A monster C. Mendeli was resting, and of the great-bulbed Gigas several plants were submitted to this toasting process. Sobralia macrantha we could understand, and even Dendrobium Falconeri, which before buds evolve must get some sort of check to keep them in the happy medium between flower and foliage production. Dendrobium Ainsworthii was here also, and lots of Cattleya citrina hung up like herrings, to harden in the flesh, and several other things.

No. 10 House.

This forms the first of a new range, elegant without being absurdly costly, and glazed with Hartley's plate glass, to do away in a measure with shading. This forms the division exposed under the influence of a west aspect. Here were Epidendrum nemorale in quantities, also Lælia albida and several of its congeners, particularly good being many of the plants of autumnalis. Odontoglossum Londesboroughianum is a wayward subject, not only in respect of its pseudobulbs, but its tall gaunt flower racemes—the flower individually is worthy of admiration; the habit of the plant, unless it can be induced, like cirrosum, to dwarf its pretensions after cultivation, is not at all desirable. The somewhat rare Epidendrum Parkinsonianum is here, and so is the white Sobralia virginalis in good order.

No. 11 House.

This division is tenanted with a miscellaneous assortment, and it is here where the Phalænopsids are grown. P. Schilleriana is doing fairly well, and so are some of the amabilis—the miffy grandiflora being, as is invariably the case in general collections, worst done. The house is low and moist, and, so far as we can cater for growth, likely enough to induce extension of leaf-growth and flower production. Catasetum scurra is a sweet-scented grotesque-looking subject, greenish-white, with radiated lines. Aerides Lobbii in this climate, for its size, and it is goodly, is simply magnificent; and there are very good pieces of Angræcum sesquipedale, both the ordinary and summer flowering varieties. Nothing is richer in its way than the ivory-white Chysis bractescens, which is relieved with a spice of yellow on the crest of the lip. Oncidium ampliatum was in strong masses, and prominent also were Dendrobium Schröderi, Cypripedium Stonei with a good dozen growths, Vanda Lowii and Vanda insignis of Blume, which is a very slow growing plant, but when in flower of unmistakable excellence.

No. 12 House.

This is the new cool-house built to command the eastern as opposed to the western aspect, and fitted in every way like the Odontoglossum-house already described. It has an additional advantage in having a grated path with a space underneath to collect water that trickles down from the stages, and to drain paths as well at all times. The moisture in this case is not lost but only placed out of range of the feet, and comfort to promenaders is thereby secured. There are some excellently grown plants here: to name all would be tedious. Omitting much that might make a good story, we might name Odontoglossum Alexandræ roseum, a marvellously fine plant, and an exquisite variety, which has already won honours at our horticultural "Royal"; then O. Andersonianum—one raceme four-branched with twenty-seven flowers, and another with four flowers, both racemes from one matured growth. There are several here of this species; the one similar to what I afterwards saw at Mr. Bull's under the name of Ruckerianum may be said to be a yellow ground Andersonianum, just as O. odoratum is a yellow ground gloriosum—no specific difference, I presume, merely colour difference. There is such a variety in both these multitudinous spotted species—I refer to Andersonianum and gloriosum—that each would require to know what they were taking home. There is quite as great diversity in Alexandræ; some are starry, others dull and insipid-like in the spotting, while others are fine in every way. The two types which take my fancy, and of which there were a plentiful crop here, are the very wavy segmented ones, crisped like a Parsley leaf, and bearing a good long close raceme; the other, the pure florist's flower—broad, flat, and well defined, with spots not crimson or purple, as some describe them (they would be glorious to look upon if they were so), but of a bright Indian-red, and occasionally with a purple dash suffused. Then O. Pescatorei, in some sorts here white with ruby band up the back of the segments, in many indefinitely blotched, and in others spotted, which is far the most rare—purity of whiteness, with the exception of the faint yellow dash on the crest of the lip. One or two very good samples were in flower, although doubtless there are many more of them evolved now. O. cirrosum Klablochorum is a highly-marked, beautiful variety. Without this for March and April work, the person that has to supply Orchids for cut flowers would find some trouble to meet a pressing demand. Then O. pulchellum is of first importance, and is well-grown in this cool-house, as also O. radiatum majus, Edwardsii pardinum, with its yellow flowers, and reddish spots—one of the not least distinguished among recent introductions. Then O. zebrinum, plenteous in its formation of bulbs, but shy as a flower-producer; serratum, macranthum especially grand, revelling in the cold, and its bulbs distending to extra proportions; Lycaste Skinneri, in good lumps, evidently treated to a warmer winter house; then Epidendrum myrianthum, and the rare erubescens, which most culturists abandoned in despair years ago, but now reintroduced with such bulbs as to give a chance for prolonging life and inducing flower racemes. In these days of high prices and desire for white flowers, we must not omit to name a plant of Lycaste Skinneri alba, which had three growths or leads, and some of the back bulbs like a good-sized Victoria Potato: but this has been relegated to the next compartment, although its coloured fellows bask in this atmosphere.

No. 13 House.

This house is twice the width of No. 12 house—in truth the division wall separating the eastern aspect house from the two western aspect houses has disappeared, if ever it were present, and No. 13 house has both exposures as well as the gable exposure to the south. In this case it needs must have a great central table of 12 feet—the 3-feet paths, and then the 3-feet side tables. It holds a large quantity of plants, and here, as everywhere, fellows from different parts are induced to live comfortably together. In this division there are large quantities of Cattleya Mossiæ, a grand plant of Lælia elegans alba with fifty bulbs. Cypripedium Henckianum—a dwarf Roezlii, good masses of Cypripedium Lowii, fine Cattleya lobata, and strongly

developed pieces of Dendrobium superbiens, as well as densiflorum, and many of the yellow drooping-racemed Dendrobes. Here also was Odontoglossum Reichenheimii with immense bulbs, showing how well it likes a moderate warmth; also O. citrosmum in great variety—splendidly managed plants crowded with flower-racemes, many of them branching; Dendrobium speciosum and the Wallich form of nobile growing side by side, as also several good starts of Vandas, particularly one of the tricolor section called Russelliana. This is a decidedly good thing, large, broadly-limbed, and good in substance. Angræcum eburneum in its large form was well represented—indeed in the midst of so many eburneums the fine varieties of this species are apt to be overlooked. Oncidium aurosum, too, so useful in September, was in rude health, and so were many Lælia purpurata, Cattleya Leopoldii, amethystoglossa, and the captivating Oncidium fuscatum, with long erect racemes coloured in the lip like a carpet design in colours of faint purple-lilac and white in soft suffusion, well balanced, and positively elegant. Here the Lælia anceps and its varieties were well grown; one plant in particular would have quite 300 bulbs, and the leaves surmounting them ovate, and without a speck.

Such, notwithstanding the space I have occupied, is but a brief *resumé* of the treasures Sir Trevor Lawrence has got together, and has succeeded in keeping in such condition as my remarks will only have but faintly conveyed to those who have not had the privilege of seeing them. I do not require after this to add a certificate to the cultural capabilities of Mr. Spyers, upon whom the chief responsibility of maintaining in order this exceedingly valuable collection of Orchids rests: the plants speak for themselves. *James Anderson, Meadowbank Nurseries, Glasgow.*

A SYNOPSIS OF THE SPECIES AND FORMS OF EPIMEDIUM.

The species and hybrid forms of Epimedium are now widely cultivated, but the names in gardens and garden catalogues are in a state of great confusion. This is partly because there is no available general synopsis in existence to which reference may be made, and I am therefore attempting in this present paper to supply what is required in this direction. There is considerable discrepancy amongst systematic botanists as regards the nomenclature of the rows of floral whorls. The flower has three rows of parts, normally of four members each, placed opposite to one another, outside the stamens. Following Bentham and Hooker in *Genera Plantarum*, I intend in the descriptions which follow to regard the outer row as an outer row of sepals, the second row as an inner row of sepals, and leaves of the third row as petals. Regarding Aceranthus as not worth separating generically from Epimedium, the species range themselves in three well-marked groups, as follows:—

Group 1.—Petals spurred. Peduncle not produced direct from the rootstock.

* Petals with scarcely any lamina, and the stamens and style much exceeding them.

1. E. alpinum	2. E. elatum

** Petals with a distinct lamina; stamens and style not protruded from the cup in the centre of the flower.

3. E. rubrum 4. E. concinnum	5. E. Musschianum 6. E. macranthum

Group 2.—Petals yellow, with a small spur. Peduncles produced direct from the rootstock.

7. E. Perralderianum. 8. E. pteroceras.	9. E. pinnatum.

Group 3.—Habit of Group 1, but petals destitute of spur (Aceranthus).

10. E. diphyllum.	11. E. sagittatum.

1. *E. alpinum*, Linn., DC. Prod. i. 110; Eng. Bot., t. 438, edit. iii., t. 52; Baxt. Brit. Bot., t. 47.—Rootstock woody, wide-creeping. Fully developed leaves about 1 foot long, biternate (that is, composed of nine leaflets), the common petiole about ½ a foot long, glabrous, the leaflets bright green, cordate-ovate, 2—3 inches long, not firm enough in texture to last through the winter, glabrous above, finely hairy all over beneath, ciliato-dentate, the three end ones of the triads equal-sided, with short rounded basal lobes, the six side ones of the triads oblique, with much larger basal lobes, the lobe of the outer side twice as large as that of the inner. Flowers 12—20, in a lax panicle about ½ a foot long, which springs from the side of the common petiole about a couple of inches from its apex; pedicels erecto-patent, finely glanduloso-pilose, the upper ones simple, the lower ones bearing often 3—5 flowers; bracts minute, lanceolate. Expanded flower about ½ an inch in diameter; outer sepals oblong, convex on the back, greyish, ⅙ inch long, soon falling; inner sepals more persistent, oblong-lanceolate, dark crimson, ¼ inch long, patent in the expanded flowers; petals yellow, with scarcely any limb, composed almost entirely of a slipper-shaped yellow spur a little shorter than the inner sepals, forming a central cup not more than $\frac{1}{12}$ inch deep. Stamens and pistil at least twice the length of the central cup.

This typical form is widely spread as a wild plant in Central Europe, and has been cultivated in our gardens and shrubberies from time immemorial.

Var. *pubigerum*, Morren and Dcne. in Ann. Sc. Nat. 1834, p. 354; Boiss. Fl. Orient. i. 101; E. alpinum var. pubigerum, DC. Prod. i. 110; E. alpinum, Sibth. and Smith, Fl. Græc., tab. 150.—Rhizome shorter than in the type, so that the stems and leaves are more crowded. Raceme more densely glanduloso-pilose. Inner sepals a paler undecided yellowish-red. Petals and stamens as in the type.

This is the Oriental race of the species, which inhabits the Caucasus, Armenia, and the neighbourhood of Constantinople.

2. *E. elatum*, Morren and Dcne. in Ann. Sc. Nat., ser. 2, vol. ii. (1834), p. 356; Dcne., in Jacquem. Voy. Bot. 9, t. 8; Hook. fil. and Thoms. Fl. Ind. i. 112.—Stems 2—3 feet long, slender, erect, glabrous, straw-coloured, bearing two or three leaves below the inflorescence, and an ample terminal panicle, with reduced leaves from the axils of its branches. Fully-developed leaves ternately compound, consisting of as many as thirty or forty leaflets, closely resembling those of E. alpinum in shape and texture and toothing, all distinctly petioled, but the end ones with a shorter, more open basal sinus, and the side ones not so unequal at the base. Panicle 1 foot or 1½ foot long and broad, the leaves from the axils of its lower branches usually ternately compound, of its upper branches simple; flowers very laxly and subcorymbosely disposed; pedicels long, ascending, and very slender, densely glandulose-pilose. Flowers pale yellow, not more than ¼ inch in diameter when fully expanded, very fugitive; outer sepals oblong; inner sepals ovate-lanceolate, acute, not much longer than the outer ones; petals without any distinct lamina, the incurved spur shorter than the subtending inner sepals. Stamens much protruded from the central cup formed by the petals.

A native of the subtemperate region of the Western Himalayas (Kistwar, Kashmir, and the Chenab Valley), at an altitude above sea-level of 6000—8000 feet. Thoroughly distinct from all the other species by its tall habit, and stem with several leaves and ample terminal panicle.

3. *E. rubrum*, Morren in Belg. Hort. 1854, p. 33, tab. 6, figs. 1—6; Regel, Gartenfl. 1862, p. 311, tab. 373, figs. 4—7; E. alpinum, var. rubrum, Hook. in Bot. Mag., t. 5671; E. Morren, in Belg. Hort. 1868, p. 199, tab. xiv., No. 2.—Habit entirely of E. alpinum, but more robust, the leaves varying from biternate to almost triternate, and the leaflets sometimes as many as twenty. Leaflets just like those of alpinum in shape, texture, and toothing. Panicle springing, as in alpinum, from the petiole 1 inch or 2 inches below its apex. Expanded flowers ¾—⅞ inch in diameter; outer sepals oblong, greyish, ⅙ inch long, soon deciduous; inner sepals bright crimson, oblong-lanceolate, very convex on the back, ⅓ inch long, spreading horizontally when the flower is fully expanded; petals pale yellow or tinted with red, with a small but distinct erect limb, which is roundish, but broader than deep, and a concolorous deltoid-cylindrical spreading spur, which is nearly or quite as long as the subtending inner sepal. Stamens and style equalling or a little protruding from the central cup formed by the blades of the petals.

This seems to have been first seen in the Botanic Garden of Ghent, about 1854, but whether it was a hybrid produced there by M. Donckelaar, or was imported from Japan by Von Siebold, was not clearly made out. There can be no doubt that *alpinum* is one of its parents, and it is likely that *E. macranthum* is the other. It is now to be found in every collection, and is one of the handsomest and hardiest of all the genus. It varies a good deal in the colouring and absolute size and relative proportion of the parts of the flower. Sometimes the petal-lamina is very small, and then the stamens exceed it. Sometimes the petal-spur equals and sometimes falls decidedly short of the subtending inner sepal. *E. versicolor*, Morren, which I know only from the plate in the *Belgique Horticole*, 1854, p. 33, tab. 6, fig. 7, appears to be a closely allied form, with dull brick-red inner sepals, petals with scarcely any lamina, a bright yellow spur distinctly shorter than the sepal and stamens protruded from the petal-cup. *E. Ikariso*, Siebold, which I know only from the description by Regel, *Ind. Sem. Hort. Petrop.* 1868, *Appendix*, p. 89, appears to be a hybrid between *alpinum* and *Musschianum*. It has ovate-oblong white sepals and yellow petals, with a short cylindrical spur, an ovate lamina toothed at the apex on each side, and stamens decidedly protruded, as in *alpinum*, from the petal-cup. *J. G. Baker.*

(*To be continued.*)

Foreign Correspondence.

Across the Water: Boston.—Two weeks of winter weather, sandwiched between spring and summer, has given me some leisure, which I improve by noting its peculiarities.

It is remarkable with what regularity our winters are repeated. From March 1 to March 24 we had delightful spring weather, with the temperature from 28° to 40° at sunrise, and we began to prepare for seasonable work, but a long low black cloud in the east at sunrise of that day looked suspicious, and about noon the wind began to freshen and the temperature to fall. By 4 o'clock it had increased to a young gale, and the sashes on the frames went whirling through the air a distance of 20 feet with a crash that sent the glass in all directions. At sundown the temperature was 22°, and by 9 o'clock the wind was blowing at the rate of 40 miles an hour. Any loose pane of glass was immediately sent flying, and everything, to use a nautical phrase, was made "taut" for the night, and it was only by constant vigilance that Jack Frost was kept out of some of the older houses. It continued to blow for twenty-four hours, though with diminished force, and the temperature was 17° at sunrise. On looking at my diary I found we had just such a warm March and just such a gale, with the thermometer at 12°, two years ago the very same day, and closing the month of March quite cool, though not so cold as we have had it for a week or more, with 4 inches of snow, which still covers the ground (April 1); consequently all outdoor work is at a standstill. Your cultivators will see we have much to contend with, and all our planting has to be done in a very short period.

I was much struck with the paucity of American Elms and Maples in your parks. Along the Thames Embankment almost all the trees were the Oriental Plane, or acerifolia, which possess little merit compared with the Elms and Maples unless it is their fitness to withstand fog and smoke. [What better character for London use?] In fact all trees looked alike so far as the trunk and bark was concerned, all alike black and sooty; had I not known their peculiar wood and style of breeding I should have been unable to distinguish what they were. Here our American Elm grows everywhere and is, with the Sugar Maple, the street tree for cities as well as country. If they have been tried and found wanting, there is good excuse for selecting the Plane, but if not I should think it would be well to give them a trial.

Another tree of much beauty is what I at first supposed to be Populus tremula; I say supposed, for the origin of the one I refer to is a mystery to me. I have, however, looked it up, but it does not correspond with that species. Many years ago I planted an avenue of Norway species [? Maple] very thickly, intending to remove them as they crowded each other; for some years, as long as the trees were saleable, this was done; but they were still too crowded, and gradually they were cut away, leaving them still too thick for perfect specimens, but they were allowed to grow, and are now 40 feet high. Some six or eight years ago we cut out a few that run rather shabby, which made gaps and let in the sunlight. In these spots there have sprung up Cherry trees, Blackberries, Raspberries, Currants, Strawberries, Solanum Dulcamara, and other plants, and in one place a Poplar. It was so beautiful that I did not recognise it at first, and as I have never had any Poplar on the ground near it except P. tremula pendula, I could only suppose it to be a seedling of P. tremula pendula, erect growing, and with foliage four times as large as the parent. At any rate it is a most

beautiful tree, with foliage on the young growth fully 6 inches long, as beautiful almost as the foliage of an Anthurium, and about as velvety as a Gloxinia, deep olive-green with a reddish edging; bark ash-grey, perfectly smooth; catkins fully 2 inches long, of a rosy tinge. Yet I had my doubts, and believe it may be a seedling of P. tremuloides, our native Aspen, and I account for its appearance as I did for the variety of plants I have named, viz., that the seeds were brought by the American robins, who swarm among the Spruces, from the country a few miles away, where it grows wild, and were dropped where it sprung up with the others. It is just now (April 15) in flower, with long reddish catkins, which have a very conspicuous appearance. Of the flowers some writers do not speak, particularly Emerson — an important omission. But I have been struck with his remarks in the *Trees and Shrubs of Massachusetts*, where he says, "On the sprouts which spring from the roots of this Poplar the leaves are often many times larger than those of the tree, and so differently shaped as to lead one not familiar with them to think he had found a new species." This was just my case. The leaves of my tree were large and green enough, but I suppose I was "greener" in my enthusiasm about this accidental tree. Be that as it may, if our native Aspen, which is rarely planted as an ornamental tree, it is a fine one when young, whatever its defects in its dotage. I shall watch it. It is now seven years old and 20 feet high.

I write with sadness, for when my evening papers were brought in I read of the death of that veteran traveller, Robert Fortune. As I have followed Mr. Fortune in all his expeditions, as I have chronicled all he did in my magazine, and gave a list of all the plants he from time to time introduced, the loss is like that of a near friend. I had just been admiring a beautiful plant of Azalea ovata which I noticed lately, just in full bloom, and was at once reminded of the interesting account he gave of it in the *Journal* of the London Horticultural Society, with a beautiful coloured plate, vol. ii., p. 121. Truly what rich treasures of the garden his enthusiasm, perseverance, and knowledge opened to us; for some men would have given up all research, after being baulked by the cunning Chinaman as was Mr. Fortune in his search for new things. Perhaps you recollect his story about the dark-coloured Moutan Pæonies, which he went to China to procure. He had searched everywhere for them, but could not find any, though he had seen paintings of them. One day he saw a Chinaman with a load of Tree Pæonies on the way to market to sell, and among them some of the very dark coloured ones he had so long looked for in vain. Of course he made a bargain for what the man had, and, as he says, cheap enough too, and inquired of him where he could find more. His reply was that they came hundreds of miles away in the interior of the country, inacessible to Mr. Fortune and all outside barbarians. But he knew his man too well, so he slyly followed him at a respectable distance, and within 2 or 3 miles of the city of Shanghai he found a Chinese gardener who had plenty of all he wanted for sale.

It would take up valuable space to enumerate all the fine plants introduced by Mr. Fortune, and I only need name the Weigela, Forsythia, Tree Pæonies, Akebia, Spiræa Reevesiana, Viburnums, Fortune's Roses, Retinosporas, Azaleas, Exochorda, double Deutzia, Sciadopitys, variegated Honeysuckle, &c., to show what we should miss but for his enterprise. I hardly think the English horticulturists, with their well-known generosity, have duly recognised their indebtedness to Mr. Fortune. It would be a fitting tribute to his memory to erect a monument which should be the gratuitous offering of every gardener and horticulturist in the kingdom, and I might add, America also. *C. M. Hovey, Boston, U.S.*

Jamaica: *Beaumontia grandiflora and Roupellia grata.*—At p. 287 of vol. xiii., Mr. Syme, in his concluding remarks on Beaumontia grandiflora, says that the growth of that plant illustrates botanically that "rampant growth and the condition of blossoming are respective degrees of vitality, or phases of vigour, the one almost the opposite of the other."

In the view taken, he appears to conclude, and justly so, that few plants bloom during rampant growth, and attributes it to a different phase of vigour. I cannot, at present, accept this opinion, as I conclude that "phases of vigour" are subordinate to other qualities possessed by a plant in the various positions in which it may be situated. I prefer to think that the climbing power of the plant is a quality it possesses in order to be able to attain those positions suitable to the formation of its reproductive organs; and consequently, if situated in a position requiring it, the plant climbs. If in a situation suitable for the perfection of its organs, this power remains dormant, the vigour of the plant remaining the same. The formation of reproductive organs, as a rule, is rather a slow process, and the result of the combined actions of assimilation and metastasis. Growth appears to depend in a great measure upon the quantity of matter assimilated; but if the plant is in a proper position, and has all the necessary food it requires to elaborate the requisite materials for construction, these same materials are used primarily for the production of its fruit. If not in a proper position, these constructive materials are used for extending itself to enable the plant to get to that position suitable ("where it is no longer supported") to the formation of its reproductive organs. A plant must, of course, develope itself in such a manner as to obtain sufficient assimilative power to carry on the process of extension. It must have soil, and all other conditions necessary; but when it has attained this power, the same vigour that leads it to extend itself in an unsuitable situation developes flowers and fruit in a suitable one; consequently, instead of the conditions being opposite, or nearly so, they are identical, and only illustrate the power of some plants to adapt themselves to circumstances of nearly an opposite character.

The same qualities exhibited by the Beaumontia are here shown by Roupellia grata, a plant belonging to a genus of Apocynaceæ, and nearly allied to Strophanthus. With me this forms a low shrub, flowering abundantly, not having apparently the slightest tendency to climb, and forming one of the most conspicuous of our cultivated plants. *J. H., King's House, Jamaica.*

Natural History.

Daddy Long-legs (Tipula oleracea).—At the present time, when such great damage is being caused by the grubs of the Crane-fly, commonly known as the Daddy Long-legs, scientifically as Tipula oleracea, or T. maculosa, it seems an excellent opportunity for experiment as to the real use of some of the applications said to do good.

If those who are suffering would experiment, either on a large scale or even down to results, by solutions applied to collections of grubs in a bit of turf in a flower-pot (with a cork in the hole at the bottom), we might gain most valuable information. Nitrate of soda is said to be of great service. Soot has been found to be of use, and soot and guano used together has been found to be a perfect cure. In a bad case of attack recently reported to me the surface soil of the grass field had been pared, and carbonate of lime [? lime] applied. This was stated to have cured the evil; but whether it was owing to the radical remedy of fairly removing the infested soil, or to the joint action of the chemical, I do not know, and propose to experiment myself on the matter as soon as I can procure sufficient grubs.

"Crosskilling" the ground in field cultivation seems to do much good by killing some grubs and keeping the others from roving about in all directions, and damaging the plants generally.

In a bad case of attack at one of our sewage works, a low bank—that is to say, an elevation high enough to keep the fluid on the surface—was raised round the attacked field, and the sewage turned on for three days with absolute success as a cure.

It might be worth while to try flooding where, as with some of our strong lias clays, a little ridge might be raised sufficiently tenacious to keep the water in for a few days (with an expense of labour not counterbalanced by the result) in situations where water could be turned on.

It is said the grubs cannot be drowned, but we do not yet know the limitation of the time that they will endure. A very few yards of ground devoted to the purpose would show fairly what success could be expected from what may be called the "water cure." Experiments with salt lately made have been reported as a total failure, but this has been recommended as an application.

I scarcely like to speak merely from personal experience (and this also in dry weather, when the poisonous matter was not driven down by rain); but in garden cultivation I have had great success for some time back in preserving crops from attacks of slugs (previously overwhelming) by isolating the rows or patches with narrow lines of gas-lime fresh from the works.

I placed the material, or had it placed, under careful direction, so that the lines should neither touch the plants, or the draining from it, in case of rain, run down on the root-fibres near the stem; and at present the plan has answered so completely that it suggests it might be of service in preventing any roaming of larvæ on the surface.

The love of these Daddy Long-legs for wet ground has probably fostered the parents of the present outburst in all the neglected grassy spots near hedges and woods, as well as in the Clover and grass fields during last year; and if little can be done in the way of remedy now, yet the prevention by means of sheep feeding Clover stubbles, destroying neglected grass edges to fields, and rolling grass, and also encouragement of the insect-feeding birds, might help us for the future. *O.*

Florists' Flowers.

Selection of Show and Fancy Dahlias.—It is a tradition of the nursery trade to commence sending out Dahlias—that is, the propagated plants of the current spring—on May 1. In the case where a large business is done in Dahlias, it is customary to get the other plant orders cleared up by the end of April, so that the Dahlia trade should be commenced and prosecuted without break until the accumulated orders are to a great extent despatched. As Dahlias are not planted out till the first or second week in June—earlier or later, according to the state of the weather—a month or so was thus afforded to growers for exhibition to pot their plants, and get them pushed on into as large size as possible. In addition, the trade has to be supplied by those who send out new varieties, so that they in their turn can supply them to their customers.

As cultivators are now looking for the spring catalogues to make up their orders, it is a fitting time to set down a few notes on the leading varieties other than the new ones of 1879, these having been noticed on p. 568 of vol. xii. The summer of 1879 was a wet and cold one, and Dahlias grew vigorously, yet despite such drawbacks certain sorts maintained their high character, and added new lustre to their constancy. Of the Show Dahlias, as distinguished from the Fancy varieties, special mention can be made of Admiration (Keynes), yellow ground, edged and mottled with lake, a fine, large, useful flower, constant in all weathers; Alexander Cramond (Keynes), shaded maroon, large, striking in colour, very good and useful; Christopher Ridley (Turner), bright glowing crimson, in perfect character last season, brilliant in colour, and with a fine high centre and splendid outline; Countess (Keynes), pale ground edged with purplish-lilac, a most useful variety but rather coarse, owing to the abundance of wet; Cremorne (Eckford), yellow tipped with red, centre very fine, and outline first-rate when caught in good form; Charles Backhouse (Goodwin), small in size, owing to the wet, but perfect in shape; Empress Maud (Keynes), white, edged with purple, a good useful flower of dwarf growth; Flag of Truce (Wheeler), white flaked with lilac, very good and constant; Dictator (Keynes), bright scarlet, rich in colour and very useful for show purposes; Ethel Newcome (Keynes), clear primrose, excellent centre, and very constant; Henry Walton (Keynes), yellow ground, deeply edged with vermilion, very good and useful; Herbert Turner (Turner), delicate French

white, of an exquisitely tender tint, very constant and good; Hon. Sidney Herbert (Keynes), rich shaded crimson, a good useful flower of dwarf growth; Louisa Neate (Keynes), delicate pink, with creamy-white centre, very pretty indeed, and in excellent character in spite of the rain; John William Lord (Keynes), shaded orange-buff, very fine and useful; John Wyatt (Keynes), crimson-scarlet, very fine form, constant and glowing in colour; James Willing (Rawlings), bright rosy-crimson, attractive in colour, but rough on the surface, owing to the season; John Bennett (Rawlings), yellow, deeply edged with scarlet, very striking in colour, but apt to come flat; James Service (Keynes), dark crimson, rich in colour, very good and useful; James Cocker (Keynes), purple, a fine and constant variety; John Neville Keynes (Keynes), one of the best of the yellows, but the summer of 1879 was too cold and wet to bring it in good character; King of Primroses (Rawlings), a good old flower, very constant and reliable in all weathers; Lady Golightly (Fellowes), French-white, lovely in colour, but rather undersized for show purposes; Lady Gladwys Herbert (Keynes), light orange, deeply edged with crimson—there is nothing to beat it of the same character, a good and constant flower; Mrs. John Downie (Keynes), pale ground, heavily edged with rosy-purple, very good indeed; Mrs. Stancomb (Keynes), canary-yellow, very distinctly tipped with deep fawn, very pretty and useful, a variety that is much improved by close shading; Ovid (Turner), very fine purple, grand in colour, a good, constant, and useful variety; O. E. Coope (Rawlings), shaded crimson, bright in colour, large and full, with a good centre; Rev. Dr. Moffat (Keynes), dark mulberry, a good and finely formed flower, but much spoiled by the wet weather; Stafford's Gem, rosy-cerise, with yellow tip, very distinct in character, indeed should be classed with the Fancies—a variety that does not produce seed; Thomas Goodwin (Goodwin), one of the best and most useful of show Dahlias, very dark maroon, almost black, well up in the centre, large, fine shape, and always to be had in good character; Rifleman (Keynes), brilliant scarlet-crimson, very bright and useful—a variety that is destined to be much grown for exhibition purposes; and Constancy (Keynes), yellow ground, deeply edged with lake, good and useful, but needs a fine summer to come out well.

Of the Fancy Dahlias some were in excellent condition despite the wet season. Those more especially deserving of notice were Charles Wyatt (Keynes), deep rose, flaked with crimson and purple, comes very fine indeed in fair weather. This variety has the peculiarity of also producing self purple and rosy-lilac flowers; both of fine quality for show purposes. George Barnes (Keynes), rich lilac, striped with crimson, flowers very large and fine, and grand as a purple self; Egyptian Prince (Keynes), orange-red striped with deeper red. This is hardly a fancy proper, and could be oftener shown in the other class: useful and free. Eccentric (Keynes), yellow ground, shaded with crimson and tipped with white; sometimes, instead of the white tip, it is edged with yellow. Fanny Sturt (Pope), red tipped with white; one of the freest and most useful of fancy Dahlias. Flora Wyatt (Keynes), orange, flaked with red, and sometimes comes pure orange; very good and useful. Enchantress (Keynes), creamy-white, striped with rosy-purple; excellent outline and size, and very useful and constant. Henry Glasscock (Keynes), buff regularly striped and spotted crimson; very fine and useful, and equally good in the form of a fine crimson self. Hercules (Keynes), yellow ground, striped and speckled with crimson; very constant and reliable. Mrs. Saunders (Turner), yellow tipped with white; very useful and always to be had. Mrs. Wickham (Rawlings), white dashed with deep crimson-purple; a good and reliable flower. Octoroon (Goodwin), shaded purple, striped white and spotted mulberry; a beautiful Fancy when caught right. Parrot (Keynes), yellow striped with crimson; one of the finest and freest in this section. Prospero (Goodwin), crimson, tipped with purple; a fine flower when caught in good condition. Queen Mab (Turner), a showy and striking flower when in proper character. Maid of Athens (Keynes), dark maroon, tipped with red and white; a most useful flower, but wants liberal growth. Marchioness of Salisbury (Keynes), white ground, striped and mottled with purple; a useful flower that sometimes takes an acceptable self form. Robert Burns (Keynes), lilac, flaked with dark maroon; a very distinct Fancy, large and full, very useful and constant, and striking in colour. Rev. J. B. M. Camm, yellow, flaked with red, good and useful; and Regularity (Keynes), variable, blush white, heavily striped with crimson, sometimes comes with a deep lilac ground, when it is very distinct—in either case a pretty Fancy, and to be depended upon for show purposes.

The foregoing lists, made up from notes taken at Messrs. Keynes & Co.'s nurseries at Salisbury, at blooming time in September last, may be useful to cultivators intending to make a selection. As it is customary to send out Dahlia plants from the nurseries in hampers, the plants being laid down on their sides and securely packed in soft moss, they should be put into a close frame as soon as received, and syringed or sprinkled overhead with soft water, and kept close for a day or two. As the plants are sent out in quite small pots, it will greatly assist them, and especially such as are intended to be grown on to supply blooms for early shows, if they are shifted into larger pots, so as to give the roots room to develope in. In this way fine and well-rooted plants can be had by the first week in June, and it is better and safer to grow the plants on into size in this way than to plant them out early and run the risk of having them cut down by frost in our somewhat uncertain climate: the second week in June will be found quite early enough to place the plants in the open ground with safety. *R. D.*

Garden Operations.

FLOWER GARDEN, ETC.

Bedding-out. — The pressure of work in all departments of a garden at this season, when bedding-out must also be done, has to some extent given a "handle" to the opponents of it, on the ground of neglect of other work to the accomplishment of this; and whilst I grant the reasonableness of such a charge, I fail to observe its applicability to bedding-out alone, the same rule holding good through every phase of gardening. The fact is, that in nearly all gardens too much is expected from the means and assistance allowed, and so bedding-out forms a convenient hinge on which to hang all the delinquency for the neglect of other work, but with which it need not seriously interfere, if the work be undertaken piecemeal—that is, the hardy and half-hardy plants be got out, as opportunity offers, in April and early in May, the tender kinds following from May 20 to the end of the first week in June; the work is thus spread over a sufficient period to admit of leisurely planting, or, in other words, no other work need be delayed through attention to this. In our own case all the arrangements are completed, the beds marked out, the hardy plants planted, and the spaces reserved for tender kinds are labelled; but, however mild the weather may become, these will not be planted till the first week of June, when they may be expected to start into growth at once, whereas those that are turned out earlier run the risk of being crippled by cold, to their permanent injury. Meantime all should be hardened off by moving them to cold pits, and fully ventilating the same whenever the elements are propitious. The commoner kinds of "bedders," such as Verbenas, Ageratums, Calceolarias, and all kinds of Pelargoniums except tricolors, may now be planted. For massing, or colour grouping, Pelargoniums are still pre-eminent, and the variety is now so great as to satisfy the most fastidious—indeed, so great as to tempt those who are fond of this class of plants to use them too largely, by which the garden becomes monotonous, and lacking in interest because lacking in variety. If, through necessity, there must be a preponderance of Pelargoniums, or of any other kind of plants, much may be done to relieve the sameness and formality attendant thereon by the use of graceful foliaged plants as "sentinels," or "dot" plants, in the masses. The following are superb kinds of plants for this purpose:—the Australian Dracænas, Sonchus laciniatus, Acacia lophantha, and Grevillea robusta. These are well suited for the least robust and lighter-coloured flowering Pelargoniums, and for the stronger growers and high-coloured kinds the following associate best:—the variegated and white and yellow-flowered Abutilons, Castor-oil plant, and Solanums marginatum and pyracanthum. This way of breaking the monotony of flat surfaces in all bedding arrangements, though little in itself, imparts a tone of grace and beauty to the whole garden, far beyond the value and number of plants required for the purpose. This mode of planting has, as it were, so become a part of our nature, that we find it impossible even to plant what are usually called "carpet arrangements" without working in the "sentinels." Of course, the appellation carpet is then no longer an appropriate term, as no one thinks of a carpet being so uneven as to cause one to stumble over the figures in it. I prefer, therefore, to apply to it the term "embossed bedding," and for these arrangements, the bulk of the plants generally consists of low growing Sedums, Saxifrages, Cerastiums, Mesembryanthemums, Pyrethrums, and Alternantheras; the dot or central plants consist of small Dracænas, Chamæpuce diacantha, Abutilon Darwinii variegatum, and tall succulents such as Sempervivum arboreum variegatum, S. Hendersoni, S. phyllioides, Echeveria metallica, E. glauca metallica, Pachyphytons, Cotyledons, and other large succulents. It will readily be perceived, that much more interest attaches to beds of this class, containing such a variety of plants, than to those containing only the usual surfeit of Pyrethrum Golden Feather, Alternantheras, and Echeveria secunda glauca. The same rule should be followed in the arranging of succulent beds, the dwarfer varieties doing duty as a groundwork, the taller as standards, and there is then no danger of the beds presenting a rigidly formal aspect.

General Work.—This now consists in hardening off bedding plants, potting on sub-tropicals, pricking out Asters, Stocks, Zinnias, Everlastings, Phlox Drummondi, Delphiniums, &c., and thinning out the common annuals that were sown in the open ground. Alternantheras may still be propagated: the dung-bed plan of striking them is every way the most preferable—our finest plants of last year were propagated in this manner as late as June 1. This is a good time to put in cuttings of various spring-flowering plants, such as double Wallflowers and Iberis—they strike best under hand-lights placed in a shady spot. Most kinds of spring flowers increase best by division as soon as they are out of flower. Among those amenable to this mode of propagation and requiring present attention are Daisies, dwarf-growing Phloxes, Polyanthuses, double Primroses, Arabis, Aubrietias and Alyssums. A border with a north aspect is the most suitable place for them, and they should be planted in rows 1 foot apart, and from 4 to 6 inches apart in the row. Well water them as soon as first planted, and after that, unless the season prove exceptionally dry, no further watering will be requisite. Hoe mixed flower borders and beds, not only to prevent the growth of weeds but to promote healthy growth in the plants. Vacant spots in such borders can be filled in by planting out Wallflowers, Sweet Williams, Asters, Stocks, or by sowing Mignonette, Virginian Stock, Candytuft, &c. Trim Box edgings and keep turf edgings closely shorn. When these are neglected the grass quickly seeds, and weedy walks are a certainty. Clean, dry, well consolidated walks, and a well kept lawn, are indispensable to full garden enjoyment. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

Fortunately for the prospects of such a crop of hardy fruits as can reasonably be hoped for, the weather, which threatened to be fatal to everything tender towards the end of last month, only lasted a brief time, and with the exception of Strawberries no other crop seems to have sustained any material injury. The Strawberries were just opening their first flowers, every one of which (with us) turned quite black, and these of course are useless, still there will be no lack of quantity, although the loss of the finest fruit will be a disappointment to many. There is every sign of a long period of drought having set in, and where mulching between the lines has not yet been attended to, not a day should be put off in rendering this valuable aid to the roots of the plants. The material used at this advanced period of the season should be as clean as possible; or, at all events, it should be of such a composition that, after a heavy shower or two, or a good watering, there will be a clean surface left for the fruits to rest upon when they are ripe. The first batch of forced plants that we planted out for autumn fruiting—notwithstanding every care in planting—have suffered from dryness in the ball, both bodies of soil not having taken the water in alike. The balls have been pricked round with a handfork, and then thoroughly drenched with water, and the surface of the soil has been heavily mulched with short rotten dung, and another copious drenching given to wash the substance of the manure into the soil. It is noteworthy that standard Apple trees on the old-fashioned bush system are more prolific of blossom than their dwarf-trained congeners. Towering up to the stars with a larger area for the distribution of sap to expand itself, the branches and young shoots are of moderate size, and no doubt were in a better position for enjoying the full advantage of what little sun and dry air was vouchsafed to us last year. Pears will be a scarce crop if every flower sets, which is too much to expect from the fragile appearance of many of the trusses of blossoms. Cherries, which set an enormous crop, are losing heavily as they approach the stoning period, a circumstance which I anticipated some time ago. The rainfall has been so very slight during the past six months that wall trees generally will require to undergo a minute inspection at their roots, in order

that they may be supplied with sufficient moisture where that important element is deficient. Early trees in a forward state upon south walls may require immediate attention in this respect, and after they are thoroughly soaked at the roots a thick mulching of litter from 3 to 4 inches deep should be scattered over the surface of the border within a radius of from 3 to 4 feet of the stem of the tree. There is a narrow border and path, each 18 inches wide, all round our walls here, and we are having the latter pricked upon the surface about an inch deep with a five-pronged fork, and then covered with a layer of rotten dung. It is as well to be prepared for the worst, and to retain what moisture there is in the soil rather than have to supply it by artificial means if the drought continues. Caterpillars are growing troublesome upon Apricots and Cherries, and are hand-picked morning and evening. Disbudding, pinching, and thinning out of superfluous shoots in Peaches, Apricots, Plums, &c., and the destruction of insect pests will demand vigorous attention for some time if good health and fertility are to be encouraged and promoted from the beginning of the season, the most important time of all the year to institute a regular system of cultivation. *W. Hinds, Canford Manor.*

FRUIT HOUSES.

Peaches and Nectarines.—The scarcity of this fruit on the open walls will be felt in many places this autumn, so that where there is a heavy demand for large desserts, arrangements should be made for meeting the deficiency by retarding late houses and wall cases through the early stages of growth in preference to shading when the fruit is ripe. If taken in hand early the best mid-season Peaches may be kept until September; but it will be necessary to throw open all doors and ventilators as the season advances, to keep the floors moistened with cold water, and to mulch the roots with good rotten manure in cases of poverty, and something less stimulating where the trees are making vigorous growth or carrying light crops of fruit. For giving the latest crop, such kinds as Barrington, Walburton Late Admirable, Téton de Venus, Prince of Wales, one of the very best of Peaches, and one or two of the yellow-fleshed varieties, together with Victoria, Stanwick, Elruge, Albert Victor, and Pitmaston Orange Nectarines are well adapted, but they should have the run of inside and outside borders with a flow and return pipe for protecting the blossoms from frost and damp in the spring, and to insure the ripening of the wood in the autumn. The pale puny-flowered, but magnificently fruited Walburton Admirable is a strong grower and shy setter, and on this account it should be grown in a sound but not over-rich soil, with plenty of warmth for ripening the flowering wood. The borders should be well drained, freely watered through the growing season, and free pollen producing kinds such as the Royal George Peach or Elruge Nectarine should be grown in the same house. Proceed with the usual routine in succession-houses, and keep the trees in health and vigour by the timely application of water to the roots and foliage, early ventilation, and good mulching. If red-spider or scale break out, as they often do near the pipes, soap and sulphur or Gishurst Compound applied to the foliage with a soft brush will speedily destroy the spider, and its application to the wood with a hard one will remove the scale, provided it is taken in hand before it reaches the foliage. In the management of forcing-houses of all kinds the appearance of the first insect should always be the signal for battle, when the moderate use of insecticides would prevent injury from their rapid spread and destruction of fruit and leaves. As before directed, allow a free growth of wood throughout the stoning period and guard against retaining more shoots than can be tied in to the trellis. As the fruit in the early house approaches ripeness, more air with a gradual diminution in the supply of moisture combined with gentle warmth in the pipes, will insure colour and good flavour. Observe great care in the removal of Peaches from the trees, as the slightest pressure of the fingers discolours the fruit; and be guided by the purpose for which they are intended in allowing them to hang until they are nearly ripe, or otherwise, as a Peach that hangs until it is quite ripe is past its best for eating, and it is almost useless for market purposes. *W. Coleman, Eastnor.*

Melons.

Plants which have been raised for planting in succession to Potatos, as the pits and frames in which the latter have been grown become vacant, should be planted at once. In some cases it may be necessary to turn over the leaves and add some fresh ones to raise the bed on which the Melons are to be grown to the required distance from the glass, allowing a few inches for the subsiding of the leaves, which should be firmly trodden together at the time of putting them in the pit. This done, 2 inches of rotten dung should be spread over the leaves, after which a couple of barrow-loads of soil of the same description as recommended in our Melon Calendar for April 17 can be put in the centre of each light to form the hillocks; when this has been in the frame a couple of days it will be in a fit state to receive the plants without any apprehension of the temperature of the soil being lower than that in which the plants are growing or being in the least likely to chill their roots. The plants having been well watered the previous afternoon should have the soil pressed firmly around them in planting, and, should the sun be bright at the time, shaded for a few hours daily for a few days until they have re-established themselves; after which it may be discontinued altogether, for, as all of our practical readers are well aware, the Melon is a sun-loving plant. Where the beds are sufficiently near to the glass without the addition of fresh leaves it will be only necessary to remove a portion of the soil in which the Potatos had been grown along the centre of the bed to make room for that prepared for the reception of the Melons. Put air on early in the morning, say at half-past 7 or 8 o'clock, according to the aspect of the pits, to prevent the foliage being scorched by the the sun shining on them whilst the leaves are covered with moisture. Half-past 3 o'clock on bright days will now be soon enough to shut up, varying a little according to the aspect of the houses, pits, and frames. Another batch of plants should now be raised to plant in frames, which will be shortly vacated by bedding and other plants. *H. W. Ward, Longford Castle.*

Cucumbers.

Where these are growing in houses and hot-water pits the plants should be syringed twice a day both ways, so that every portion of the foliage may receive a thorough washing, which will be the means of keeping the plants free from the attacks of spider and other troublesome insects. Once a day during bright weather, and not at all on dull days, will be often enough to syringe those growing in dung-frames. Give liberal and frequent waterings of liquid manure at a temperature of from 75° to 80° to plants in full bearing, and avoid overcropping. If grown in frames, and straight fine-looking fruits are aimed at, the fruit should be placed in glasses as soon as they have set. Failing these, three strips of board nailed together will make a good substitute. The necessary stopping, thinning, and tying of the shoots will also require attention. Reduce fire-heat to a minimum with a corresponding decrease in the atmospheric moisture of the houses. If necessary, make another planting, so that the supply of fruit may exceed rather than prove unequal to the demand for the same. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

Stoves.—The rapid growth most occupants of these structures are now making will necessitate a free use of the water-pot, as not only must none of them be allowed to become dry at the root, but the atmosphere must be kept in a constantly moist healthy condition. This may be done by frequently damping the pathways or flooring, the under parts of the staging and walls, from whence it will be gradually absorbed or taken up by the air and carried on to the great comfort and benefit of the foliage. At closing time in the afternoon and early in the mornings of bright days, a thorough syringing should be given so as to wet well the under and upper side of every leaf, as it is only in this way that those formidable pests to stove plants, thrips and red-spider, can be kept down and subdued, unless it be by the more tedious process of handwashing, a labour which the syringing, if judiciously used, in a great measure saves. That queen of climbers, Bougainvillea speciosa, will in most places, ere this appears, have shed its lovely inflorescence, and should be well thinned out in order to allow plenty of room for the young growth to be laid in, that it may have full and free exposure to light, sun, and air, which are essential to consolidate and ripen the same, and without thorough maturity it is a plant that is very shy-blooming. Restriction at the root is one of the best means of correcting an undue tendency to growth; and later on, by withholding water, the ripening process can be accelerated at pleasure, as then it is quite under control. The wood this Bougainvillea flowers freest on is that about the size of a small straw, which should be left at full length, and all of a gross character either be stopped or cut clean out directly it shows, as then the strength of the plant becomes more regularly distributed.

The summer blooming species, so useful for pot culture for exhibition purposes and conservatory decoration, needs thinning in like manner, and to insure a good display of its beautiful mauve-coloured bracts must have full exposure and a fair share of air to keep the young shoots short-jointed and firm, in which condition they will be found to flower with great freedom. As the plants advance and fill their pots with roots they should be liberally supplied with weak liquid manure, which may be continued with great advantage till it is time to begin to ripen them off in the autumn. In a general way Bougainvillea glabra is kept in too much heat, whereby the growth it makes becomes elongated, but in an intermediate house the character is altogether different, and the plants being hardier are more serviceable for carrying about. It often happens at this time of year that stoves become much crowded owing to the multiplicity of things being now worked up for winter blooming, but with a change in the weather from the cold we are now having most of these may be accommodated in pits or frames that are deep enough to hold a little fermenting material, which to fresh-potted stuff is a great help in giving a start. Plunged in this, such subjects as Sericographis Ghiesbreghtii, Thyrsacanthus rutilans, Plumbago rosea, Justicia flavicoma, Euphorbia jacquiniæflora, and others of that class, do remarkably well, and may be treated together, but one of the most useful of all plants for winter flowering, the Linum trigynum, should have a light to itself, as it is only by repeated and heavy syringing that it can be kept free from spider, a pest to which it is very subject, and one which quickly damages the foliage. In potting the Linum nothing suits so well as peat and finely-sifted leaf-mould with plenty of sand mixed, as in this the roots ramify freely, and water, of which it requires large quantities, passes readily through.

Bouvardias, too, are just at home in a dung frame, where they can either be planted out or plunged in pots, the former being the best, as giving the least trouble, besides which they grow more satisfactorily, and can easily be taken up in the autumn. Bouvardias, like Linums, delight in light rich vegetable soil, and if accommodated with 6 inches or so of similiar material on the bed of tan or other fermenting material they may have, there will be no difficulty in growing fine little bushes that will yield plenty of flowers for cutting. To have them in this desirable state all that is necessary during the summer is to keep them properly supplied with water, and to shut up early after a good syringing; but as they are subject to aphis they must be watched and fumigated or dusted with tobacco-powder to prevent the points of the shoots from becoming crippled, and thus stopping their progress. Besides the plants enumerated above that succeed well under frame culture, there are the Amaryllis, for which no better place can be found; and if these are plunged in a tan bed where their roots can feel a little warmth and their heads be left exposed to the full influence of the sun, it is astonishing how greatly superior in flowering qualities such are over others that are smothered up in a stove, as when so unfavourably situated it is impossible for the bulbs to ripen off properly, and unless they can do this and be well cared for after blooming, previous to drying them off, instead of being large and plump like a matured Onion they will be found shrunken and without the power to emit blossoms when the season comes round. The thing now is, by means of judicious watering and the treatment referred to, to preserve the leaves in health till they have carried out their allotted functions, when, the natural process having been gone through, the plants cast them off as being no longer of use.

While giving due consideration to these winter and spring flowering subjects, others required for summer decoration must not be forgotten, and among these none are more useful or showy than some of the old-fashioned annuals, such as Celosias, Balsams, Gomphrenas, Martynia fragrans, and Ipomœas, which, if sown at once and grown on, will soon be available for assisting to brighten up either conservatory or greenhouse. *J. Sheppard, Woolverstone.*

The Gardens of Kampen. — "S. H." writes in the *Gardeners' Magazine*:—"The town of Kampen, the home at one time of that most eminent of the Cellebroeders, Thomas à Kempis, author of the book that must rank second to the New Testament in preciousness, is a town of gardens, and a place to which students of town gardening should make patient pilgrimage. In common with many other Continental towns that have been strongly fortified, the sword has in a certain way been beaten into a ploughshare by the simple process of converting the ramparts into flowery terraces, and the camping grounds into delightful parks. Nowhere in Noord Holland have we a more agreeable example of the advantages to a town of disused fortifications; for, being of made earth, and of varying levels, they very readily fit into the notions of an elastic-minded garden architect, but they favour the growth of many kinds of trees and shrubs that are as aliens in the district. Here, amidst the drenching vapours of the Zuyder Zee, where an artist's eye may have a perpetual feast of vaporous colouring, many of the fine trees that adorn Kampen would not live in the common soil on the natural level, but are seen to thrive on the mounds and the terraces of the embankments that in the 'days of old' were designed for defences. The Cellebroeders Poort, one of the sweetest architectural 'bits' in Kampen, adorns one of the most lovely gardens, and illustrates the indissolubility of the sister arts of Architecture and Horticulture, every good building needing green grass and waving trees to set off its beauty."

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	May 17	Popular Flower Show at South Kensington.
Wednesday,	May 19	Royal Botanic Society's Show at Regent's Park. Sale of Orchids and Specimen Stove and Greenhouse Plants, at Stevens' Rooms. Sale of Stove, Greenhouse, and Bedding Plants, at Park House, Catford, by Protheroe & Morris.
Thursday,	May 20	Royal Horticultural Society of Ireland Spring Show. Reading Horticultural Society's Spring Show. Sale of the Collection of Orchids formed by the late J. B. Cockerel, Esq., at Stevens' Rooms.
Friday,	May 21	Sale of Phalænopsis grandiflora, just imported from Borneo, at Stevens' Rooms.

TWO remarkable papers have been read within the last week or two before two different Societies, but both of them unfortunately of such length that it is quite impossible for us to reproduce them in their entirety, but to which, nevertheless, it is desirable to call special attention. The one is the paper by Mr. W. T. Thiselton Dyer, Assistant-Director, Royal Gardens, Kew, on the "Botanical Enterprise of the Empire," read before the Royal Colonial Institute; the other is the record of "Forty Years' Agricultural Experience," by Mr. J. Chalmers Morton, read before the Society of Arts. The papers in question are, or will be, published *in extenso* in the *Journals* of the respective Societies. Mr. Morton's paper, moreover, is published in the *Agricultural Gazette* of last week. We may be excused, therefore, for not reprinting the whole of either of them, while our duty to our readers and our obligations to the science and practice of cultivation impel us to call the special attention of our readers to both of them, the one as bearing on Colonial, the other on home agriculture and gardening.

Alluding first of all to Mr. Dyer's paper, as being of the two the one in which, if there is any difference, we are most closely concerned in these pages, we may say that Mr. Dyer's aim was to give a "straightforward account of the work that is done or attempted to be done at Kew." Readers of the *Gardeners' Chronicle* will not need to be told that the decorative aspect of Kew—the gratification of pleasure seekers—is not the primary object of Kew, although it forms very properly a very important element in the management of that vast establishment. The history of botanic gardens in general, and of Kew in particular, may be assumed to be pretty well known to readers of the *Gardeners' Chronicle*, or at any rate, they have ample means of gaining information on these points. For these reasons we shall pass over the historical portion of the subject, and shall not tarry to speak of what is done at Kew in the home department, as we may so call it, but shall draw attention more particularly to that part of the everyday work of Kew which is not known to the general public or to the ordinary visitor, but which we venture to say is really and truly the most important part of the whole, so far as the welfare of the nation and indeed of humanity at large is concerned. When the intelligent visitor gets an inkling of this his visits to the gardens will be endowed with a new interest, and one of a depth and importance of which previously he could have no idea. Mr. Dyer had ample reason to dilate upon the splendid services which Kew has rendered to scientific botany, and not less reason to be proud of what has been done in the matter of the practical application of botany to the general welfare of mankind. The priceless services, gratuitous though they be, of Mr. Bentham, the value and utility of the Colonial *Floras* prepared at Kew, the magnitude and completeness of the herbaria and of the museums, the ever-increasing bulk and variety of the correspondence carried on at Kew, are all points which it is needless to dwell upon in these columns, so often have we had occasion to refer to them. We cannot speak in too high terms of them, but they are, comparatively at any rate, well known. Less generally known, however, are the services rendered by the several Colonial botanic gardens (of which Kew may be taken as the head centre), and to which Mr. Dyer very appropriately devoted a large share of his paper. Mr. Dyer struck a note in which he is sure to have a sympathetic response, when he urged the propriety of making a botanic garden attractive as well as useful.

"To make a botanic garden, especially in the tropics [why especially in the tropics?], as dreary and formal as a city graveyard is a safe and certain way to bring botany and everything else connected with it into contempt. No man should be so much of a botanist as to lose in the contemplation of the structural interest of a fine plant all satisfaction in the charm or grace of its form. As a general rule we may safely expect to end by interesting people when we have begun by pleasing them."

Great knowledge of human nature, and strong good sense in those words. Passing on from this subject, Mr. Dyer had an easy task when he dwelt upon the truly magnificent services to the human race which Kew, in association with the various botanical gardens of India and the colonies, has been able to perform. Food, raiment, shelter, fire—requisites alike of the untutored savage and the be-titled minister—all these are the subjects of unceasing care and attention on the part of the establishments to which we have referred. Luxury, refinement, and recreation, for which the general public in this country looks in this great establishment at Kew, in association with knowledge and utility are, in the Colonies, at any rate in the newer ones, secondary matters. The great thing there is to study the native vegetation—to see what it is capable of, to supply its deficiencies, to introduce the valuable plants of other countries—in other words, to develope their resources, intrinsic or extrinsic, to the utmost. In the case of the older countries botanical science and botanical practice have to repair and make good the waste and destruction which lust of gain and thoughtless destruction have brought about. These are grand objects, and for their fulfilment they require the science and the tact of a dozen Kews. Meanwhile, it is impossible not to recognise with thankfulness what has been done already so quietly and unobtrusively by the agencies we have mentioned. New industries have been created, new sources of wealth developed, pestilence and malaria effectively dealt with in their strongholds, barren hillsides clothed with forests, waste places made to smile with the rich products of vegetation. Great as is the task still before our botanists, our foresters, and our gardeners, it is impossible not to look with pride upon what has been done by our home authorities, and by our botanical and forest officials in India, in Australia—everywhere where the British flag floats. It would be as invidious as it is unnecessary to mention names, suffice it to say that the honour and credit for all this is due to Kew and to the garden and forest establishments all over the world which are in constant communication with it. This being so—and the facts are beyond dispute—it is a duty to impress upon our own general public, heedless of these things, and still more upon the Colonial public, the absolute necessity of an enlightened and liberal support. The counting of stamens, and the inquiry whether this leaf is hairy, or that smooth, may seem to the ignorant a mere matter of laborious trifling, but it may mean, as Mr. Dyer had no difficulty in showing—it may mean a loss of thousands of pounds and years of valuable time—it may mean heartburning and paralysing disappointments—or it may mean, on the other hand, splendid success and untold benefit to humanity.

How pitiful from this point of view appear the criticisms that this or that flower-bed is not so good as it might be, this or that shrubbery not so ornamental as it should be, this walk not quite planned according to the line of beauty, this or that garden not quite to the taste of the Governor, not quite in harmony with the views of the Town Councillors. In too many instances are the Colonial gardens cribbed, cabined, and confined by unappreciative authorities, starved by scanty means or diverted from their proper functions to serve only as recreation grounds or nursery establishments. Mr. Dyer's paper may be taken as a vigorous protest against this state of things, and we heartily wish it may have a good effect, by stirring up a feeling of confraternity and co-operation between the authorities in various Colonies, and between them all and Kew; and at the same time stimulate the powers that be to accord all reasonable facilities and means to these establishments, and induce the general public to look more appreciatively and sympathetically than they do on the quiet work of a most learned, laborious, and unobtrusive set of workers.

Adverting now, in the briefest terms, as we needs must, to Mr. Morton's paper before the Society of Arts, we may say, in general terms, that it was an epitome of the author's experience during the last forty years, crystallised and condensed into a series of diagrams and tables, so constructed that he who ran might, if he chose, read also. The record of Mr. Morton's many services, his, as we suppose, unexampled opportunities, was given with a straightforwardness and absence of self-laudation that were alike admirable. Brimful of facts, enlivened with forcible argument and lively illustration, this formed one of the most instructive and deeply-interesting lectures it has been our fortune to listen to. Now that the *Agricultural Gazette* has a separate existence apart from the *Gardeners' Chronicle*, our tongues and pens are no longer tied, and we rejoice in the opportunity of expressing our admiration of the honest, straightforward, and untiring zeal, the winning courtesy of our late colleague—still our friend and neighbour. No one who heard the lecture we are alluding to, and listened to its ample array of well-marshalled facts explained and commented on with *verve*, tact, and ability, will wonder that we, who have been privileged to know and to work with him for years, should feel proud to have been associated with such a man. We must refer to the *Agricultural Gazette* and to the *Journal of the Society of Arts* for the full details of this valuable paper, meanwhile we may say that its main object was to show the extreme fluctuations during the last forty years in all kinds of agricultural produce, to associate these fluctuations with varying climatal conditions, especially rainfall, variable in amount during the growing season. Fettered by ever-shifting antagonism of this character, the tenant-farmer, so ran Mr. Morton's argument, should be as unhampered and unrestricted by covenants and leases as possible. A good farmer unrestricted by vexatious covenants would make a better tenant than an indifferent one tied down by all sorts of restrictions. Mr Morton's tables and results had great interest for us, inasmuch as it was obvious at a glance that what applied in the case of agricultural crops applied also to a large extent, making allowance for differing conditions and circumstances, to our market garden crops, our fruit and Potato crops, and our kitchen garden produce.

Mr. Morton, as we have seen, dwelt principally on freedom of tenure and freedom from restriction as the means whereby the farmer

might fortify himself against the fluctuations of season and the competition of foreign growers. But there are other matters which strike us in looking at his tables, and which probably the time at his disposal forbad him to enter into, or at least which induced him to pass over lightly. For instance, an inspection of his tables shows that the fluctuations in the case of grazing farms and in the amount of dairy produce are considerably less violent than in the case of arable farms, for reasons which are sufficiently obvious — one being that the pasture farm is more or less productive throughout the entire year and not during one short season only. Again, the tables show clearly, if we read them aright, the great advantage of large farms worked by large capital over small farms worked by relatively slender means. The more the capital, the greater the area dealt with, the greater the intelligence brought to bear in its management, the greater the returns, the greater the power to bear a series or adverse seasons. Adverse seasons! Can the farmer or the gardener help imself against untoward fate? A more profitable question would be—Does he try? Is he not too much inclined to look on such things as visitations of Providence rather than as difficulties to be provided for and contended against, so far as circumstances will allow? True, he drains and cultivates, but does he make provision against drought? Does he provide means for taking the water from where it is not wanted to where it might be useful? Does he utilise the resources at his command, or rather is he not guilty of wanton waste and ignorant misuse of manure? Too often, we fear, it is so, both with gardeners and farmers, though we must say we think the latter might well take a few lessons from the former. Then again the farmer depends far too much on one or two crops—he puts all his eggs into one basket. Compare his practice with that of the market gardener, for instance, with whom no sooner is one crop off than another is in, and with whom if one crop fails another compensates for its loss by its productiveness. The farmer wants more labour-saving appliances, more machinery, more light, more heat, and let none say these latter are beyond his means till the attempt has been made to obtain them. The farmer, too, requires to bring his produce direct to the consumer, and to this end wants better and more rapid means of conveyance, less and less dependence on the middleman.

We cannot pursue the subject or give more illustrations, but we cite them merely to show that, in our opinion, feedom of tenure and of culture are by no means the only things a farmer or gardener requires in his conflict with the elements. He wants, so far as circumstances will permit, to use the forces of Nature, and make them do his bidding rather than be vanquished by them. Surely no one in the nineteenth century will say that a man is powerless in this

Fig. 106.—Choisya ternata. Flowers ivory-white. (see p. 626.)

respect—all experience goes to the contrary. The farmers and the gardeners require to avail themselves of the forces already turned to such account by the engineer and the telegraph operators. What is possible to one class is surely in its degree and in its way possible to others.

—— Choisya ternata.—In writing of this plant in 1869 we stated that this ornamental greenhouse shrub, though introduced some years since, is now very rarely met with. The same remark might be made now, though we may well anticipate that it will speedily make way when its merits become known. For ourselves, we first met with it in the Jardin des Plantes at Paris several years ago, and were struck with its beauty. For some years, too, the plant has been grown against a wall at Kew, as well as at Messrs. E. G. Henderson & Sons' nursery, and the fact that it is now in bloom there, with its deep green foliage quite uninjured, is a sufficient proof of its hardy character. As a greenhouse plant, and for early forcing purposes, few plants can vie with it, as many who saw Mr. B. S. Williams' specimens exhibited at recent shows will readily admit. The general character of the plant, a native of Mexico, is well shown in the accompanying engraving (fig. 106) of a spray from Mr. Williams' specimen; the flowers are in colour like those of the Orange, to which indeed our plant is nearly allied. As in the case with other plants with compound leaves, the segments are jointed to the leaf-stalk, so that the position and set of the leaves varies according to circumstances.

—— Indian Azaleas.—The Indian Azalea had a kind of field day at South Kensington on Tuesday last. Messrs. Veitch & Sons set up a representative group, in which we found old and new varieties of merit, and being pleasantly interspersed with Japanese Maples, there was presented to view a bank of colour, singularly attractive, while it was capable of being turned to excellent account as an instructive collection. Nothing could come near Flambeau for its lustrous purple-crimson colour. It stood out from all the rest, illumining the group with a breadth of tone as rich as it was pronounced. It is with Azaleas as with some other flowers, the richest hues of colour are found in association with blossom of inferior form. We want the crimson of Flambeau allied with the fine form of the glorious white Apollon. Eclatante, salmon-red, is very bright and striking, and an invaluable decorative variety. Roi d'Hollande is still a fine rich coloured variety, and Neptune is equally useful, but a little paler. Cocarde Orange is a very taking double variety, with orange and salmon-red flowers, very free. Among salmon shades the fine old Stella still takes high place, a little semi-double, fine in form, and with dashes of bright purple on the upper segments. Adolphe Masquitter is also very fine, with a dash of purple on the upper segments, but not so deep in colour as Stella. Grandis is well named, very large, of fine form, with dashes of purple on the orange-salmon. Of magenta shades, Duc de Nassau and Charmer, two varieties still almost unrivalled for exhibition purposes, are yet in the van of the group of this colour; La Rose is of a pale magenta-rose, large, very fine, free, and a most desirable decorative variety. Cedo Nulli is of a violet-magenta colour, pale, but very striking. Oswald de Kerchove is of a very bright rosy-magenta colour, and a most desirable variety. Of paler shades of rose, Reine des Roses takes high place—large and very pleasing; Dr. Moore is a double-flowered variety, and very free; Comtesse de Flandres, pinkish-rose, is very fine and free; and Madame Van der Cruyssen has double rose flowers, also very free. In the way of variegated Azaleas, having strongly marked white margins, Madame Louise de Kerchove, salmon edged with white, is very pretty and fine, as well as of excellent form; Mr. Turner is of a more delicate tone, but very good. Of white-flowered Azaleas there were several; a white Roi Leopold is remarkably free, inclined to become semi-double, and occasionally flaked with carmine-pink. Pharailde Vervaene is a fine white, with large flowers having fringed petals, but very pleasing indeed because of its purity of colour. Bernhard Andreas alba is a pure white form of this double rose-coloured variety; Rosa Bonheur is also a good white semi-double, with dashes of pale green in the centre; Marie Van Houtte is pure white, with slight flakes of carmine, and semi-double; Leonie Van Houtte is a very good white variety, with slight dashes of green; and Apollon, a grand Azalea, large and splendid in form, and occasionally striped with pale rose. There is no plant so valuable to gardeners generally at this season of the year as the Indian Azalea.

—— Giant Herbaceous Calceolarias.—This name might be appropriately applied to some herbaceous Calceolarias exhibited at South Kensington on Tuesday last by Mr. Rapley, gr. to J. Brand, Esq., Bedford Hill House, Balham. The flowers were of enormous dimensions, some of them measuring 2 to 2½ inches in length and correspondingly broad. The plants were of a quite dwarf character, healthy, and are in a very sandy soil. The largest flowers were those having yellow grounds more or less spotted, and two or three self yellows were large and fine. While size must always be a telling point in herbaceous Calceolarias, both in respect of decorative purposes and the opinion of the general public, raisers of this flower, while gaining dimension, have not associated them with form: the large blossoms being "baggy," loose, and uncouth, with a very few exceptions. Of late years the Calceolaria has been dwarfed in its growth, strengthened in its habit, and increased in size; but in point of form the progress has not been so marked. Let our raisers take a new departure, and give us blossoms partaking of that symmetry and form that were closely associated with the Calceolaria when it was more of a florists' flower than it is in the present day.

—— New Decorative Pelargoniums.—Mr. R. Weatherell's group of these at South Kensington on the 11th inst. possessed one remarkable merit, that of dwarfness of habit. The plants were from 15 to 18 inches in height, and had large and full heads of bloom. W. E. Gladstone and Clipper are two very bright varieties, that looked 20 per cent. better in the conservatory than they did in the dark Council-chamber, which so often detracts from the value of really good things. Brilliant, Success, Master Richard, and Vivid, are all bright in appearance, and, in common with these decorative Pelargoniums, very free. Mr. Braid's Decorator—which in common with W. E. Gladstone and Clipper, in the before-mentioned group, was awarded a First-class Certificate of Merit—was large and bold in appearance, but with a roughness of expression decidedly against it. A variety in this group, named Vivid, was of great value for its colour and form; and now there is such a large group of these useful Pelargoniums, we need here, as in the Calceolaria, improvements in form, and a more perfect outline of shape.

—— Trianæa bogotensis. — Mr. Burbidge kindly sends us flowering specimens of the curious Trianæa bogotensis. It is a curious water plant, with the appearance of a gigantic Duckweed (Lemna), but the floating disc-like leaves are, as it were, threaded upon long runners, as in a Strawberry. The flowers show it to be allied, not to the Lemna, but to the common Frog-bit, Hydrocharis. It is a fit companion to the Pistias and Pontederas of our stove tanks, and would form a capital plant for drawing-room aquaria. During the past winter Mr. Burbidge had several plants in an intermediate-house which now and then descended to 38°. The honeycomb-like air-cells below the leaf cause it to float nicely on the water-level. Six inches of water is sufficient for it. A little loam surfaced with gravel serves for its roots to permeate in their quest after nourishment. Mr. Burbidge tells us that "he has Trapa natans, Ceratopteris, Ouvirandra fenestralis, Herpestis, Nymphæa pygmæa, Azolla, Limnocharis, Aponogeton distachyon, &c., now growing well in pots and pans of earth, the holes stopped up below, and the earth surfaced with water. Pistia Stratiotes and Salvinia natans we lost during the winter, and much desire to possess again."

—— Caution to Gardeners.—A Buckinghamshire gardener writes:—"I wish to put gardeners on their guard against two men, passing as brothers, who are going about the country photographing gentlemen's mansions. As I, with many others in this neighbourhood, have been practised upon by these men, I write from experience and information since gained. Their method of proceeding is to take apartments in a town and get cards printed with their address (I enclose one). They then hire a horse and trap and drive around to the various gentlemen's establishments in the locality, selecting those where a good staff of servants is likely to be kept indoors and out. They send their card in to the lady or gentle man at home, and ask permission to photograph the house, which is generally given, and afterwards pay a visit to the gardener, to induce him to make up a group of his men to be taken with the house, which many are willing to do, with the idea of getting a view of the house; but after ordering their photos and paying for them in advance they find that they have been the dupes of systematic swindlers."

—— Another Substitute for Hops.—In Germany Menyanthes trifoliata, our beautiful Buck-bean, is used as a substitute for Hops in brewing. The bitter principle is said to be present in greater abundance in this plant than in the Hop itself. In Sweden it is used in the brewing of porter, and is said to have been introduced into that country by an English sailor in 1789. For brewing purposes the leaves should be gathered in the spring, and dried in the shade.

—— Hardy Herbaceous Plants at Kew.—Several interesting hardy Primroses are now blooming at Kew. Perhaps the most handsome of all these is P. sikkimensis, which long ago was spoken of by Sir Joseph Hooker as "the pride of all the alpine Primulas." The author of that charming book, *Journal of a Naturalist in the Himalayas*, found it in wet, boggy places at elevations of from 12,000 to 17,000 feet at Lachen and Lachong, covering acres with a yellow carpet in May and June. The tall scapes bear heads of pendulous almost bell-shaped, long-stalked, lemon-yellow flowers. An ally of this, a new species, P. grandis, lately received at Kew from Dr. Regel, of St. Petersburg, is an extraordinary plant, with tufts of long-stalked, cordate, rugose, toothed, green leaves, and a stout scape bearing a large number of gracefully drooping, tubular yellow flowers not nearly so large or showy as in the last-named; the whole plant, with the exception of inflorescence, being devoid of meal. P. luteola, a Caucasian species, first discovered by Ruprecht, belongs to a totally different section from the one just mentioned, and has salver-shaped corollas of a clear yellow colour. P. involucrata is a lovely plant; and, in addition to the beauty of the flowers, these possess the attraction of being deliciously scented. Two forms of this were noticeable at Kew—one with the ordinary creamy-white flowers and short styles, the other with reddish-purple corolla tubes and long styles. P. purpurea, a nearly scentless species, with its long narrow leaves, deep glossy green above and white beneath, and heads of rather large purple flowers, is very handsome; according to Dr. Watts, however, who at present is busy at the Kew Herbarium on a monograph of the Primulaceæ, the cultivated plants, fine as we think them, are very poor in comparison with the species in its Himalayan home. The earliest of all the Pæonies at Kew is P. anomala, a pretty and graceful plant, about 2 feet high; it has splendid deep crimson blossoms and finely cut foliage. P. tenuifolia, from Tauria, with flowers about half the size of the last, has leaves almost Fennel-like in the fineness of their cutting, whilst in its variety latifolia they are much coarser, being very like those of P. anomala. The Globe-flowers are too showy to be passed over; they are amongst the best of spring border plants. Trollius europæus, T. napelliformis, and T. altaicus, have fine lemon-yellow flowers. In the Siberian T. asiaticus they are orange-yellow, whilst in T. Fortunei the orange is so deep as to be tinged with red. Thermopsis flexuosa, with its digitately trifoliate-stalked leaves, with large stipules and large Pea-shaped yellow blossoms, is a useful and ornamental border plant, about a foot and a-half high.

—— Scottish Horticultural Association.—The Association has agreed to offer prizes of £5 for the best, and £2 10s. for the second best, essay on "The History of Horticultural Buildings," special reference being made to the development of designing, heating, ventilating, and arrangement, with illustrations. The competition is open to all members of the Association. Also prizes of £3, £2, and £1, for competition by under-gardeners, members of the Association, for the three best "Collections of Insects Destructive to Plant Life," with short descriptive notes; and similar amounts for competition by under-gardeners, members of the Association, excluding

previous prize winners, for the best three herbaria of British plants, collected between April, 1880, and February, 1881. The collections to be arranged according to the natural system. The name of each plant, its habitat, and date of collection, to be stated on the paper on which the specimen is preserved. Essays, collections of insects, and herbaria, to be sent to the secretary, Mr. Alexander Milne, Leith Walk Nursery, Edinburgh, carriage paid, on or before February 1, 1881, under motto, and accompanied with sealed envelope containing sender's name, address, and motto, with a written declaration to the effect that each competitor has, as the case may be, written the essay, collected the insects, and gathered the plants, in the collection, in the localities mentioned, within the stated period.

—— Carissa grandiflora.—In the Palm-house at Kew a fine specimen of this beautiful evergreen shrub is in fine flower, its large deliciously scented pure white blossoms contrast well with the deep green glossy leaves. A native of the Cape of Good Hope, from whence it was introduced by Cooper, when collecting for the late Mr. Wilson Saunders.

—— Japanese Plants and Spring Frosts.—The Rev. C. Wolley Dod writes :—"There certainly cannot be such things as east winds or spring frosts in China or Japan. If a plant is named japonica, or Sieboldi, or Fortunei, I at once know that it will stand any amount of cold in winter, but not frost or east wind in spring. Dielytra spectabilis is shrivelled up to nothing; Spiræa japonica, out-of-doors, is cut to the ground; Spiræa palmata has its blooming shoots hopelessly spoilt. Polygonum Sieboldi, which was 4 feet high in the woods, is doubled up with its top to the ground. Many true alpines seem to enjoy the dry cold. Gentiana acaulis appears to thrive on it : a lovely plant which I now have in full flower for the first time, Anemone narcissiflora, bears it bravely. Of the Globe-flowers, too, Trollius europæus, asiaticus and americanus are finer than I ever saw them, but the dark orange-flowered kind known as japonicus, or Fortunei, hangs down its head and is withered. A plant with a mass of feathery, elegant white flowers, like a delicate Dropwort, is very ornamental now, and is certainly not Japanese, though I do not know its nationality. It is named Heuchera botryoides. Spring flowers which do not mind an English east wind are worthy of being honourably mentioned."

—— Orchids in Flower at Kew.—Thunia alba, of which there are some nice well-grown examples, is a handsome plant, striking alike by reason of its fine Sugar-cane like foliage, and its large showy flowers ; pure white, with the exception of the lip, which shades off into canary-yellow in its lower portion, and is veined with purplish lines in the upper. Physosiphon Loddigesi, though not strictly beautiful, is a graceful and elegant plant of Pleurothallis-like habit, and long one-sided slender spikes of rather distant, small tubular flowers, which are yellow-green in lower half, and deep red-orange above. Brassavola Digbyana, a very singular Orchid, is remarkable for its fragrant, very large, solitary flowers ; its elongated stem-like pseudobulbs are terminated by a thick glaucous leaf, from the base of which rises the peduncle. The sepals and petals are a pale purplish-green, and the creamy-coloured cordate lip is extremely large, its margin being cut up all round into a dense hair-like fringe, nearly an inch in depth. Epidendrum selligerum, though deficient in coloration—the sepals and petals being a dull olive-green, and the three-lobed lip white—deserves to be grown for its delicious scent ; it is an easily cultivated free-flowering species. A fine variety of Cattleya Warneri, with deep purplish-crimson lip, makes a fine display, as do also some good Vandas—V. insignis, V. tricolor, and V. suavis.

—— The Coombes.—The Coombes in the parish of Sibbertoft, on the border of Leicestershire, are a peculiar feature as occurring in the county of Northampton. Occasionally they are nearly precipitous, and everywhere form a distinct transition for some miles from the upper to the lower lias, consisting of marlstone. The object of mentioning them here is to call attention to a circumstance which was brought before my notice yesterday. A patch of about 18 feet square was covered with varieties of the Cowslip, many of them of great beauty. Of those before me one has the ordinary Cowslip tint, the petals terminated with bright crimson ; the flowers in different specimens were pin-eyed and thrum-eyed. Another, still of a Cowslip form, had petals as broad as those of the Oxlip, but still with the Cowslip character, of a bright orange, and very beautiful. These flowers were pin-eyed. A distinct and very handsome plant, with bright crimson petals, with a yellow disc and a yellow line up each petal, had the habit of a Primrose : in this the pistil projected very far, the flower-stalks very slender and hispid. From the same root sprung a large-flowered orange Cowslip. Doubtless other forms would have been found had they been sought for. The party consisted of school children with their teachers, who accompanied them ; all the children with one accord said that the plants must have been accidentally turned over, for they had found that, if a Primrose or Cowslip was planted with the head downwards, it invariably produced coloured flowers, and they could not be persuaded to the contrary. Several of the plants were growing on old Ash stumps, which were scattered over the whole plot. *M. J. B.*

—— The Five-Gallon Measure.—The *Gazette* of Friday, May 7, contains an Order in Council to the effect that Her Majesty is pleased to approve of the "five-gallon measure" as a new denomination of standard, and directs that the same shall be a Board of Trade standard in like manner as if it was mentioned in the second schedule to the Weights and Measures Act, 1878.

—— Scottish Horticultural Association.—The subjects of the papers to be read and discussed at the meetings of this Association during the remainder of the present session are :—June 1. "Florists' Flowers : Past and Present," by Mr. John Downie ; "Flowering Stove Exotics," by Mr. A. Fischer. July 6. "The Fruit and Flower-producing Agencies of Fibrous Roots," by Mr. M. Temple ; "Phalænopsis," by Mr. Wm. Russell. August 3. "Arrangement of Flowers in a Bouquet," by Mr. A. Kerr ; "Botanical Tour through the Himalayas," by Mr. Wm. Gollen. September 7. "Planting and Distribution of Trees, with a view to Landscape Effect," by Mr. C. S. France ; "Hardy and Exotic Ferns," by Mr. Chas. Warwick. October 5. "Fruits in Lanarkshire," by Mr. Jas. Whitton ; "Pine-apple," by Mr. Chas. Buchanan. November 2. "Vegetation of Past Epochs," by Mr. J. Newton Burns ; "Chinese Azaleas, with special reference to Early Forcing," by Mr. Alex. Mackenzie. December 7. "The Chemistry of Plants," by Mr. W. I. Macadam. 1881.—January 4. "Calanthe Culture," by Mr. Wm. Priest ; "Ferns and Selaginellas," by Mr. Wm. Dickson. February 1. "Orchids," by Dr. Paterson ; "Plant Physiology," by Mr. John Sadler.

—— Matricaria inodora flore pleno.—This plant is evidently identical with what has been sent from the Continent as a Chrysanthemum. It differs, however, entirely from that family of annuals, as it is a very hardy biennial, if not perennial. One of its features is found in its usefulness as a winter decorative plant for the border. The foliage is dense green, Fennel-like, and covers the ground well, making charming tufts of greenery when nearly all else is withered and brown. The flowers, which are produced in great abundance during the summer and autumn, are full, pure white, have long stems, and make capital material to furnish cut flowers. The plant is quite devoid of the customary Feverfew perfume.

—— The Meteorological Society. — At the ordinary meeting of the Society, to be held at 25, Great George Street, Westminster, on Wednesday, the 19th inst., at 7 P.M., the following papers will be read :—"Variations in the Barometric Weight of the Lower Atmospheric Strata in India," by Prof. E. Douglas Archibald, M.A., F.M.S. ; "Winds and Weather experienced in the North Atlantic, between lats. 30° and 50° during February and March, 1880," by Charles Harding, F.M.S. ; "On the Meteorology of Mozufferpore, Tirhoot, for the year 1879," by Charles N. Pearson, F.M.S. For exhibition : — the Radiometer invented by D. Winstanley.

—— The Vocabulary of Botanical Terms.—At the last meeting of the Linnean Society (May 6), Mr. G. T. Bettany, of Guy's Hospital Medical School, gave some remarks on the vocabulary of botanical terms in use in the description of flowering plants. The author advocated making a distinction between terms used in elementary descriptions in educational works and those used in the terse and complete Floras. Under evolution there was much chance of botanical progress if terms were simplified and made such as children could comprehend ; but almost every book aiming at comprehensiveness became obscure. For these and other reasons the author strongly objected to the now too frequent use of tri and polysyllabic terms.

—— Agathæa cœlestis fol. variegatis.—A market grower finds this a very remunerative plant to grow for sale in August and September to visitors who are attracted to his nursery. Originally introduced as a bedding plant, it failed to fulfil the first promise of usefulness, and then it was thrown aside by many as a failure. Some, however, discerned in it a useful subject for pot-culture for house decoration ; and growing it on into size, and getting it well established in 5-inch pots, were delighted with its freedom of bloom, its profuseness and continuity, its neat Box-like white variegated leaves, and its compact, short-jointed, wiry habit of growth. It has this further recommendation, that it produces very pretty silvery mauve-blue flowers that are thrown well above the foliage, and it is this which makes it so attractive. Those who see it buy it ; and, it being a plant that will bear a large amount of cold, as well as rough treatment. If kept watered it remains for a long time in flower. It deserves far more attention as a window plant than has yet been given to it.

—— Potato Flour.—In the last number of the *Monthly Magazine of Pharmacy* attention is drawn to the fact of the very great demand there is for Potato flour, the extent of which, it is said, is almost unlimited. This flour is simply the dry evaporated pulp of the common Potato. The whiter, and more free from black specks, the better, of course, is the quality. It is used for sizing and other manufacturing purposes, and by precipitation, and with the aid of acid, is turned into starch. In Europe it meets with a large and increasing demand in its primitive state as Potato flour. In Lancashire alone 20,000 tons are sold annually, and as many more would be taken if put on the market. When calcined it is used largely for silk dressing, as well as for other purposes. At present the quotation for Potato flour in Liverpool is nearly double that of Wheat flour.

—— Deutzia gracilis. — We have just seen some plants of Deutzia gracilis that were bloomed in pots last spring, and grown on all the summer in a cold greenhouse, and suffered to flower again this spring without a shift. From the time they began to grow they were treated three times a week to a surface-dressing of Clay's Fertiliser, and they are now completely covered with dense heads of very fine flowers. As a matter of course they receive close attention in regard to water at the roots.

—— Effect of Scion on Stock.—Mr. D. T. Fish kindly sends us a specimen which may be described in his own words :—"We have here a fine Purple Beech grafted about 4 feet from the ground. At the base of the bole there has sprung up a tuft of shoots with copper-coloured leaves, of which I enclose samples. Fifteen feet from the bole there is another similar tuft. These are later and shorter growths. Both are somewhat in advance of the tree itself. Is not this singular? And both have also more colour than the growing branchlets of the tree. Is not this yet more marvellous?" This adds another and an interesting example to the few cases recorded of the influence of the scion on the stock, as mentioned in Dr. Masters' article on the subject in our volume for 1872.

—— Prizes for Orchids.—The Hon. and Rev. J. T. Boscawen, Steward of the Horticultural Department of the Bath and West of England Society's forthcoming show at Worcester, requests us to state that he will again give at that meeting two cups of the value of 10 guineas and one of 5 guineas for Orchids. Amateur Orchid growers should make a note of this, and write to Mr. Boscawen for particulars.

—— The Linnean Society.—The two following *savans* have recently (May 6) been elected Foreign Members of the Linnean Society :—M. C. J. de

Maximowicz, Director of the Imperial Museum and Herbarium, St. Petersburg, well known for his numerous memoirs on systematic botany; and Dr. Edward Strasburger, Professor of Botany in the University of Jena, whose morphological and physiological researches on various groups of plants are highly appreciated.

—— Publications Received.—*Natural History Rambles: Ponds and Ditches*, by M. A. Cooke, LL.D. (Society for Promoting Christian Knowledge). —*Revue Scientifique*.—*Introduction to the Study of Flowers*, by Andrew Wilson, Ph.D. (Chambers). —*An Elementary Text-book of Botany*, by Dr. Prautl, English translation, revised by Dr. Viner (Swan, Sonnenschein & Allan).—*The Art of Growing Roses Out-of-doors*, by the Rev. O. Fisher, 4th edition (Bradbury, Agnew & Co.).

—— Aristolochia Goldieana.—We are pleased to hear that this magnificent species, from West Africa, is coming into flower at Kew. It was figured in the *Gardeners' Chronicle* in 1867.

—— Socotra—The Phylloxera.—We are indebted to Professor Bayley Balfour for the following interesting note relating to his recent experiences:—"I collected at Socotra specimens to bring home alive of succulents, such as Stapelia, Euphorbia, Adenium, Aloe, &c., and also bulbs of several Monocotyledons. The larger specimens I packed in cases, addressed them to Kew, and sent them as freight by P. and O. steamer. But fearing that accident might befall these cases, I took out one or two specimens of each species (all small ones), which I put in a Pandanus-leaf basket and took with me on board the steamer to bring home direct overland. All went well until I reached Brindisi. When I landed there I was very weak from fever, and not at all in a mood to make a row at the Custom-house. All my gear was taken there, I myself carrying my plants—the basket being tied across, so that they were covered. My portmanteau and other things were passed by the customs officer and I was just leaving the place with my basket when a *gendarme* shoved his hand in at one end of the basket and seized the end of a Euphorbia stem which happened slightly to project. I was instantly ordered back, and notwithstanding all my protestations as to the scientific value of the plants, I was told they could not be allowed to go through Italy, and I had farther to submit to my other packages being opened and searched for any stray plant, although they had been before that passed. I said I should take the plants to the P. and O. office and have them properly forwarded to England. No! that could be not allowed; and I was marched, guarded by a *gendarme*, back to the ship. All I could do then was to hand over my package to the head steward, with instructions to have the plants properly packed for transmission by Southampton, but as the steamer had first to go to Venice and the box would have to go back to Port Said, it will be some time ere it reaches this country. I am greatly vexed about this, for in my anxiety to get the plants home alive I had put all my most important things into this basket. In some cases I only had one or two bulbs of a plant, and they are in that basket. If they don't reach home alive it will be a great loss, for in many instances I got no flower or fruit of the Monocotyledons, and from the leaves only determination will be impossible. Of most of the things there are duplicates in the boxes sent direct to Kew, but it is just the few which are not in duplicate that I shall miss most. I think I have given you a full statement of the facts of my case. It is monstrous that an absurd law should be allowed to interfere with scientific work; and I see, notwithstanding all their care, they have Phylloxera badly enough about Naples. I got one or two things at Socotra that I think horticulturists will like—a Begonia with which I am very much delighted, and fortunately have some buds already home—a lovely little pink Gentian, and a Crinum with, as Hunter tells me, a splendid truss of flowers. I did not get it in flower." We are happy to add to this note of Prof. Bayley Balfour's the welcome intelligence that the larger cases above alluded to, and which were sent by sea, and therefore escaped the clutches of the Italian Government, arrived at the Royal Gardens, Kew, on the 13th inst. They comprise five packages sent direct from Aden, including numerous specimens of the true Socotrine Aloe, Aloe Perryi, Baker MSS.; of the Dragon Tree, Dracæna Ombet; numerous species of Stapelia and Euphorbia, a Jatropha, a Cotyledon, Marsilia coromandelina, and many tubers and bulbs yet undetermined.

—— The Weather.—General remarks on the weather during the week ending May 10, issued by the Meteorological Office, London:—The weather has been very dry and the sky moderately clear in nearly all parts of the kingdom. In the south-east and north-east of England and over Scotland, however, more cloud was reported than elsewhere, and at the close of the period the weather was dull at all our stations, and slight rain fell over the greater part of England. The temperature was again below the mean in all districts—as much as 5° or 6° below at most of the English stations, and from 2° to 4° elsewhere. The maxima were generally very low for the season, while over the central and northern parts of Great Britain and central Ireland several slight frosts were registered at night, the lowest of the minimum readings being 28°, at Durham. The rainfall was again less than the mean in all districts. Bright sunshine, except in the central and western parts of Great Britain, shows a decided decrease, and in the south and east of England and east of Scotland the number of hours recorded was only equal to about a quarter of the time during which the sun was above the horizon. The small percentage indicated for London is very striking. The wind was generally between north and north-east all over the kingdom, and though moderate, or light on most days, blew freshly at times at some of our eastern and southern stations. On the 8th and 10th, however, the direction was more variable, south-easterly and southerly winds being reported from our south-westerly coasts on the former day, and light westerly airs from the north of England on the latter.

—— Gardeners' Royal Benevolent Institution.—The Duke of Connaught has consented to take the chair at the thirty-seventh anniversary dinner of this Society, to be held at the "Albion," Aldersgate Street, on Wednesday, July 7.

Home Correspondence.

The Sparrow Question.—*Apropos* of Primroses the great sparrow question has cropped up again, and my heart being hot within me on this subject I must beg to have my say. First let me premise that I was a lover and student of birds long before I could call a single plant my own, and that love still continues, to the exclusion of one species, Passer damnabilis (I beg pardon) domesticus! The blackbird may steal our Cherries, but its glorious song compensates for pecks of them. The bullfinch may nip off a few buds, but its comparative rarity and pretty plumage plead for tolerance if not protection. As for throstles, of all our songsters the most enduring, and north of the Trent the finest, I will only say that I fear it is owing to the havoc played with this species by the terrible winter of 1878-79 that we have been so plagued with slugs and snails, so that even deaf gardeners ought to protect it. I cannot call to mind any other bird except perhaps the pretty and cheery chaffinch that does not do more good than harm to the gardener. But the sparrow! Years ago some person calling himself a naturalist—he should have omitted the three final letters—put on record some awful fable as to the number of caterpillars a pair of sparrows destroy in a summer. As the unhappy man probably did not know, or from defective sight could not distinguish between a house sparrow and the useful little bird that has been outraged by the name of hedge-sparrow—a purely insect-eating bird of an entirely different order—we will acquit him of *malice prepense*, but what mischief has he done! Lamentations reach us from America, groans from New Zealand, wailings from Australia, all on account of sparrows imported on the faith of that yarn. But it may be fairly asked, what evidence can I bring forward against the accused bird? Well, sir, I have the misfortune to own a garden near a town which is frightfully infested with sparrows. It is, therefore, scarcely necessary to say that my Gooseberries and Currants have four-fifths of their buds picked off, that my yellow Crocuses are nipped off, that every row of Peas has to be carefully netted or nothing is left on them but strings of perforated and empty pods, that half the food given to the fowls is consumed by these harpies—all this is a matter of course. But in return I have a right to expect that there should not be a caterpillar in the garden, if there be a grain of truth in the insect-eating propensities of a bird with a beak as obviously adapted for eating grain as that of the hedge-warbler (I will not call it hedge-sparrow) is for eating insects. So far is this from being the case that I have never seen a garden where caterpillars were so rampant as this. The Gooseberries are defoliated first by the larvæ of Abraxus grossularia, then by the Gooseberry sawfly; The Apple trees are disfigured by the unsightly webs of Yponomeuta padella; and, finally, almost every plant with large leaves—Pelargoniums, Chilian Beet, and even the stinging Wigandia—is so riddled by the caterpillars of Mamestra oleracea and M. brassicæ (nice, juicy, hairless grubs that one would suppose irresistible to any bird, if only as a relish) that the garden by the end of September is a mere abomination of desolation. Yet I firmly believe that if every sparrow would eat but one caterpillar a day, so numerous are the birds, I should be wholly freed from insect pests. Finally, if it be a return for the damage it does me, to drive away other birds that really do eat insects, or to deafen me every evening with its hideous chirping, this return it certainly does make and no other. I can only trust that on my part I have done something to explode the imposture of the sparrow as a useful bird. *F. L. S.* [If country sparrows are annoying, London sparrows are infinitely more daring and troublesome. Eds.]

Maréchal Niel.—I enclose you a sample of a curious malformation, or disease, of which I have recently met with several examples. It quickly kills the Rose, and does not seem to proceed from the tenderness of the plant, the severities of the climate, nor budding on any particular stock. The example sent occurred on a clean stem in the conservatory, and is from 6 to 9 inches above the point of insertion of the bud. Moreover, the shoot is alive below the swelling, and a shoot is growing out of it. The appearance is exactly like a graft clayed over; though, as you will see, no foreign matter has touched the wood, which now seems a prey to fungus, or a species of dry-rot. *D. T. Fish.*

The Phylloxera Question.—I have forwarded a letter to the Council of the Royal Horticultural Society, which it may be of some interest to bring before your readers:—"In February last I brought under your notice the Government regulation from the Cape of Good Hope, prohibiting the introduction of Vines, plants, tubers, roots, bulbs, &c., and in March received a letter from your Council intimating that they were advised not to interfere in the matter. Since that time a regulation has come into force by which Germany, France, Italy, Austria, Spain and Portugal have made a similar prohibition, which is inflicting such a serious injury on horticultural industry that I venture again to bring the subject under your notice. You are doubtless cognisant of the convention that has been entered into by the above-named countries, and the slightest consideration will show what a paralysis and calamity it must be to horticulture. I therefore ask of a Society that has done so much for horticulture in times past, whether in the present emergency it will not render some assistance in getting such an obnoxious regulation rescinded or considerably modified—a regulation which, as you know, and all scientific men will affirm, is utterly futile for the purpose intended. You have probably seen that with this object a meeting has been held in Belgium, and a petition presented to the Minister there of Foreign Affairs, and that the Ghent deputies are going to bring the subject before the Belgian Parliament. The prestige in which the Royal Horticultural Society of London is held in foreign countries will, I hope, be maintained by whatever assistance you may deem useful in this emergency. It is almost needless to point out what a loss such a regulation is collectively and individually; in my own case, only last week I received several extensive orders for choice plants from the countries in which the regulation is actually in force, which orders I could not execute. I mention this as showing the grievousness of the regulation: for so little publicity has been given to it, that neither is it generally known or understood, or have horticulturists had notice of it. My knowledge of the Convention has only been received indirectly through my Belgian colleagues. [Our correspondent did not read his *Chronicle*.] At first sight this subject, viewed in councils of state, might appear trivial, yet an industry that is widely extended through all civilised countries cannot be unimportant—not the less so, because from its very nature it is quietly conducted—and one industry cannot be affected without others suffering; but quite apart from commercial and financial considerations, if Governments are to be stable and countries prosperous, surely it is desirable to foster instead of impede that which adds to the interest and occupation of the people, thus allaying discontent and its consequent results; indeed anything that adds largely to the innocent recreation, needs, and contentment of a nation, should not be vexatiously and unnecessarily interfered with by Governments. The urgency of the subject is my apology for troubling you." *William Bull, F.L.S.*

The Great Lizard Orchis at Llandudno.—Within the last few months a statement has appeared in several local newspapers and gardening journals to the effect that the Great Lizard Orchis (Orchis hircina) has been found at Llandudno. Botanists at a distance will like to know on what authority the statement has been made. The Llandudno mountain, commonly called the Great Orme's Head, contains about a thousand acres of rocky ground, the geological formation being mountain

limestone. Every part of it, with the exception of a few steep cliffs on the north-east side, immediately over the sea, is easily accessible. From the days of Pennant it has been famed for its rare plants, and every yard of it has been ransacked by botanists, and many lists of its plants have been published. The list has hardly been added to of late years, but some plants formerly found there have disappeared, through the frequent visits of collectors. Last year, however, a dealer in plants, a native of Kent, settled in Llandudno, and in due time announced that he had discovered there Orchis hircina, Orchis fusca (syn. purpurea), and Ophrys aranifera. The last may possibly have been found in Wales before, but the two former have hitherto been believed to be confined to the south-east of England, and O. hircina is extremely rare even there. When I came to Llandudno last week I at once searched for the dealer, and made enquiries of him, and I give the result. He told me that he had found many of Orchis hircina, and knew of about twenty more in the same spot, which he was going to dig up as soon as they were tall enough to move. He had only three left. One of these I bought for a sovereign—the price he asked, and offered to pay two for another, if he would show it to me growing wild. He would not do that. He was watched: and others would find them out, and exterminate the whole stock; but as soon as he had dug them all up he would show me the place he had dug them up from, with which I ought to be satisfied. He had not only found O. fusca and O. aranifera besides, but within the last few days Cypripedium Calceolus also. I asked him to let me see it. He first showed me what appeared to be an Epipactis, and on my telling him it was not a Cypripedium, he produced what certainly was a small Cypripedium of some sort. He told me he was going to dig up some more in a day or two, but would not allow me to go with him to see the place. I then asked him what other rare local plants he had. The first he showed me, which he said he found on the rocks near the Head, he did not know the name of, but I recognised it as Claytonia sibirica, and on my telling him it was not British, he supposed the seed must have blown from some garden. I did not disguise my incredulity, but he continued very good-humoured and communicative, and showed me several letters from botanists at a distance in proof of the truth of all he had said. No one pretends to have seen any of these plants growing wild, at Llandudno except himself, but, as he added, he was born and brought up in Kent, so of course knew more about Orchises than people were likely to do in North Wales. *C. Wolley Dod, Osborne House, Llandudno, May* 8. [A committee of the whole house should sit in judgment on this man. Eds.]

Setting Peaches.—I enclose herewith three shoots of Peach trees, to give you some idea of the set of Peaches in this garden. Their shoots do not represent an isolated case, but are truly representative of our set on trees against open walls, which have no further protection than a 12-inch board at the top of the walls, which are 10 feet high and 14 inches thick. We have two south walls 300 feet long, wired, which contain Peaches, Nectarines, Apricots, and Pears of sorts. The shoots show what can be done by good management, which is the true key of success in bringing good fruits to perfection on open walls. I have taken full crops from my wall trees the last two years, and I think you will admit I have a fair promise of a third. My success depends more on the management of the trees than on the protection afforded them. I grow just sufficient wood and sufficient fruit for the trees' health, and those I do well. *Robert Smith, Gr. to the Lady Francis Fletcher, Kenward, Yalding, Kent.* [The shoots were covered with young fruits as thick as Blackberries, and packed in Spinach leaves as big as London market Cabbage leaves. Eds.]

Hardiness of Broccoli.—To suppose that Broccoli which have escaped the winter are any the hardier for having done so, or that any raised from them will be more enduring, as "J. H.," of Heytesbury, appears to think, is a very erroneous notion, as the only thing that has saved the few that any of us have from destruction is the favoured position the plants happen to have by occupying dry ground, or the exceptional shelter they may have had from trees or buildings, or, as is perhaps more general, the woody stems that some few among plantations have assumed owing to a check to growth during the summer or autumn. If we would have Broccoli stand our winters we must aim at getting them in this condition, and not, as we do now, at high cultivation, by planting in deep dug, heavily manured ground, where they produce immense leaves and stems so full of sap that when overtaken by frost they are rent asunder, so that after a thaw the whole structure collapses. This was the case last year, and whole plantations were a mass of rottenness, but which, had they been starved a bit, would have been saved. The summer was so wet and cold that plants made the greater part of their growth in the autumn, and as they were without fibre, such as they have in ordinary seasons, they were not in a condition to meet a severe winter, hence the loss that accrued, which was more owing to their sappy succulent state than to the severity of the weather, as I am convinced that had they been ripened and hardened by sun, they would have stood very well, and it is noteworthy that such as have done so are those standing at wide intervals where they had plenty of room, air, and light playing around them. Although we all like to see and grow fine heads of Broccoli, it would be wise to sacrifice the chance of size for the sake of securing a supply, and instead of planting as we usually do, put half out on hard ground, after some other crop has come off. Much may be done likewise by pricking out the plants from the seed-beds as soon as large enough to handle, which prevents their becoming drawn, and adds immensely to the number of fibrous roots, which after all do more to build up solid leaves and stems than the large gross ones that supply more crude and watery matter. It needly hardly be remarked that the different kinds of Broccoli vary very much as to enduring powers, and that those having the shortest stalks are by far the hardiest, as witness the old dwarf Russian and Cattell's Eclipse, two that will frequently stand when all others perish. This fact should be borne in mind, as it is only by planting these and others of a similar nature that we can make at all sure of getting any late; but the early kinds can generally be had by heeling in and affording some kind of protection, such as a covering of straw, which saved me a fine lot in the autumn. *J. S.*

The Falling of Peach Leaves.—I can sympathise with a "Somerset Gardener," being one of those unfortunate craftsmen who are expected to be gardener, botanist, doctor, &c. I arrived here twenty years ago, and found some old and young Peach and Nectarine trees on the walls. I got a few from Messrs. Veitch to fill them up, and in eight years from 1860 the wall was covered with healthy trees, George IV. amongst the rest, a magnificent example, being a strong grower. In 1868 a Royal George Peach in the centre of the south wall was attacked with the following symptoms, and a "Somerset Gardener" will see if my observations coincide with his own experience, if not I should be glad to see the difference. This disease spread right and left, and eventually I burnt them all but four which, though young, had been planted, and these became attacked and would have been destroyed if I had not found a remedy in time. On the trees at this time of the year the shoots wither, and those more matured drop off at the touch, and the small leaves on the end of the shoots become spotted as described, and these become holes, those remaining being perforated and sickly. Many of the shoots died back, and some of the strongest growths, 1 foot to 18 inches, are found to be dead, and hang down the first fine day after dull weather. As time goes on the gum comes out of the branches, and they become full of black spots; also gum in the older branches by the shoots; and late in autumn and early spring the shoots and branches are spotted, many of them being found to be dead on examination. Remedies tried—Tobacco-water, soapsuds, and clear water, syringed every morning as hard as possible without injuring the leaves; also painted with lime in winter and taken from the wall, and the last dressed with slacked lime mixed with water: next morning syringed trees and wall with the same just before they started in the spring. These all failed, and during this period the fly was kept off, aod the leaves were not curled. The trees in the houses had been pretty well, but now at once became affected with the same disease, and this was almost too much to bear. Everything having failed, the Peaches in the early house had just begun to stone, this I had fumigated eleven successive nights until I found they would stand no more as the large leaves begun to crack, &c. This was useless; then I tried solutions, &c., with the same result. Some of the trees my employer wished me to take out, this I did in one instance, but regretted it afterwards, and, after all, I saved the crops of fruit in both houses, and many of the trees in these houses have been inmates for sixty or seventy years, and are as vigorous and as full of fruit now as they were twenty years ago. They have fruited well ever since my method has been adopted, and are improving every year. *W. Keel, Newton Park, Bristol.*

Dynamite.—Having used this explosive for some time for blowing up tree roots, and being novices at the beginning, we learned our experience as the work proceeded. Our first operation was with a small root with a 4-inch cartridge, which being rather more strength than the root required it was soon blown into matchwood. Our next operation was with a large Elm root, 5 feet in diameter and several tons in weight, situated in a corner between the church and the house, and where we could only act upon it from one side. To cleave it up with wedges was next to an impossibility, and to use dynamite in its present position would be likely to endanger the church or the house, or perhaps both. By digging a trench round it and applying sufficient chains and the power of six horses, including the power of a builder's crab as a retaining power, we got the root far enough from the church not to run any risk of blowing in the windows. From our inexperience, instead of boring one deep hole in the centre we bored five holes, putting a 4-inch cartridge in each, which suited our purpose to make the block portable or easily lifted, to be burned up as rubbish. Unlike gunpowder, dynamite requires a special mode of firing, which consists of a very strong percussion-cap, called a detonator, attached to a fuse. This fuse, when lit with a match, sets fire to the fulminate, which exploding in its turn explodes the dynamite, and from experience, if the required quantity of dynamite has been pretty well calculated upon, and the depth of the hole pretty well guessed, with equal strength all round, there will be a burster, and sometimes the chips scattered for 100 yards round about; or if the root is Spruce, Silver Fir, or any soft wood, it often happens it is only broken in three or four pieces, sufficient to be lifted into a cart. In all cases where we have large standing trees to bring down we dismantle their top branches and dig a trench round the root, and as the tree comes down up comes the root, and with a cross-cut saw cutting the root of the bole, and boring a hole with a carpenter's auger and charging with dynamite, the root is soon made portable. With large old roots of trees that have been felled, sometimes, we simply dig a trench round them; by doing so it gives the operator a better idea where to find the most solid parts of the root before proceeding to bore for his charge. I have in no case tried putting the dynamite under the roots, but I have no doubt but it will succeed, though I fancy at a great waste. In charging I seldom put anything in the hole over the dynamite saves and, loosely; in one case I filled the hole up with water, and the charge acted well all the same. It may be considered dangerous, but as the fuse burns about a foot a minute there is time to get out of the way after applying the match. When the dynamite becomes frozen it requires to be gradually thawed in a warm room. *J. Miller, Clumber.*

Calycanthemy of Primrose.—I send you a curious malformation of this interesting plant. The plant seems somewhat unable to evolve a second proper flower, and so in lieu thereof it sets to work to change its sepals into petals, and to enlarge their size—the second phenomenon being to me the more singular of the two. Is the plant too well fed, or what? The leaves are large and very healthy. I hope you may not have seen any examples like it before. By the way, I notice a great tendency to degeneration of late years among such curiosities of vegetation as Hose-in-Hose Polyanthus, Hen-and-Chicken Daisies, &c. Are plants becoming more staid and ashamed of their eccentricities? I hope not. *D. T. Fish.* [A well-known, but none the less curious and pretty, state of things. Long ago it was stated that English gardeners could or did produce it by suppressing the natural corolla; but though we have made frequent inquiry, we have never met with any one to confirm the statement. It would be worth trying, however. Eds.]

Caladium argyrites.—The remarks of your correspondent, "J. S.," at p. 598, anent the cultivation of Caladium argyrites for decorative purposes in winter, are contrary to the opinion I have formed of the plant as having no equal in the class to which it belongs. I agree with "J. S." that to keep plants of this Caladium in the moist air of a stove prior to taking it to a comparatively cold room would be a very unwise thing to do. Most people, however, tone their plants off by giving them a lower and drier temperature some time before using them for decorative purposes. Under any circumstances I have never been able to discover that a "moist" atmosphere was other than inimical to the well-being of Caladiums at this dull time of year, and I can well believe "J. S.," that if one desired to impair the health of plants, or even to kill them, his suggestion, if carried into practical effect, would be a very good way of accomplishing it. The variety above mentioned is so distinct from anything else, and its habit so different, that a little extra care is well bestowed upon so striking a gem for winter decoration. The plant is beautiful by itself, but I think I never saw anything so striking as a group of flowering and foliage plants which had a front row of Caladium argyrites overhung by another row of Scarlet Pelargoniums, the trusses of which hung gracefully over the beautifully marked leaves of the former, and had a very pleasing effect. *W. Hinds.*

Double Daisies.—Probably the fashion of bedding-out hardy plants for spring decoration in gardens has done as much to kill double Daisies on the one hand as it has assisted to popularise them on the other. Ere the bedding fashion came up those who

grew Daisies were content to allow them to remain in the borders and develope into huge clumps; but the bedding method necessitated the replanting twice in the year, and few hardy perennials take kindly to this frequent transplanting. The myriads of growers of Daisies for the market and costermonger lift and replant only in the autumn, pulling the plants well to pieces and planting up again in well manured soil. In this way very fine plants are sold in spring at a ridiculous price, and yet far more are grown than can be sold. The past spring season has found generally a dull sale, but rarely are two seasons alike; and perchance next spring the demand may be large. The beautiful and very ornamental golden-blotched kinds show their markings by far the best when grown in good soil; then the leaves are double the usual size, and the variegation the richest. Amongst the market growers the Double Red Quilled and Double White are chiefly grown. The large crown-flowered kinds flower too late to be of value. The best whites are the Market Giant, the White Globe, a fine quilled kind, and Virginia, a medium-sized early flowered kind, and blooms profusely. The best reds are the Market Red and its variegated form, and Bacchus, an early kind, with quilled flowers of medium size, and of a reddish-crimson hue. The only other colour is an intermediate mixture, a reddish-pink, and it is found in both flat-petalled and quilled forms. The best of these are Pink Beauty and Sunrise, the latter a very pretty and free-blooming kind. Double Daisies are such favourites in the garden that they deserve all the care and good cultivation possible. *A. D.*

Reports of Societies.

Royal Horticultural: *May* 11.

Scientific Committee.—Arthur Grote, Esq., in the chair.

The Phylloxera Question.—Dr. Masters brought up a report for presentation to the Council, detailing the steps taken by various foreign and Continental Governments, with a view to prevent the ingress and spread of the Phylloxera, and pointing out the unnecessary and even absurd restrictions imposed on the transit of living plants by some Governments. The report was adopted, and ordered to be laid before the Council.

The Winter and the Plants.—Dr. Masters laid on the table copies of the circulars drawn up with a view of eliciting information as to the effects of the late winter on various plants. These circulars can be had on application to the Secretary. Mr. G. F. Wilson suggested that information as to "unexpected survivals" should also be solicited. It was mentioned that this information could be inserted in the "remarks column." Dr. Gilbert alluded to the effect of the wet season of 1879 on the Wheat crops. In general terms the yield at Rothamsted was not half an average, though the straw was not correspondingly deficient, at least where manure was applied. An examination of the drain-water collected for the purpose showed that a large proportion of the nitrogen supplied in the manure was washed out of the soil by the rainfall, as a consequence of which the analysis of the grain showed but a small quantity of nitrogen in proportion to the quantity applied in manure.

Unhealthy Condition of Plants.—A letter was read from Mr. Tonks, detailing the ill-success which had befallen him in cultivating various plants where formerly he was very successful. The letter conveyed no hint as to the cause of the misfortune, which probably could only be discovered on the spot.

Parasite on Sempervivum.—Mr. W. G. Smith alluded to a parasite fungus, Endophyllum sempervivi—a rare plant, but which when introduced into the greenhouse had proved very destructive to species of Sempervivum.

Gall on Eucalyptus.—Dr. Masters showed a remarkable fusiform gall on a species of Eucalyptus, and which had been sent to him by Baron von Mueller. It was referred to Mr. MacLachlan for report.

Plants Exhibited.—Rev. H. Harpur-Crewe showed Tulipa Orphanidesi, Fritillaria Ehrharti from Syra with a small bell-shaped purplish flower edged with green; various species of Muscari, as yet unnamed; and a white variety of Scilla italica. Messrs. Veitch showed the elegant Chionographis japonica, introduced from Japan by Mr. Maries. It is a perennial, of tufted habit, with oblong-obovate, acute, wavy-margined, glabrous leaves, and an erect flower-stalk 12—18 inches high, with scattered lanceolate bracts, and terminating in a linear spike of sessile white flowers, each flower with six linear narrow white segments. Anthurium Scherzerianum pygmæum, also from Messrs. Veitch, was shown. Its very narrow leaves and spathe, and its spadix stalked above the spathe, were points, irrespective of size, in which it differed from the ordinary form, and which secured for it the award of a Botanical Certificate (see fig. 107). Another Anthurium was shown, a cross between the ordinary A. Scherzerianum and the white ariety: in this case the spathe was (fig. 108) spotted with small red spots on a white ground. A curiously twisted variety of Cryptomeria japonica was also shown: the variety is figured in Siebold and Zuccarini's *Flora Japonica.*

Floral Committee.—Dr. Denny in the chair. It was somewhat remarkable that the genus Anthurium should produce the most remarkable novelties exhibited at two successive meetings, yet as on the last occasion, when Anthurium Andreanum was first shown in England, so on the present was shown for the first time a plant which in many respects is equally remarkable, *i.e.*, the curiously intermediate cross between A. Scherzerianum and its white variety raised by Mr. F. Bergman, gr. to Baron Rothschild at Ferrières and exhibited here by the Messrs. Veitch, who also staged beside it a singular seedling form from A. Scherzerianum with a distinctly pedicellated spadix. Mr. Sherwin gr. to M. Sparke, Esq., Charlewood House, Huyton, Liverpool, showed the remarkable example of Odontoglossum odoratum which he exhibited at Manchester the other week, and which today received a well merited Cultural Commendation. Odontoglossum mulus with a fine four-branched spike, came from Mr. Ebbage, gr. to J. S. Bockett, Esq., Stamford Hill. Mr. Cannell sent a fine stand of cut blooms of Pelargonium cucullatum flore-pleno, a valuable plant for cutting, in the way of the old Copenhagen but more decidedly magenta in colour; cut blooms of the fine old border Campanula persicifolia alba plena; several seedling varieties of Primula Sieboldii; and cut blooms of brightly coloured and well marked Mimulus. Messrs. W. Cutbush & Son showed in Buxus rotundifolia aurea reticulata a variety of Box with the young leaves of a bright straw-yellow colour. Lobelia Blue Star, a vigorous-growing and free-flowering variety, with large blossoms of a bluish-plum colour and a white centre, was exhibited by Messrs. Charles Lee & Son, of Hammersmith; and Mr. George, of Putney Heath, had some cut blooms of Carnation Surrey Belle, flesh-tinted pink, striped with rose. From Mr. R. Dean, of Ealing, came cut blooms of Bedfont Yellow, Belvoir Yellow, and Blood Red Wallflowers, and also of several other good hardy plants.

In the large conservatory, Messrs James Veitch & Sons staged a large group of well-flowered, medium, and small sized plants, of various Indian Azaleas, most charmingly arranged in combination with handsome specimens of Japanese Acers. Some comments on the Azaleas will be found on p. 626, so that here we need only state that the Society's reward was a Gold Medal. A Silver Flora Medal was awarded to Messrs. William Paul & Son, Waltham Cross, for half a dozen boxes of cut Roses, an interesting and very attractive display; and Silver Banksian Medals were accorded to Mr. Rapley, gr. to J. Brand, Esq., Bedford Hill House, Balham, for a group of Herbaceous Calceolarias, also noted on p. 626; and to Mr. Cannell, for a display of bedding Pansies, Wallflowers, &c. From Chiswick, Mr. Barron sent a group of admirably grown Gloxinias, and also of Cape species of Pelargoniums.

New Plants Certificated.

Messrs. James Veitch & Sons were awarded First-class Certificates for Chionographis japonica, a Japanese perennial white flowering, Melanthaceous plant, which is quite hardy, and admirably suited for the rockwork. For Anthurium Scherzerianum Rothschildianum ×, a very remarkable hybrid between A. Scherzerianum and its variety alba, raised by Mr. F. Bergman, gr. to Baron Rothschild at Ferrières, and which has the yellow spadix of the white form, and the spathe creamy-white spotted with crimson—in fact, exactly intermediate between its two parents; and for Gloxinia Prince of Wales, an erect flowering variety, with medium-sized blooms, which have the segments well defined by a marginal band of white, and the throat beautifully reticulated with a pleasing shade of violet. Gloxinia Chiswick White, an erect flower of great size and purity, and of a very vigorous habit, raised at Chiswick by Mr. Barron, also received a First-class award. Mr. R. Weatherill, florist, Finchley, received similar awards for Pelargonium Sunrise, Clipper, and W. E. Gladstone, all decorative varieties, which are commented upon on p. 626. Mr. G. Braid, florist, Winchmore Hill, also received a First-class Certificate for a decorative variety named Decorator, and which is likewise noted in the paragraph before alluded to.

Fig. 107.—Anthurium Scherzerianum var. pygmæum.

Fruit Committee.—H. Webb, Esq., in the chair. Mr. G. Shelton, Commercial Street, Mount Gambier, exhibited several examples of South Australian produce, including a good sample of Uvedale's St. Germain Pears—gathered two months before ripe, three dishes of Sweet Almonds, two dishes of Potatos, one of Apples, and one of Danver's Yellow Onions—an interesting display, which gained a vote of thanks for their exhibitor. Mr. Mares, gr. to C. Allhusen, Esq., Stoke Court, Slough, received a Cultural Commendation for very fine dishes of Crawford's Early Peaches, Hunt's Tawny Nectarines, fine in size and splendidly coloured; and a capital dish of President Strawberries. Mr. Hinds, gr. to Lord Wimborne, Canford Manor, also received a Cultural Commendation for a grand dish of President Strawberries, the produce of plants wintered without any glass protection, and potted the second week in August; excellent samples of William I. Peas, grown in 9-inch pots in a

cool orchard-house; Veitch's Ashleaf Potatos, and Mushrooms. A similar award was also accorded to Mr. Hudson, gr. to J. Atkinson, Esq., Gunnersbury House, Acton, for half-a-dozen nice Queen Pines. Mr. Miller, Clumber Gardens, Worksop, sent a capital dish of Vicomtesse Héricart de Thury Strawberries, and well kept examples of Ne Plus Meuris, Winter Nelis, and Passe Colmar Pears. Mr. Ledsham, Green Lane, Tarvin Road, Chester, sent examples of a very promising variety of late Broccoli, which the committee requested to see again next month. The heads range from small to medium size, the *beau ideal* of a first-class Broccoli in size, shape, and whiteness, and, as we can affirm, of very delicate flavour.

Notices of Books.

Sugar-Beet. By Lewis Ware. London: Sampson Low & Co. 8vo.

The object of this book is to give a sketch of the history of the Beet-sugar industry in Europe, the varieties grown, the soil, tillage, yield, cost of cultivation, harvesting, transportation, conservation, feeding qualities of the Beet and of the pulp. The title-page, from which we have abstracted the above, might well have been termed the table of contents; at any rate, it serves well to give a general idea of the nature of the work. The author has had special and lengthened opportunities of studying all departments of his subject, and is anxious to turn his knowledge to account by introducing the culture of the Beet, and the manufacture of the sugar, into the States. That he would thereby do a good thing there can be no doubt. But he will have to reckon with the tax-collector, and with fiscal regulations which have proved the ruin of the manufacture in this country, and have to some extent checked its development abroad. It is to be hoped that the Americans may be wiser. In spite of all restrictions, however, the number of Beet-sugar factories in France in 1877-78 is given at 513, the number of kilos produced 325,000,000. The book is so carefully compiled that it will be useful to farmers in general to those who grow Mangel for their cattle. No mention is made of the attempts to grow Sugar-Beet in England, and a much more serious omission is the entire absence of all notice of the elaborate experiments carried on with so much care at Rothamsted by Messrs. Lawes and Gilbert.

La Culture Maraichère. (Market Garden Culture for the South and Centre of France and for Algeria.) By M. A. Dumas. Fourth edition. Paris: Rothschild; London: Dulau.

This is one of the series of handy little books for which the French have to thank the publisher. The author claims for his book special consideration as being a work for gardeners written by a gardener, and a gardener moreover who is not one in name only, but one who, as he tells us, handles the spade and the dibber every day of his life. After giving a chapter of generalities as to the aspect of the garden, the nature of soils and of garden operations generally, he passes on to the culture of particular plants, arranging them in order according to their family relationships, and finally gives a calendar of operations for each month of the year. We may briefly summarise the author's recommendations as to the culture of Asparagus, which are the more interesting as such large quantities arrive in our markets at this season from the South of France. The seed is sown in March or April in a light, highly manured soil, which should be well dug during dry weather. The soil being thus pulverised the seed is sown broadcast, or in lines 4 to 5 inches apart, the latter method being preferable, taking care not to sow too thickly nor at a depth of more than 3 to 4 inches. In dry seasons watering may be necessary, and when the seed has germinated hoeing is requisite. The bed for the permanent plantations should by preference be sandy, deep, very friable, the best in the garden, and exposed to the south. It should be trenched and well manured. The ground being prepared in the manner indicated, in February or March a trench is dug, some 16 to 18 inches deep and as much in width, the soil being thrown out on each side of the trench to a distance of 16 to 18 inches. At the bottom of the trench so made little mounds of fine earth about 4 inches high are raised, at a distance one from another of a yard. Other similar trenches are dug at distances a yard apart. When all is ready the young Asparagus plants—preferably those of two years' growth—are placed on the little mounds in the trenches, the roots being carefully spread out over them and fine soil carefully sifted in between them. The trench is then filled in nearly to the top with compost, in which fowls' dung or night soil has been mixed. A caution is given against too deep planting, and when frost is anticipated then the stems should be cut about 4 inches above the surface, and the whole covered with a layer of dung. During the autumn the plants should be watered freely with liquid manure. The shoots are not cut till the third year, after which time the shoots may be cut each year from April to July. This summary may suffice to show the practical character of the work. Under the head of "vulgar errors or prejudices" he instances the dislike which it appears some Frenchmen have to the toad and to the mole, both animals which render the greatest services to the agriculturist and the gardener, and whose evil deeds are more than compensated for by the good they do. The influence of particular phases of the moon is ridiculed, and still more so the fog or blight (*brouillard*). "My Lettuces are weakly and small—it's the fog; my Beans are covered with greenfly—it's the fog; my Scarlet Runners and my Peas are full of grubs—it's the fog—the fog—the fog—always the fog." To those who make this complaint the author recommends a visit to those districts where the fog is most frequent, thickest, and most persistent. Look round the gardens, says he, in the environs of Paris, of Tours, of Angers—he might have added London—and see if the fog causes the dreadful consequences by some attributed to it. There, continues the author, "you will find luxuriant growth; garden produce of first-rate quality. The fog is powerless for mischief—guess why. It is because the gardens are cultivated with energy and intelligence, neither labour nor expense is spared to give the plants the necessary supply of water, and to furnish them with abundance of manure."

We cordially commend the book to all gardeners, to whom the somewhat idiomatic phraseology in which the book is written offers no obstacle.

Fig. 108.—Anthurium rothschildianum ×. (see p. 630.)

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, May 12, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
	In.	In.	°	°	°	°	°	°	°		In.
May 6	29.87	+0.11	58.5	40.3	18.2	47.5	— 4.1	43.1	86	ENE: NE	0.00
7	29.95	+0.20	54.9	38.1	16.8	45.2	— 6.5	38.7	78	NE	0.00
8	29.99	+0.25	55.0	37.2	18.4	45.2	— 6.4	38.3	77	E.N.E.: N.E.	0.00
9	30.09	—0.35	53.1	37.0	16.1	44.8	— 6.7	38.7	79	NNE: N.	0.00
10	29.89	+0.15	50.0	38.8	14.2	42.2	— 9.1	40.0	92	N.E.	0.00
11	29.77	+0.03	62.7	39.9	22.8	49.0	— 2.2	41.1	74	E.: E.S.E.	0.00
12	29.88	+0.14	63.9	41.1	22.8	51.0	— 0.1	40.8	68	E.S.E.: S.E.	0.00
Mean	29.92	+0.18	57.0	38.5	18.5	46.4	— 5.0	40.1	79	N.E.: E.	sum 0.00

May 6.—Dull till noon. Fine and bright afterwards. Cool. Cloudy at night.
— 7.—A fine bright morning, cloudy afterwards. Overcast at night. Cold.
— 8.—A fine day, partially cloudy till evening, then cloudless. Cold.
— 9.—A fine day, but dull and cloudy. Occasional gleams of sunshine. Cold.
— 10.—A dull day, very cloudy. Occasional thin rain. Very cold.
— 11.—Dull till 10 A.M. Fine and bright after. Clear at night. Warmer. Windy.
— 12.—A very fine bright day. Warmer. Strong wind, Cloudless and cold at night.

London: *Barometer.*—During the week ending Saturday, May 8, in the vicinity of London the reading of the barometer at the level of the sea decreased from 30.08 inches at the beginning of the week to 29.69 inches by the afternoon of May 3;

and increased to 30.22 inches by the end of the week. The mean reading for the week at sea level was 29.99 inches, being 0.18 inch below that of the preceding week, and 0.06 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 65° on the 2d to 49½° on the 5th; the mean value for the week was 57°. The lowest temperatures of the air observed by night varied from 32° on the 2d to 45¼° on the 4th; the mean for the week was 38¾°. The mean daily range of temperature in the week was 18¼°, the greatest range in the day being 33° on the 2d, and the least 6¾° on the 5th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—May 2, 46°.7, — 3°.4; 3d, 45°.9, — 4°.5; 4th, 48°.6, — 2°.6; 5th, 44°.7, — 6°.5; 6th, 47°.5, — 4°.1; 7th, 45°.2, — 6°.5; 8th, 45°.2, — 6°.4. The mean temperature of the air for the week was 46°.3, being 4°.8 below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 145° on May 2, 135½° on the 8th, and 132½° on the 7th; on the 5th the reading did not rise above 90°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 23¼° on the 2d, 27½° on the 7th, and 28° both on the 3d and 8th; the mean of the seven lowest readings was 31¾°.

Wind.—The direction of the wind was N.E. and E.N.E., and its strength moderately strong.

The weather during the week was fine, though dull and cold; the sky was most cloudy. A slight *thunderstorm* occurred on the 3d inst.

Rain fell on two days during the week; the amount measured was 0.17 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, May 8, the highest temperatures of the air observed by day were above 64½° at Blackheath (London), Leicester, Cambridge,, and Nottingham, and below 57½° at Norwich and Hull; the mean value from all stations was 62°. The lowest temperatures of the air observed by night were below 33° at Truro, Bristol, Blackheath, Cambridge, Sheffield, and Hull, and above 38½° at Liverpool and Sunderland; the mean value from all places was 35°. The extreme range of temperature in the week was above 33° at Blackheath, Cambridge, and Nottingham, and below 20° at Norwich and Liverpool; the mean range from all stations was 27°.

The mean of the seven high day temperatures was above 59½° at Truro, Plymouth, and Nottingham, and below 53½° at Norwich and Hull; the general mean from all places was 57°. The mean of the seven low night temperatures was below 38° at Wolverhampton and Hull, and above 41½° at Plymouth, Norwich, and Sunderland; the mean from all stations was 39¾°. The mean daily range of temperature in the week was above 21° at Wolverhampton and Nottingham, and below 14° at Norwich and Liverpool; the mean daily range from all places was 17¼°.

The mean temperature of the air for the week from all stations was 46¾°, being 4° higher than the value for the corresponding week in 1879. The mean temperature was above 49° at Truro and Plymouth, and below 45° at Sheffield and Hull.

Rain.—The amounts of rain were small everywhere, and varied from 0.31 inch at Plymouth to 0.02 inch at Leicester and Bradford. At Truro, Wolverhampton, Liverpool, Leeds, and Sunderland no rain fell. The average fall over the country was 0.07 inch.

The weather during the week was somewhat fine and dry, though dull, with cold winds. *Thunderstorms* occurred at some places on the 3d inst.

SCOTLAND: *Temperature.* — During the week ending Saturday, May 8, the highest temperatures of the air observed by day varied from 64° at Dundee and Perth to 59° at Edinburgh; the general mean from all places was 62°. The lowest temperatures of the air observed by night varied from 30° at Perth to 38° at Glasgow; the mean value from all stations was 34°. The mean range of temperature in the week from all places was 28°.

The mean temperature of the air for the week from all stations was 47°, being 2¾° higher than the value for the corresponding week in 1879. The mean temperature was above 49¼° at Glasgow, and below 46° at Aberdeen.

Rain.—At Dundee the amount of rain measured was 0.25 inch, whilst at Aberdeen 0.06 inch only was recorded. At Greenock and Perth no rain was measured. The average fall over the country was 0.08 inch.

DUBLIN.—The highest temperature of the air was 59¼°, the lowest was 32°, the extreme range 27¼°, the mean 46°. No rain was measured.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

HARES AND RABBITS EATING YOUNG SPRUCE.—Is there any practical way of preventing hares and rabbits eating young Spruce in plantations otherwise than by enclosing them with wire netting? *Kirkby.*

TURNPIKE TOLLS.—Will you be good enough to inform me whether a turnpike toll is payable on earth or loam used for nursery purposes? *E. W. S.*

Answers to Correspondents.

ANTHURIUM SCHERZERIANUM: *Nimrod.* We should object to both being shown, as being too nearly alike.

BOOKS: *H. C. The Orchid Grower's Manual*, by Mr. B. S. Williams; *Cool Orchids, and How to Grow Them*, by Mr. F. W. Burbidge (Bogue); *Orchids for Amateurs*, by Britten and Gower (*Bazaar* Office). Messrs. Lovell, Reeve & Co., Henrietta Street, Covent Garden, can supply you with coloured plates of Orchids.

CALCEOLARIAS: *Kelway & Son.* An ordinarily good strain, such as is grown by several of the leading market growers, but inferior in size to the strains of Mr. James and Mr. Rapley.

CINERARIA: *W. Ward.* Your double Cineraria is, to the best of our recollection, hardly of the same shade of colour as the new one shown recently under the name of Mr. Thomas Lloyd; but we cannot say for certain, without flowers of both for comparison. Whether similar or distinct, it is a first-rate flower.

DARI: *C. W. Abrey.* The seeds of Sorghum vulgare, more properly known under the popular name of Durra. The flour made from it is used in India as food, and, unground, for feeding horses, pigs, and poultry. It cannot be grown to advantage in this country.

DOUBLE PRIMROSES: *James Carter & Co.* Your Cloth of Gold Primrose is a very desirable variety for border culture.

ERRATUM (p. 599). — For "Violette de Galopin and Reine Claude Rouge are *delusions*," read "are delicious." I forgot to say Beurré Hardy and Gratioli of Jersey, on the Quince stock, are annually good bearers, large, and delicious. *W. F. Radclyffe.*

GREENHOUSE PLANTS: *Syd.* Your question is too vague.

INSECTS: *G. H.* The grub of the Crane-fly or Daddy Long-legs, Tipula oleracea. See p. 621. Encourage the Rooks.

LICHEN ON LAWN: *A. L.* Rake it off, and encourage the growth of the grass by a dressing of nitrate of soda or sulphate of ammonia.

MIMULUS: *T. Bayliss.* Your seedlings are very fine, being large in size, smooth, boldly marked, and richly coloured.

NAMES OF PLANTS: *Tytus.* 1, Clematis viticella; 2, Kleinia ficoides; 3, Alyssum saxatile; 4, Pulmonaria officinalis; 5, Vinca major; 6, Leucoium vernum; 7, Abies Pinsapo.—*W. Powell.* Both are cultivated varieties of Geranium pratense.—*W. P.* Claytonia virginiana.—*R. S. H.* All seedling varieties of the Norway Maple. The Pinus is the P. Massoniana of gardens, more properly called P. Thunbergii.—*C. W. D.* Arabis hirsuta and Cotoneaster vulgaris.—*H. J. Ross.* Aerides falcatum and Dendrobium crepidatum.—*P. & M., Leytonstone.* Pachysandra terminalis.—*E. C. C. D.* Carex glauca.—*James Rimmer.* 1, Cattleya labiata; 2, Cattleya elegans; 3, Saccolabium guttatum; 4, Phajus bicolor.—*R. A.* 1, Chorozema Henchmanni; 2, Pultenæa subumbellata; 3, Woodwardia radicans; 4, Pteris tremula; 5, Doodia caudata, sterile frond.—*E. Bennett.* 1, Brassia verrucosa; 2, a Dendrobium, which we do not recognise; 3, a garden variety of Epacris, which we can not name; 4, Clematis montana.—*W. R., Lark Hill.* Both varieties of Lilium longiflorum.—*T. Davies.* Aquilegia cœrulea.

NEW ZEALAND SEEDS: *J. T. S.* They will grow in a mixture of peat, loam, and sand, but must be given a greenhouse temperature.

PINE FOREST NEAR RAVENNA.—The inquirer at p. 568 may refer to Brandis' *Forest Flora*, p. 516, where the Stone Pine forest stretching along the coast of the Adriatic is noticed under Pinus pinea. He will also find bibliographic notices of this celebrated pinetum in De Berenger's *Studii di Archeologia Forestale*, Venice, 1863. *H. Cleghorn.*

POLYANTHUSES: *B. S. W.* A nice strain of border flowers, but of no value as florists' flowers.

SEEDS TO NAME: *H. Woodmansey.* The seeds are those of Abrus precatorius, a leguminous tropical plant of a twining habit. They are very pretty and much used in India, &c., for necklaces and other ornaments, as well as a standard of weight in the weighing of diamonds.

THE SOUTH OF FRANCE: *W. B.* No doubt you might, with some trouble, find employment in some of the towns in the South of France to which the English resort, such as Cannes, Hyères, Nice, Mentone, Pau, and many others; but we should not recommend you to go to any of those places now, unless you wish to be roasted.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED: — William Paul & Son (Waltham Cross, Herts), Catalogue of New Roses, Pelargoniums, Phloxes.—Dicksons & Co. (1, Waterloo Place, Edinburgh), Descriptive Catalogue of Florists' Flowers. — Boulton & Paul (Rose Lane Works, Norwich), Illustrated Catalogue of Iron and Wire Fencing, Tree Guards, Garden Frames, Plant Preservers, &c.—George Cooling (Bath), Catalogue of Roses in Pots, Clematis, Liliums, Bedding Plants, &c. — E. G. Henderson & Son (Maida Vale, W.), Catalogue of Flowering and Ornamental Plants, &c.—Samuel Yates (16, Old Millgate, Manchester), Catalogue of Hives and Bee Furniture.—Paul & Son (The "Old Nurseries," Cheshunt), Catalogue of New "Cheshunt" and English Seedling Roses.—V. H. Hallock & Son (Queens, New York, U.S.A.), a Catalogue of all the Known Species of Lilies, and their Most Distinct Varieties.

COMMUNICATIONS RECEIVED:—J. V. & Sons.—Bridport.—J. M. D. P.—W. F.—H. K.—J. L. B.—Royal Colonial Institute.—W. S.—H. S.—R. H.—Pat.—A. M.—D. R.—J. H.—P. D. E.—W. R.—J. S.—J. R. J.—T. C.—R. B.—J. G. B.—J. D.—J. C. & Co.—J. Alexander (many thanks). Dr. P.—Young Gardener (let them threaten; it is all they will do. The book is worthless).—W. D.—M. J. B.—J. A.—G. D.—W. D. R.—G. W.—W. E.—R. Mc. L.

Markets.

COVENT GARDEN, May 13.

A better tone has prevailed during the week, clearances being more readily effected. Large quantities of Grapes, both home-grown and from the Channel Islands, are changing hands at previous prices, while Strawberries have experienced a rise in value. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Lemons, per 100	6 0–10 0
— American, barrl.	18 0–30 0	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– 1 6	Pears, per dozen	4 0– 8 0
Gooseberries, green, per quart	0 6– 0 9	Pine-apples, per lb.	1 0– 3 0
Grapes, per lb.	3 0–10 0	Strawberries, per oz.	0 4– 0 9

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz.	2 0– 3 0
— English, p. 100	5 0– 6 0	Mint, green, bunch	1 0– ..
— French, per bun.	3 0– 6 0	Mushrooms, p. baskt.	1 6– 2 0
Beans, French, p. lb.	1 6– ..	Onions, per bushel	10 0–12 0
Beet, per doz.	2 0– 4 0	— Spring, per bun.	0 6– ..
Cabbages, per doz.	1 0– 2 0	Parsley, per lb.	0 9– ..
Carrots, per bunch	0 8– ..	Peas, per lb.	1 0– ..
— French, per lb.	0 6– ..	— French, per qt.	5 0– ..
— New, per bunch	1 6– ..	Potatos (new), per lb.	0 3– 0 9
Cauliflowers, per doz.	2 0– 5 0	Radishes, per bun.	0 2– ..
Celery, per bundle	1 6– 4 0	Rhubarb (Leeds), per bundle	0 4– 0 9
Chilis, per 100	3 0– ..	Seakale, per punnet	3 0– ..
Cucumbers, per doz.	8 0–12 0	Small salading, pun.	0 4– ..
Endive, per 2 doz.	1 6– 3 0	Spinach, per bushel	2 6– ..
Garlic, per lb.	1 0– ..	Tomatos, per dozen	4 0– 6 0
Herbs, per bunch	0 2– 0 4	Turnips, new, bunch	0 6– ..
Horse Radish, p. bun.	4 0– ..		

Potatos:—Regents, 100*s.* to 140*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 170*s.* to 190*s.* per ton. German, 2*s.* 6*d.* to 7*s.* per bag; Channel Islands, 4*d.* to 6*d.* per lb.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Foliage Plants, various, each	2 0–10 6
Azaleas, per dozen	18 0–60 0	Fuchsias, per dozen	9 0–15 0
Bedding Plants, various, per doz.	1 6– 2 6	Genista, per dozen	9 0–18 0
Begonias, per doz.	6 0–18 0	Lilium eximium, doz.	30 0–60 0
Bouvardias, per doz.	12 0–24 0	Lobelia, per dozen	6 0– 9 0
Calceolaria, per doz.	8 0–12 0	Mignonette, per doz.	5 0– 9 0
— Herbaceous, doz.	6 0– 9 0	Myrtles, per doz.	6 0–12 0
Cinerarias, per doz.	6 0–12 0	Palms in variety, each	2 6–21 0
Cyclamen, per dozen	9 0–24 0	Pelargoniums, dozen	9 0–24 0
Cyperus, per dozen	4 0– 9 0	— Ivy-leaved, doz.	4 0– 8 0
Dracæna terminalis	30 0–60 0	— Tricolor	4 0–12 0
— viridis, per doz.	12 0–24 0	Roses, Hybrid Perpetual, per doz.	18 0–36 0
Erica various, per dozen	12 0–30 0	— Fairy, per dozen	6 0–10 0
Euonymus, various, per dozen	6 0–18 0	Spiræa, per dozen	6 0–18 0
Ferns, in var., doz.	4 0–18 0	— palmata, doz.	18 0–30 0
Ficus elastica, each	1 6– 7 6	Stocks, per dozen	4 0– 8 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Pansies, 12 bunches	2 0– 6 0
Anemone, 12 bun.	3 0– 6 0	Polyanthus, 12 bun.	1 6– 4 0
Arum Lilies, per dozen	3 0– 6 0	Pelargoniums, 12 spr.	0 6– 1 0
Azalea, 12 sprays	0 6– 1 0	— zonal, 12 sprays	0 3– 0 9
Bouvardias, per bun.	1 0– 4 0	Primroses, 12 bunch.	0 9– 1 0
Camellias, per doz.	1 0– 6 0	— double, white, 12 bunches	1 6– 3 0
Carnations, per dozen	1 0– 3 0	Primula, double, per bunch	1 0– 1 6
Cowslips, 12 bunches	1 0– 1 6	Roses (indoor), doz.	1 0– 9 0
Daffodils, various, 12 bunches	4 0– 9 0	— Roses, Fr., doz.	2 0– 6 0
Eucharis, per doz.	4 0– 6 0	Spiræa, 12 sprays	1 0– 2 0
Euphorbia, 12 sprays	3 0– 6 0	Stephanotis, 12 spr.	2 6– 4 0
Forget-me-not, 12 bunches	3 0– 9 0	Tropæolum, 12 bun.	1 0– 3 0
Gardenias, 12 blms.	2 0– 8 0	Tuberoses, per dozen	3 0– 4 0
Heliotropes, 12 sp.	0 6– 1 0	Tulips, 12 bunches	4 0– 8 0
Hyacinths, 12 bun.	4 0–12 0	Violets, French, per bunch	1 6– 2 6
Lily of the Valley, 12 bunches	6 0–18 0	— English, p. bun.	1 0– 2 0
Mignonette, 12 bun.	6 0– 9 0	Wallflowers	4 0– 9 0
Narcissus, various, 12 bunches	4 0– 9 0	White Lilac, Fr., per bundle	4 0– 8 0

SEEDS.

LONDON: *May* 12.—The consumptive demand for the present season being nearly over, the seed markets begin to assume a quiet appearance. There is, however, some speculative inquiry for American Clover seed, under the influence of which values have made a substantial advance. The stocks remaining on hand prove to be light, and are mainly held on American account. Trefoil also meets with some attention for holding over: this is caused by the unfavourable reports received as to the growing crop. There is no quotable variation in either Alsike, white, or Rye-grass. Tares are neglected. Fine sowing Rape seed is scarce, and must be noted 2*s.* to 3*s.* per quarter dearer. Mustard keeps firm. There is a good sale for white runner Beans: current rates continue unprecedentedly low. Some handsome blue Peas, just arrived from New Zealand, are now offering on Mark Lane, the quality of which far surpasses those of English growth. Choice Sicilian Canary seed is obtainable at 53*s.* per quarter; Hemp seed, 31*s.*; Haricots and Lentils sell lowly. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Trade at Mark Lane on Monday was firm. Millers operated sparingly in Wheat, and no material change presented itself from last week: the home-grown produce was no higher. Barley met with a poor inquiry, and prices were unaltered. Malt was quiet and about the same in price as last noted. Oats were in large supply, and for the better qualities prices were the turn higher. Maize showed an improvement of from 3*d.* to 6*d.* on the week. Beans were scarce and firm, Peas were fully as dear, and flour moved off slowly on former terms.—Trade was rather firm on Wednesday. As regards Wheat there was not much doing, but the finer sorts were held for rather more money, and the tendency was distinctly in favour of the holder. Barley was quiet and unaltered. Malt remained dull. Oats, although in good supply, were well held, and a steady tone prevailed as regards Maize. Beans and Peas were scarce and firm. Flour was quiet, but fully as dear.—Average prices of corn for the week ending May 8:—Wheat, 46*s.*; Barley, 33*s.* 4*d.*; Oats, 26*s.* For the corresponding period last year:—Wheat, 40*s.* 9*d.*; Barley, 30*s.* 9*d.*; Oats, 21*s.* 6*d.*

CATTLE.

At the Metropolitan Market on Monday the trade in beasts was dull and prices scarcely as good as on Monday se'nnight. Trade in sheep was not so brisk as of late, and it was difficult to effect a clearance notwithstanding a disposition to take rather lower than we quote. Lambs were lower, and good calves continue to be scarce and dear. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.*, and 5*s.* 6*d.* to 6*s.*; calves, 5*s.* 6*d.* to 6*s.* 8*d.*; sheep, 5*s.* 6*d.* to 6*s.*, and 6*s.* 4*d.* to 7*s.*; lambs, 8*s.* to 8*s.* 4*d.*; pigs, 4*s.* 6*d.* to 5*s.* 4*d.*—Thursday's cattle trade was quiet. Beasts were firm, owing to short supplies; sheep and lambs were very quiet at about late rates; and the figure for calves and pigs were unaltered.

HAY.

Tuesday's Whitechapel Market report states that the trade for fodder was very dull, and prices without variation. Quotations:—Prime Clover, 100*s.* to 132*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 100*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 37*s.* per load.—On Thursday there was a moderate supply of hay and straw on sale. The trade was quiet, and prices were unaltered. — Cumberland Market quotations: — Superior meadow hay, 98*s.* to 105*s.*; inferior, 45*s.* to 75*s.*; superior Clover, 126*s.* to 132*s.*; inferior, 80*s.* to 105*s.*; and straw, 36*s.* to 40*s.* per load.

POTATOS.

The Borough and Spitalfields Markets reports state that trade has continued quiet, but owing to the smaller foreign supplies, prices had rather a firmer tendency. Quotations:—Scotch Regents, 140*s.* to 160*s.* per ton; Champions, 180*s.* to 200*s.*; Lincoln ditto, 180*s.* to 190*s.*; Victorias, 160*s.* to 180*s.*; German reds, 4*s.* 6*d.* to 7*s.* 6*d.* per bag; and Dutch rocks and French whites, 4*s.* 6*d.* —The imports into London last week were confined to 28,126 bags from Hamburg, 2875 bags Stettin, 6621 Harburg, 1350 boxes Lisbon, and 374 boxes and 154 casks from Malta.

COALS.

The prices current at market during the week were as follows: — Bower's West Hartley, 14*s.* 3*d.*; West Hartley, 14*s.* 3*d.*; Walls End—Hetton, 14*s.* 6*d.* and 15*s.*; Hetton Lyons, 13*s.* 6*d.* and 14*s.*; Hawthorns, 13*s.* 9*d.* and 14*s.* 3*d.*; Lambton, 14*s.* and 14*s.* 6*d.*; Original Hartlepool, 15*s.* and 15*s.* 6*d.*; Wear, 13*s.* 6*d.* and 14*s.*; South Hetton, 14*s.* 6*d.* and 15*s.*; Vanes, 13*s.* 6*d.*; Chilton Tees, 14*s.* 6*d.* and 15*s.*; East Hartlepool, 14*s.* 6*d.*; South Hartlepool, 14*s.* 6*d.*; Tees, 14*s.* 3*d.*; Tunstall, 14*s.*; Radford Navigation, 15*s.* 9*d.* The higher prices prevailed in the early part of the week.

Government Stock.—Consols closed on Monday at the following figures: — For delivery, 99 to 99⅛; for the account, 99 3/16 to 99 5/16. Tuesday's prices were, 99 to 99⅛ for delivery, and 99⅛ to 99¼ for the account. The final figures on Wednesday were, for the account, 99 3/16 to 99 5/16, and 99 to 99⅛ for delivery. The closing prices on Thursday were, for the account, 99 3/16 to 99 5/16, and 99⅜ to 99½ for delivery.

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THE

JOURNAL OF FORESTRY

AND

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Programme of Vol. IV., commencing May, 1880:—

In commencing a new volume of the *Journal of Forestry*, the Editor has pleasure in announcing that he has arranged for a large number of articles on almost every conceivable branch of Arboriculture and Estates Management: the chief features of the Journal, which have been found of so much value in former years, will be preserved, and these will comprise the following:—

EDITORIAL NOTES on current arboricultural matters, at home and abroad, topics of the day, the weather, and the persistent advocacy of a British School of Forestry.

THE EDITOR'S BOX.—Short letters and facts from Readers, discussions on various practices and methods, and any other subjects which can be elucidated in this manner, besides jottings from the note-books of our practical contributors.

THE HOME FARM.—A monthly epitome of the work to be performed in the home farm, by a land steward of great experience, with judicious hints and advice on the management of crops, farm stock, poultry, &c.

FOREST WORK FOR THE MONTH.—This is one of the most valued features of the *Journal*, and contains a precise, accurate, and reliable *resumé* of the forest operations which should be performed each month in England, Scotland, Wales, and Ireland, by a well-known experienced Forester in each country.

NOTES AND QUERIES.—Questions on any subject connected with forestry or estate management may be asked under this heading, and answers given by the Editor or some experienced contributor.

REVIEWS OF BOOKS.—The principal new books connected with rural pursuits, and the transactions of several of the learned societies, are critically examined and reviewed on their own merits.

OUR FOREIGN EXCHANGES gives a monthly epitome of the foreign arboricultural and gardening papers; and attention is by this means often directed to important articles in foreign periodicals, by Dr. J. C. Brown, late Government Professor of Botany at the Cape of Good Hope, who kindly undertakes this department.

CHIPS AND SLIPS are cuttings from "here, there, and everywhere," and contain just those odd scraps and gleanings from our contemporaries as are considered of an interesting nature to our readers.

In addition to the above leading features, which appear in each number of the Journal, the Editor is enabled, through the courtesy of the Staff of Contributors, to announce the following subjects, on which, amongst others, articles may be expected in the present volume:—

THE CONVERSION OF TIMBER, AND THE MACHINERY EMPLOYED.
STEAM CULTIVATION AS A PREPARATION FOR TREE PLANTING.
BRICK AND TILE MAKING.
PLANTING FOR SHELTER, AND FOR EFFECT OR ORNAMENT.
THE STRENGTH, DENSITY, AND USES OF TIMBER.
THE VALUATION AND MEASUREMENT OF TIMBER.
NOTES ON THE NEWER CONIFERÆ.
REMARKABLE TREES AT HOPETOUN HOUSE.
THE PRESENT TRAINING OF OUR INDIAN FORESTERS.
ADVANTAGES OF A BRITISH SCHOOL OF FORESTRY.
A SYNOPSIS OF BRITISH ELMS.
PLANT RESPIRATION AND NUTRITION.
UTILITY OF PLANTING "ABIES DOUGLASII."
CLIMATIC INFLUENCE OF TREES.
THE EDUCATION OF YOUNG FORESTERS.
THE LARCH DISEASE.
FOREST ENTOMOLOGY.
THE EUCALYPTS OF AUSTRALIA.
MANUFACTURE OF CHARCOAL AND PYROLIGNEOUS ACID.
ACCLIMATISATION OF NEW ZEALAND SHRUBS ON OUR WEST COAST.
NEW ZEALAND A FIELD FOR TREE PLANTING.
THE COMPARATIVE GROWTH OF AMBER TREES.
UNDERWOOD.
COST OF HARVESTING OAK BARK.
THE APPLIANCES USED IN FORESTRY.
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ROAD MAKING.
GLANCES AT THE FORESTS OF SOUTHERN EUROPE, &c.

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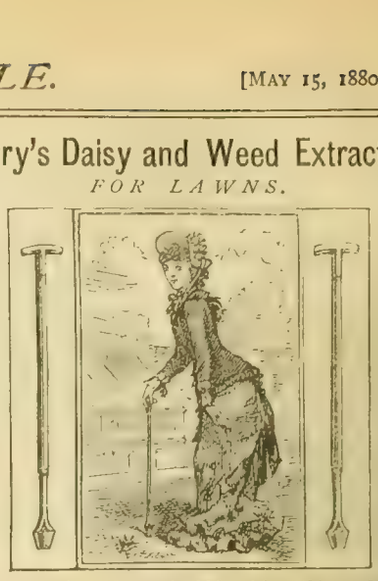

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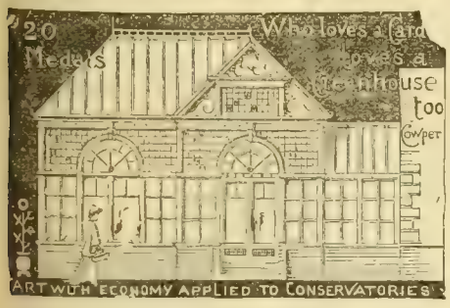

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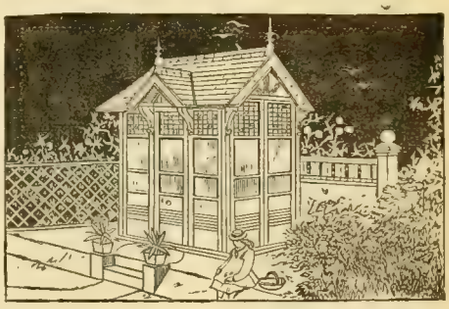

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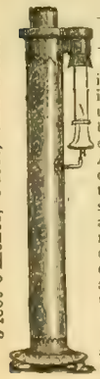

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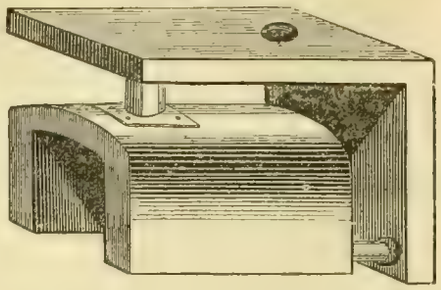

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24 ,,	24 ,,	24 ,,	700	12	0	0
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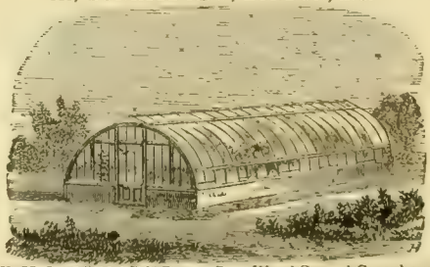

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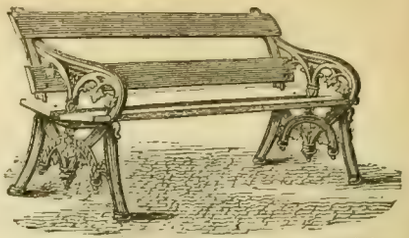

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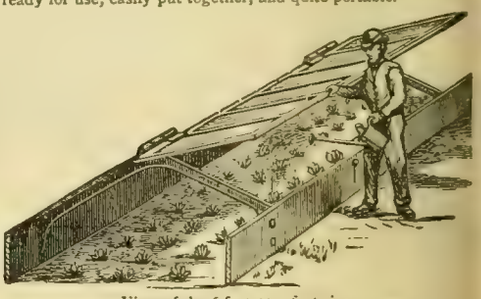

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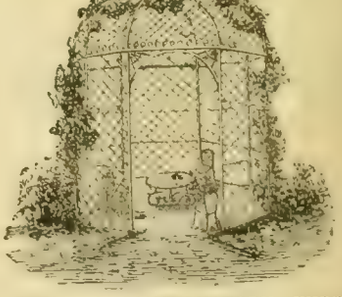

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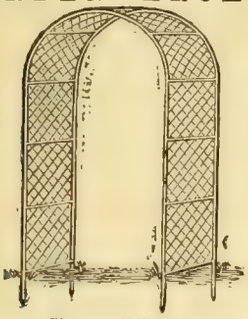

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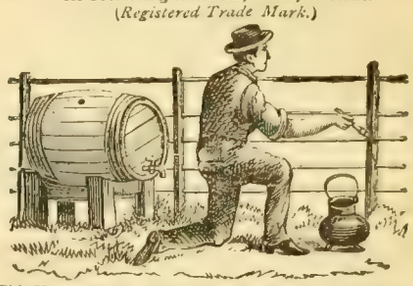

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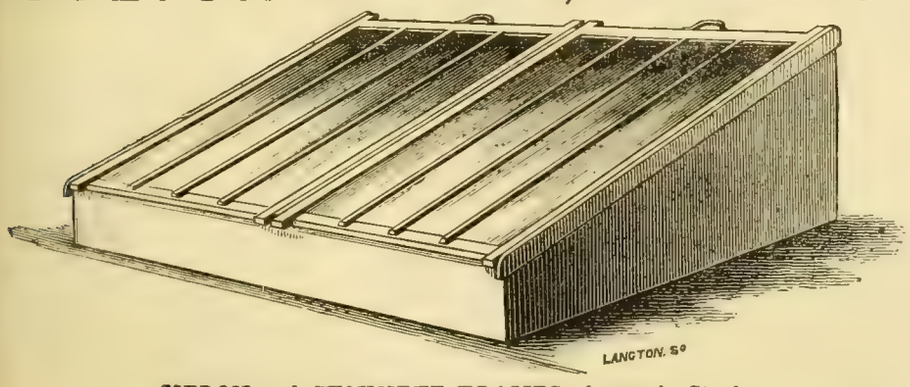

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Pure, Mild and Mellow, Delicious and Most Wholesome. Universally recommended by the Profession. The Cream of Old Irish Whiskies.

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Dr. Hassall says—"Soft and Mellow, Pure, well Matured, and of very excellent quality."

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Gold Medal, Paris Exhibition, 1878; Dublin Exhibition, 1865, the Gold Medal.—20, Great Titchfield Street, London, W.

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"By a thorough knowledge of the natural laws which govern the operation of digestion and nutrition, and by a careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast tables with a delicately-flavoured beverage which may save us many heavy doctor's bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly-nourished frame."—*Civil Service Gazette.*

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This extraordinary Medicine has a singular influence upon the blood, which it enriches and purifies. It removes all pimples and blotches, purifies the system, and acts like a charm. As a sustaining and purifying tonic it is invaluable, and highly recommended in long-standing cases of indigestion, nervousness, coughs, colds, scrofula, gout, dropsy, and wasting of flesh. Sold by all druggists. Caution.—Get the red and blue wrapper, with the Doctor's head in the centre. No other genuine. In bottles, 2*s.* 6*d.*, 4*s.* 6*d.*, and 11*s.*—131, Fleet Street, E.C.

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The Medical Profession for over Forty Years have approved of this pure solution as the Best Remedy for

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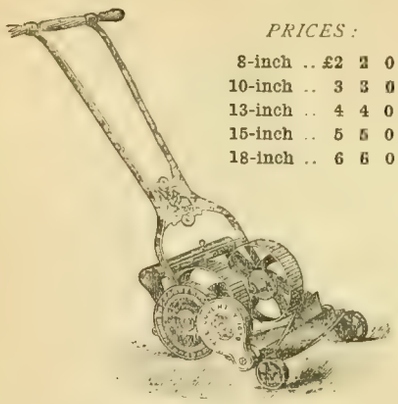

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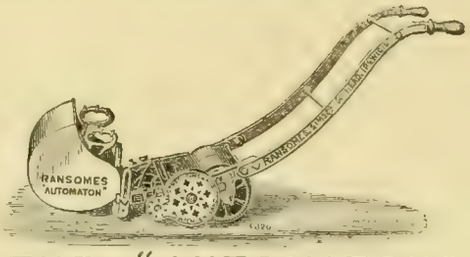

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The best general purpose machine.

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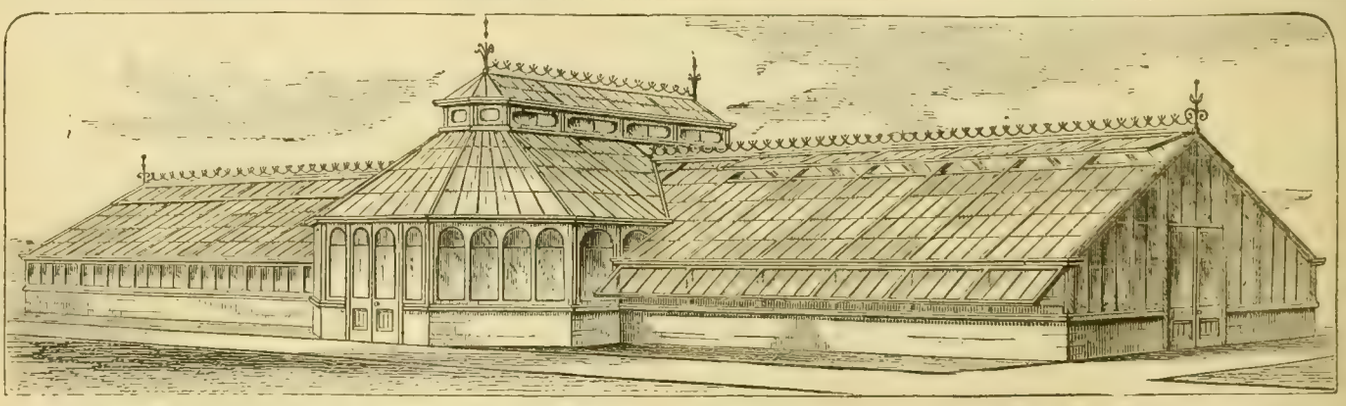
TWO GOLD MEDALS Awarded to us by Royal Horticultural Society,



At the Grand Show at Preston, July, 1878, Out of Fourteen Competitors.

Having extensive works, special machinery, and first-class workmen, who have been many years in the trade, we are able to supply the very *best class of buildings* at an extremely *low price*. As we are the *only firm* in the kingdom that has ever been awarded *Two Gold Medals* by the Royal Horticultural Society, this will be some proof of the quality of our productions.

Our buildings are constructed so as to combine great strength, simplicity, and durability, with extreme lightness, and being made of the very best materials, will, with ordinary care, *last a lifetime*. The ventilators at top and bottom open the whole length with one handle to each series. The glass used is 21-oz. British sheet, and the paint the best *genuine* white lead and oil.

HEATING APPARATUS, with thoroughly *reliable Boilers* supplied and fixed in the most practical and efficient manner, and guaranteed to work economically and answer its purpose in all seasons. We devote special personal attention to this branch of our business, and have *never* had a *failure*.

Plans, Estimates, and Catalogues free. Customers waited on in any part of the Kingdom.

R. HALLIDAY & CO., Royal Horticultural Works, MIDDLETON, MANCHESTER.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by William Richards, at the Office of Messrs. Bradbury, Agnew & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said William Richards, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—Saturday, May 15, 1880.
Agent for Manchester—John Heywood. Agents for Scotland—Messrs. J. Menzies & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 334.—Vol. XIII. { New Series. } SATURDAY, MAY 22, 1880. { Registered at the General Post-office as a Newspaper. } Price 5d. { Post Free, 5½d.

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NOTICE.—The "Gardeners' Chronicle" for next Saturday, May 29, will contain a Coloured Plate of "HERBACEOUS CALCEOLARIAS."

SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 *to the end of* 1878," *to secure them at once.*

The following is a List of those already published:—

1879.—October 11.	1880.—January 10.
,, 25.	,, 24.
November 8.	February 7, 21.
,, 15.	March 20, 27.
,, 29.	April 3.
December 13.	May 8.

Price 5d. each, post free 5½d.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

Now Ready, in cloth, 16s.,

THE GARDENERS' CHRONICLE,

Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.

NOTICE.—COMMITTEES' MEETINGS, Fruit and Floral at 11 A.M., Scientific at 1 o'Clock—Ordinary Meeting for Election of Fellows at 3 P.M., and Band, on TUESDAY NEXT, May 25. Admission, 1s.

LINNEAN SOCIETY, Burlington House, Piccadilly, W.

The ANNIVERSARY MEETING of the Linnean Society of London will be held here, on MONDAY, May 24, at 3 o'Clock precisely, for the ELECTION of a COUNCIL and OFFICERS for the ensuing Year.

London, May 15. FREDERICK CURREY, Sec.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.

The TWENTY-FOURTH ANNUAL GRAND FLOWER SHOW will take place on FRIDAY, July 2. Schedules and Prizes may be obtained on application to

26, Parade, Tunbridge Wells. Mr. E. F. LOOF, Sec.

AYLESBURY FLORAL and HORTICULTURAL SOCIETY.

SUMMER SHOW, THURSDAY, July 15, instead of July 8, as previously advertised. Schedules of Prizes, and any other information may be obtained of

Aylesbury, May 5. G. A. JEFFERIES, Sec.

SAXIFRAGA WALLACEI.—Much the best of all this family, its heads of flowers are so large as to be very useful for Cut Flowers, and for the rockery or borders. A gem. Post-free, 1s. each, 10s. dozen, £3 10s. per 100.

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SUTTON'S HOME-GROWN SEEDS, &c. PARIS, 1878.

In addition to FIVE PRIZE MEDALS awarded by the Juries, the LEGION OF HONOUR (*a superior distinction accorded to no other English Exhibitor of Seeds*) was conferred on our Managing Partner by the French Government.

SUTTON AND SONS, Reading, London and Paris.

Orchids.

THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.

Lion Walk, Colchester.

To the Trade.

DAHLIAS—40,000, in 400 varieties, now ready. CATALOGUE and Price on application to KELWAY AND SON, Langport, Somerset.

Sixty Thousand

HARDY and other BEDDING PLANTS, from 1s to 6s. per dozen. Special Prices per 100 or 1000 on application. Hardy and Exotic FERNS cheap. Apply for LIST to T. L. MAYOS, Nurseryman, Hereford.

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H. BLANDFORD, The Dorset Nurseries, Blandford.

New Dwarf Silver Variegated Geranium, "VISCOUNTESS CRANBROOK."

WM. POTTEN will send out the above on and after May 17, as advertised in the *Gardeners' Chronicle*, April 24, 1880.

Camden Nursery, Sissinghurst, Staplehurst.

Now is the Best Time to Transplant Hollies.

HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d to 31s. 6d. each Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.

RICHARD SMITH AND CO., Nurserymen, Worcester.

Bennett's Pedigree Roses should be worked on the SEEDLING BRIER.

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The Nurseries, West Dulwich, S.E.

BEDDING CLEMATIS, in assorted colours.—A great bargain is offered in very fine plants—25 for 20s., 50 for 30s., 100 for 50s., package included. Cash with order. A magnificent stock of CLEMATIS LANUGINOSA on offer. CHARLES NOBLE, Bagshot.

To the Trade.

CALCEOLARIA and PANSY SEED, our own saving, from the finest strains. Price on application to

DOWNIE AND LAIRD, 17, Frederick Street, Edinburgh.

PENZANCE EARLY WHITE BROCCOLI PLANTS.—Good plants, free by post, at 1s. 3d. per 100.

J. G. MITCHINSON, Seed Stores, Penzance.

MUSHROOM SPAWN, best Milltrack.—Orders are now being booked, to be delivered on and after June 1. For price and further particulars apply to H. THORNTON AND CO. (late A. Dancer), Fulham, S.W.

TO NURSERYMEN, FLORISTS, and others Cultivating Market Produce.—The undermentioned are prepared to undertake the SALE of the same at a very moderate Commission.—WISE AND RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

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WANTED, GARDENIAS, Crimson and Maréchal Niel ROSES, CARNATIONS, choice ORCHIDS. Best quality only. Letters and consignments to W. CALE, 4, Tavistock Row, Covent Garden, W.C.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878 Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit.

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PETUNIAS (strong seedling plants), violet, white and rose; ASTERS, same colours, all at 9d. per dozen or 5s. per 100. Packing free.

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ALPINES, HERBACEOUS and ROCK PLANTS, 24s. per 100, own selection. EUONYMUS JAPONICUS, Gold and Silver Variegated, suitable for bedding, 6 inches, 24s. per 100.

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MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.

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WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

VERBENAS and CALCEOLARIAS.—Strong, well-rooted Cuttings of White Verbenas, Boule de Neige, Eclipse Scarlet, and Purple King, the best purple, 6s. per 100, free for cash, safely packed. LOBELIA Bluestone, intense blue.—WILLIAM FIELD, Tarvin Road Nurseries, Chester.

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VERBENAS.—Strong, healthy, well-rooted Cuttings, free from disease, guaranteed to give satisfaction, at 6s. per 100, 50s. per 1000, of Purple, White, Crimson, and Pink, or Rose. Package free. Cash with orders. Sample dozens, post-free, 1s. 2d. per dozen.

T. FLETCHER AND SON, Florists, &c., Chesterfield.

IMPORTANT NOTICE.—GEO. DAVISON AND CO., SEED MERCHANTS and NURSERYMEN, Hereford, are now selling the cheapest and best COLLECTIONS of BIENNIALS and PERENNIALS ever offered, at 2s. 6d., 5s., 10s. 6d. and 21s. All Seeds of best quality and carriage free.

HARDY PERENNIALS and FLORIST FLOWERS.—The above Two New CATALOGUES are now in circulation, and may be had Post-free by applying to THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London, N.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.

CATALOGUES free. The Trade supplied.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.

THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

WHITE HELLEBORE POWDER.—The only destroyer of the destructive maggot on Gooseberry Trees, &c. To be had Wholesale of

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Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both destroys Daisies, Plantains, Rib-grass, &c., and invigorates the grass. Testimonials and instructions on application. 36s. per cwt.; 56 lb. kegs, 19s.; 28 lb. tins, 10s.

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GENUINE ROLL-MADE TOBACCO CLOTH and PAPER, for Fumigating Greenhouses. Cloth, 10d. per pound; Paper, 9d. per pound.—JAMES and CLAUSSON, 44, Hampton Street, Walworth Road, London, S.E. P.O.O. payable 227, Walworth Road, S.E.

COCOA-NUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1s.; 30 bags (bags included), 20s.; truck free to rail, 25s.

T. RICH (late Finlayson & Hector), Cocoa-Nut Fibre Works, 24 and 25, Redman's Row, Mile End Road, London, E.

LAWN MOWERS at DEANE AND CO.'S 15 per Cent. for Cash off Makers' Lists.

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2. Green's List, 10 in. 70s, 12 in. 90s, 16 in. 130s., 20 in. £8.
3. Samuelson's List, 9 in. 40s., 12 in. 55s., 15 in. 70s.
4. Archimedean, 10 in. 63s., 12 in. 84s., 14 in. 105s., 16 in. £6 6s.

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SALES BY AUCTION.

Established and Imported Orchids.
MONDAY NEXT.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY next, at 12 o'Clock precisely, 400 lots of ESTABLISHED ORCHIDS from various private collections, for unreserved Sale. Amongst them will be found Masdevallia tovarensis, Lindeni, Psittacina, and others; Lælia anceps alba, Angræcum sesquipedale, Odontoglossum læve, vexillarium, and other good varieties; Cattleyas, Oncidiums, Dendrobiums, Phalænopsis of sorts, and many other rare and fine species. Imported ORCHIDS, including Mormodes species, Dendrobiums, Calanthe vestita, Limatodes rosea, &c.; together with 140 Teakwood Orchid Baskets

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Cattleya Mossiæ.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, May 24, an importation of CATTLEYA MOSSIÆ, in variety, just arrived from South America, in excellent condition. The plants are good, and can be specially recommended.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Hornsey, N.
TWELFTH ANNUAL BEDDING PLANT SALE.
IMPORTANT UNRESERVED SALE of about 80,000 unusually well-grown GREENHOUSE and BEDDING PLANTS, in rich assortment, consisting of Verbenas, Fuchsias, Heliotropes, 25,000 choice Geraniums, the whole of which are wintered plants, including Mrs. Pollock, Madame Vaucher, Vesuvius, and other well-known varieties; 10,000 Lobelias, 4000 Calceolarias, 5000 Alternantheras, of sorts; choice Roses in pots, Spiræas, Pelargoniums, Fuchsias, Heliotropes, &c.

MESSRS. PROTHEROE AND MORRIS will SELL the above Stock, on the Premises, The Nursery, Hornsey, N., on TUESDAY, May 25, at 12 o'Clock, by order of Mr. J. Page (successor to Mr. Cleall).

On view three days prior to Sale. Catalogues, post-free, from the Nursery, and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Acton.
IMPORTANT SALE of FREEHOLD PROPERTY.
Dissolution of Partnership

MR. J. P. HOPE is favoured with instructions to SELL by AUCTION, at the Mart, Tokenhouse Yard, near the Bank of England, E.C., on TUESDAY, June 1, at 2 o'Clock, the very valuable FREEHOLD PROPERTY, known as the Lecture Hall, well situate in Church Road, Acton, which, being the only public hall in a parish with 15,000 inhabitants, presents an unusual opportunity of securing a first-class investment. Also the double-fronted detached Freehold Villa, with large Garden, Coach-house, and Two-stall Stable, known as St. Mary's Villa, situate in the Park Road North, Acton; and the Freehold Land, nearly an acre in extent, with valuable frontage to Park Road, known as Temperance Nursery, together with the Greenhouses, Furnaces, and Hot-water Apparatus as fixed: the whole forming excellent home and business premises for a Nurseryman, or suitable for the erection of small Houses, which are much in demand. The Nursery Stock, Vans, Horses, &c., can be taken at a fair valuation, or will be Sold by Auction the week after this sale.

Particulars will shortly be ready, and may be obtained of Messrs. RUSSELL, DAVIES AND RUSSELL, Solicitors, 59, Coleman Street, E.C.; Messrs. RUSSELL, SON AND SCOTT, Solicitors, 14, Old Jewry Chambers, E.C.; at the "Station" and "Prince of Wales" Hotels, Acton; at the Mart; and of the Auctioneer, Mr. J. P. HOPE, (opposite) North London Station, Acton, W.

10,000 Odontoglossum Alexandræ, Pacho varieties.

MR. J. C. STEVENS has been instructed by Mr. F. Sander, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 27, at half-past 12 o'Clock precisely, an immense Importation of ODONTOGLOSSUM ALEXANDRÆ, the Queen of Odontoglots. The consignment, taking quality, size, and quantity into consideration, will be found the grandest that have ever reached this land; they were collected by Mr. C. Falkenberg in the neighbourhood of Pacho, the district for the best varieties: the plants being scarce in that locality, no expense has been spared to get this grand lot together. The importation is of an even size, few small plants being among it, and the whole are in the finest condition.

The Sale also contains a large consignment of CATTLEYA TRIANÆ, and OTHER ORCHIDS.

May be viewed the morning of Sale, and Catalogues had.

Oakwood House, High Road, Tottenham.
Bruce Grove Road Station, Great Eastern Railway.

MR. J. C. STEVENS will SELL by AUCTION, on the Premises as above, on SATURDAY, May 29, at half-past 12 o'Clock precisely, a small collection of STOVE and GREENHOUSE PLANTS, including a variety of Orchids, Ferns, Dracænas, Eucharis, Palms, Camellias, and Azaleas, &c.; also Geraniums, Lobelias, Calceolarias, and other bedding plants: Galvanised Hurdles, Terra Cotta Vases, Garden Lights, Fowl Coops, Beehives, and Sundries.

May be viewed the day prior and morning of Sale, and Catalogues had on the Premises, and of Mr. J. C. STEVENS, Auctioneer, 38, King Street, Covent Garden, W.C.

Masdevallia rosea.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 31, at half-past 12 o'Clock precisely, a fine lot of this splendid MASDEVALLIA, described in *Gardeners' Chronicle*, May 1. Professor Dr. Reichenbach says:—"What is Masdevallia rosea? some of our readers may ask. Well, it is a peculiar type of Masdevallia, quite distinct from any species we have, bearing flowers of a length of 11 centimetres, the even sepals are 3 centimetres broad, of a most lovely rich rose-purple, the long tube of an exquisite purple-scarlet. Dr. Lindley sketches it:—'Flowers pink, 2 inches long, very showy.' This glorious thing, so long desired, was saved from the wrecked ship, *Para*, at St. Michael's, Azores, by our friend, F. C. Lehmann. The very few plants will appear at Mr. Stevens' Rooms to make their European *début*. We hope to give soon further details and a woodcut of the queen of Masdevallias. This Masdevallia is most difficult to import, and to Mr. Lehmann's energy and skill we owe that now it is alive in Europe."

The Sale will also contain a fine lot of ODONTOGLOSSUM ALEXANDRÆ, O. VEXILLARIUM LEHMANNI, O. LUTEO-PURPUREUM, various DENDROBIUMS, CŒLOGYNES, ODONTOGLOTS, ONCIDIUMS, and other ORCHIDS.

May be viewed the morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS has received instructions from W. Turner, Esq., Over Hall, Winsford, Cheshire, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 2, and following days (instead of the days previously announced), at half-past 12 o'Clock precisely each day, without the least reserve, the entire COLLECTION of ESTABLISHED ORCHIDS. Amongst other grand things will be found Lælia Warneri, Saccolabium Turneri (spikes nearly 2 feet long), Cattleya Skinneri alba, C. Morgani, C. Wagneri, Lælia Williamsi, and many other rare and valuable plants.

May be viewed the morning of Sale, and Catalogues had.

WANTED to PURCHASE, the FREEHOLD of a MARKET GARDEN or Small NURSERY, or LAND suitable for the above purpose, in a populous district, within easy distance of a large town of not less than 20,000 inhabitants.

B., 7, Davy Street, Wakefield Road, Bradford, Yorkshire.

Ireland.

TO BE SOLD, by Tender, in consequence of death of Proprietor, the Old Established PARK NURSERY, 1 mile from Wexford Railway Station. Contains 7 Acres, 2 Greenhouses, Propagating and Fern Houses, Foreman's Dwelling, also Seed Warehouse in Wexford. In full work: good connection. Farm of 15 acres, convenient, if required. Long leases. Tenders will be received and fuller particulars given by JOHN HINTON, Auctioneer, Wexford.

Grange Nursery, Heaton Mersey, near Manchester.

TO BE DISPOSED OF, by Private Treaty, Grange Villa, Heaton Mersey, with the site thereof and adjoining Land used as a Nursery, and containing together by admeasurement 14,520 square yards or thereabouts. The house comprises Dining, Drawing and Breakfast-rooms, with Kitchen, Scullery, Six Bed-rooms, Dressing-room, Water-closet, and Store-room, and is Cellared throughout. The Outbuildings consist of Stabling for Three Horses, Coach-house and Harness-room, with large Loft and Store-cupboard, Cow-house, Piggeries, Pigeon-house, and Hen-house. There is a Greenhouse attached to the house. On the land there is erected a range of Glass 225 feet long, consisting of Vineries, Fernery, Greenhouse, and Propagating Pit. There are materials on the ground requisite for Erecting another Range of Glass, the foundations for which are already laid. There is a good Stock of Rose Trees, Shrubs, Fruit Trees, and other Plants, Flowers, &c. The Premises have for some time been used as a Nursery by the late proprietor, Mr. Thomas Studd deceased, and are replete with every convenience for carrying on the Business of a Nurseryman. The situation is healthy, and the premises command an extensive view of the Derbyshire Hills, Alderley Edge and Bowdon.

The Premises can be inspected on application at the House, and any further information can be obtained from Mr. W. R. MINOR, Solicitor, 26, Brown Street, Manchester.

Brentford, close to Station.
To FLORISTS and MARKET GARDENERS.

TO BE LET, well planted GARDEN GROUND, of about 2½ acres, with Stabling, Packing Sheds, Greenhouses, Pits. Water Tanks, &c. Immediate possession can be had. For further particulars, terms, and cards to view, apply to

Mr. SAMUEL GODDARD, Auctioneer, 217, High Street, Brentford, Middlesex.

Second-Hand Conservatory.

TO BE SOLD, IMMEDIATELY, all the Woodwork, Shelving, Glass and Ventilating Gear of a strong Span-roof Conservatory—size about 25 feet long, by 18 feet wide—at present attached to the mansion belonging to Duncan Graham, Esq., Lydiate House, Willaston, near Horton, Cheshire, which must be removed at once to enable the contractors (Bennett Bros, Liverpool) to erect a larger conservatory on its site.

For further particulars apply to BENNETT BROS., Horticultural Engineers, Sir Thomas's Buildings, Liverpool.

SPECIAL OFFER.

GERANIUM, Golden Tricolor, Masterpiece, the best out, 6s. per dozen.
" Golden Tricolor, Prince of Wales, 6s. per dozen.
" Golden Tricolor, Peter Grieve, 5s. per dozen.
" Silver Tricolor, Mrs. Laing, 6s. per dozen.
" 6 other good varieties, Silver Tricolors, for 3s.
" 6 varieties beautiful Silver Variegated, with distinct coloured flowers, 6s.
" 12 varieties, good and distinct Zonals, for 2s. 6d.
" 12 varieties, good and distinct Doubles, for 2s. 6d.
COLEUS, 12 varieties, good and distinct, for 2s. 6d.
ECHEVERIA SECUNDA GLAUCA, 10s, per 100.
PRIMULA ROSEA (new and quite hardy) 1s. each, 9s. per doz.
FUCHSIA PENDULÆFLORA, 6d. each, 5s. per dozen.

The above are good plants, in single pots, or can be sent out of pots, post-free, at same prices.

Any friends who have not received W. P.'s Catalogue, please write, and one shall be sent.

WM. POTTER, Camden Nursery, Sissinghurst, Staplehurst, Kent.

CAULIFLOWER AND CABBAGE
PLANTS.

Our own selected stocks, in good strong plants. Veitch's Autumn Giant Cauliflower, per 1000, 7s. 6d.; Walcheren and Early London Cauliflower, per 1000, 6s.; Brussels Sprouts, per 1000, 5s.; Daniel's Defiance Cabbage, per 100, 1s., per 1000, 7s. 6d.; Enfield Market, Early Nonpareil, and other sorts, per 1000, 5s.; Champion Drumhead or Cattle Cabbage, extra fine stock, per 1000, 4s. 6d.

Free on Rail at prices quoted. Orders of 20s. and upwards carriage free.

DANIELS BROTHERS,
The Royal Norfolk Seed Establishment, Norwich.

TEA SCENTED ROSES,
For Planting Out or Greenhouse Culture.

Upwards of 20,000 strong, well established plants, in pots.

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CRANSTON'S NURSERY & SEED COMPANY, Limited,
KING'S ACRE, near HEREFORD.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION, for the Relief of Decayed Farmers, their Widows and Orphans.

Patron—HER MAJESTY THE QUEEN.
President—HIS GRACE THE DUKE OF RICHMOND AND GORDON.

ALLOWANCES to PENSIONERS.
Married .. .. £40 per annum,
Ma e .. .. £26 ,,
Widows and unmarried Orphan Daughters £20 ,,

Every information to be had of the Secretary, by whom Subscriptions and Donations will be thankfully received.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The TWENTIETH ANNIVERSARY FESTIVAL, in aid of the Funds of the Institution, will take place at Willis's Rooms, on THURSDAY, June 3, at a quarter to 7 o'Clock.

The Right Hon. LORD CARINGTON in the Chair.

Dinner Tickets 21s., application for which must be made to the Secretary.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The ANNUAL GENERAL MEETING will be held at Willis's Rooms, St. James's, on WEDNESDAY, June 16, at 11 o'Clock precisely; and the ELECTION of PENSIONERS will take place on the same day, at half-past 11 o'Clock.

All Subscriptions shall be deemed payable on January 1 in each year; and no Contributor shall vote in respect of an Annual Subscription while the same is in arrear.

Offices of the Institution, 26, Charles Street, Haymarket, S.W.

SEEDLING PELARGONIUMS.—An inspection of our extensive Collection of the above would well repay the trouble of a visit.

F. AND A. SMITH, West Dulwich, S.E.

New Japanese Azalea.

AZALEA ROSÆFLORA.—This beautiful species, which is now offered for the first time, differs from every other Azalea in cultivation. The flowers in the bud resemble those of a miniature Tea Rose, whilst as they expand they regularly imbricate like those of a Camellia. These qualities, combined with the fact that it does not fall off, render it invaluable for coat flowers, bouquets, as well as for exhibition and general decorative purposes. It is compact and free in growth, and much branched; colour deep rosy-red.

First size, 6 inches high, some in flower, 10s. 6d.
Second size, 6 to 9 inches high, some in flower, 21s.
Third size, 1 foot high, many in flower, 31s. 6d.

WM. HUGH GOWER (Manager to the late Wm. Rollisson & Son), The Nurseries, Tooting, S.W.

Now being Distributed!
NEW ZONAL PELARGONIUM,
WEST BRIGHTON GEM.
Unsurpassed for Winter Flowering.

This has been awarded a First-class Certificate as a New Plant by the Brighton and Sussex Horticultural Society, and a Cultural Commendation by the Royal Horticultural Society. Price 10s 6d. each, two for 20s (usual allowance to the Trade). As the stock is limited, orders will be booked and executed in strict rotation.

For further particulars see the *Times* of December 17, 1879, the *Journal of Horticulture* of December 18, the *Gardeners' Chronicle*, of December 20, and for full description and CATALOGUE of Alternantheras, and other Carpet Bedding Plants, apply to

WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

MILES' HYBRID SPIRAL MIGNONETTE.

Extract from the *Journal of Horticulture*:—"This is the finest Mignonette that has come under our notice. It is the same variety that attracted the attention of Her Majesty the Queen, at the great Exhibition at South Kensington."

Plants of the above splendid variety, established in pots, 6s. per dozen.

WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

MESSRS. THOMAS CRIPPS AND SON are now sending out the undermentioned three new CLEMATISES, all of the viticella or Jackmanni section:—

EARL BEACONSFIELD (T. Cripps & Son).—A splendid hybrid, described in the *Gardeners' Chronicle*, June 22, 1878, as "a beautiful flower of a rich royal purple colour, and splendid form. This variety belongs to the viticella type, and is remarkably richly coloured." First-class Certificate Royal Horticultural Society. Price 15s. each

LILACINA FLORIBUNDA (T. Cripps & Son).—Pale grey-lilac, deeply veined; flowers the size of C. Jackmanni, but having six petals and of perfect shape. This is the lightest variety and most abundant bloomer in this section. An admirable contrast to C. Jackmanni for bedding purposes. Price 10s. 6d. each.

OTHELLO (T. Cripps & Son).—Flowers medium, a good shaped six-petalled variety. Late and very free flowering: colour dark velvety purple. Price 10s. 6d.

Discount to the Trade.

Plates of "Earl Beaconsfield" and "lilacina grandiflora," 2s. 6d. each.

The Tunbridge Wells Nurseries, Kent.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers the following Plants:—

PELARGONIUMS—Waltham Seedling, fine crimson; Lucius salmon, 1s. 6d. per doz., 10s. per 100; Madame Vaucher and Virgo Marie, two best whites, 1s. 6d. per doz., 12s. per 100; Dr. Denny, nearest to blue, fine, 5s. per doz. Pelargoniums, in 12 choice varieties, 4s. per doz., 25s. per 100

" SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 1s. 6d. per doz., 12s. per 100; Princess Alexandra, very fine, silver edge, 2s. per doz., 15s. per 100; Bijou, 10s per 100.

" BRONZE—McMahon and Black Douglas, both first-class, 2s. 6d. per doz., 18s. per 100.

LOBELIA—Bluestone (true), strong plants, 1s. 6d. per doz., 10s. per 100; smaller, 2s. 6d. per 100, 20s. per 1000.

AGERATUM—Imperial Dwarf, blue, makes a fine bed, 1s. 6d p. doz., 10s. p. 100; or from stores, 5s. p. 100, 40s. p. 1000.

COLEUS Verschaffeltii and IRESINE Lindeni, crimson leaf, very effective, 1s. per doz., 6s. per 100.

HELIOTROPE—Finest dark, strong, from stores, 1s. per doz., 6s. per 100.

DAHLIAS—Best sorts, white, yellow, scarlet, dark rose, &c., 2s 6d. per doz., 15s. per 100, good plants.

TROPÆOLUM—Vesuvius, scarlet, dwarf and free, 10s. per 100.

NIPHETOS—Pure white Tea Rose, strong stuff from stores, on own roots, 30s. per 100, 5s. per doz.

Packing included. Terms cash.

Cemetery Nursery, Gravesend.

Now Ready—Good Spring-sown Cabbage and Other PLANTS, &c.

GEE'S superior Bedfordshire-grown Plants, &c., grown from his far-famed selected stocks, can again be supplied in any quantities, as follows, for cash with orders:—
CABBAGE PLANTS—Early Enfield, Nonpareil, Large Drumhead, Thousand-head, and Red Dutch.
SAVOY.—Large Drumhead, and Dwarf Green Curled.
SCOTCH KALE, BRUSSELS SPROUTS, finest.
KOHL RABI.—Large Green.
All the foregoing at 4s. per 1000.
BROCCOLI.—Purple Sprouting, at 5s.; Adams' Early White, Knight's Protecting, and Wilcox's Large Late White, at 7s. 6d. per 1000.
CAULIFLOWER.—Veitch's Giant, true, 15s. per 1000; Early London and Walcheren, 10s.
LETTUCE—Old Brown Cos, Victoria, Drumhead, and Paris Green Cos, all at 5s. per 1000.
Packages 6d. per 1000 extra.
F. GEE, Seed and Plant Grower, Biggleswade, Beds.

Bedding Plants, &c.

F. AND A. SMITH offer the undernoted, in well established hardened plants, at low prices:—

Alternantheras	Fuchsias
Ageratums	Geraniums, best sorts
Coleus in variety	Heliotropes
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Cobœa scandens	Petunias
Calceolarias	Tropæolums
Dahlias	

The Nurseries, West Dulwich, S.E.

BEDDING PANSIES and VIOLAS, for continuous blooming—Blue Bell, Clevedon Blue, Clevedon Yellow, Tory, Victoria, Waverley; strong plants, from open ground, with abundance of roots, all at 2s. per dozen, or 12s. per 100.
Golden Perpetual (best yellow), Purity (best white), at 3s. per dozen. Carriage paid on all orders above £1.
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Important Notice.

ROSES—ROSES—ROSES.—Hybrid Perpetuals, Tea-scented, and other Roses in pots, for blooming in conservatory, or planting out at once, fine strong healthy plants, including A. Sisley, C. Mermet, C. Paris, C. Devoniensis, I. Pirola, J. Ducher, Lamarque, Mad. Lambard, Niphetos, S. Hibberd, S. d'Elize, S. P. Neron, &c., 12s., 15s., 18s. and 24s. per dozen. Also a very fine lot of Bennett's Pedigree Roses, including the new striped Rose, American Banner, 24s. per dozen. Fine plants of American Banner, 5s. each. LIST gratis on application.
J. HOUSE, Eastgate Nurseries, Peterborough.

Verbenas—50,000 Now Ready for Sale.

S. BIDE can now supply, as he has done on previous occasions, really good strong spring-struck Plants of Purple, Scarlet, White, and Pink VERBENAS, at 6s. per 100. Good Exhibition Varieties, 8s. per 100. IRESINE LINDENI, 6s. per 100. HELIOTROPE, 6s. per 100 COLEUS VERSCHAFFELTII, 8s. per 100. MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATA, 8s. per 100. Package free for cash with order.
Also strong healthy CUTTINGS of the above at half-price, free by post.
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Primulas — Primulas — Primulas.

Eleventh Year of Distribution.
WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100; package and carriage free.
CINERARIAS, choicest assortment, same size and price.
The above are quite equal to those I have sent out in previous years. Cash with order.
JOHN STEVENS, The Nurseries, Coventry.

To the Trade.

CINERARIA SEED, 1880 Crop.
F. AND A. SMITH can supply the above (saved from their well-known collection) by weight. Price on application.
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Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

Verbenas—Verbenas—Verbenas.

STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6s. per 100; 50s. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8s. Terms cash.
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FUCHSIAS, 100 nice young plants, in 12 splendid varieties, 8s.
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CALCEOLARIA, Golden Gem, 6s. per 100. Terms cash.
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JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, has still on hand a fine Stock of Fruiting and Planting CANES of Muscat of Alexandria, Bowood Muscat, Mrs. Pince, Gros Guillaume, Burchardt's Prince, and Madresfield Court. Also Planting Canes of several other varieties. CATALOGUE free. The Trade supplied.

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Should be in every Collection.
GEORGE COOLING has pleasure in offering fine plants, coming into bloom, of these desirable varieties, viz.:—

Beauty of Stapleford	Jean Sisley
Duke of Connaught	Michael Saunders
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Duchess of Westminster	Pearl
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The complete Set, 25s., basket and packing free for cash with order.
New LIST of Roses in pots, Clematis, &c., post-free.
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W. COOMBER, Curator, Royal Botanic Gardens, Regent's Park [Sydenham
W. H. HEAD, Superintendent, Crystal Palace Gardens,
JAMES VEITCH & SONS, Royal Exotic Nursery, Chelsea
E. G. HENDERSON & SON, Pine-apple Nursery, Maida Vale [loway
B. S. WILLIAMS, Victoria and Paradise Nurseries, Hol-
HUGH LOW & Co., Clapton Nursery, Clapton
CHARLES TURNER, Royal Nurseries, Slough
CHARLES LEE & SON, Royal Vineyard Nursery, Ham-
CRANSTON & Co., Nurserymen, Hereford [mersmith
JOHN FRASER, Lea Bridge Road Nurseries, Leyton
OSBORN & SONS, Fulham Nurseries, Fulham
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RICHARD SMITH & Co., Nurserymen, Worcester
J. W. WIMSETT, Ashburnham Park Nursery, Chelsea
J. STANDISH & Co., Nurserymen, Ascot
J. LAING & Co., Nurserymen, Forest Hill
T. JACKSON & SON, Kingston-on-Thames
WOODROFFE & SON, Harrow Road
ROBT. P. KER & SONS, Nurserymen, Liverpool
FISHER, SON & SIBRAY, Handsworth Nurseries, Sheffield
WM. THOMSON & SON, Tweed Vineyard, Clovenfords, Galashiels, N.B. [Street, Chester
F. & A. DICKSON & SONS, Nurserymen, 106, Eastgate
THOS. CRIPPS & SONS, Nurserymen, Tunbridge Wells
J. BUNYARD & SONS, Nurserymen, Maidstone
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F. R. KINGHORN, Sheen Nursery, Richmond, Surrey
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P. S. LAIRD & SINCLAIR, Dundee, N.B.
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F. & A. SMITH, Nurserymen, Dulwich
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G. NORMAN, Marquis of Salisbury's, Hatfield House
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J. ROBERTS, Baron Lionel de Rothschild's, Gunnersbury
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Sold in Packets 1s. each, and in Bags, ¼ Cwt. 7s. 6d.; ½ Cwt. 12s. 6d.; 1 Cwt. 20s.

Special Quotations by the Ton.

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HELLEBORUS NIGER, the Christmas Rose. This beautiful white flower, coming to perfection at Christmas time, is already much too little grown, being hitherto too scarce and dear. Millions of its fine blossoms should be ready for the markets in mid-winter, where only hundreds are now to be found, and would always prove the most profitable thing it is possible to grow. It requires no heat nor care. We are prepared to supply for immediate orders any quantity of fine roots at one-sixth the usual prices, and we believe that investment in them will prove the finest speculation possible. For terms apply to
HOOPER AND CO., Covent Garden, London, W.C.

BEDDING PLANTS, &c.
GERANIUMS, Bedding, Zonal and Nosegay, in choice sorts, our selection, 2s. 6d. and 3s. per dozen, 16s. and 20s. per 100.
GERANIUMS, Bedding, Bicolor varieties, 3s., 3s. 6d., and 4s. per dozen.
" choice, for pot culture in summer or winter, twelve fine varieties, 4s. and 6s.
Our collection is second to none, including the best sorts from all raisers, home or foreign.
AGERATUMS and LOBELIAS, strong, and well hardened off from stores, 1s. per dozen, 5s. per 100.
" " in pots, 2s. per dozen, 12s. per 100.
CALCEOLARIA, Golden Gem, 2s. per dozen.
DACTYLIS ELEGANTISSIMA, GOLDEN PYRETHRUM, SEDUMS of sorts, for Carpet Bedding, 1s. per dozen, 6s. per 100.
HELIOTROPES, COLEUS, TROPÆOLUMS, and SALVIAS, fine named sorts, 2s. per dozen, 12s. per 100.
ANTIRRHINUMS, PHLOXES, PANSIES, and PINKS, fine named sorts, 3s. per dozen; 12 of each, 48 in all, 11s.
ALTERNANTHERAS and IRESINES, of sorts, 2s. 6d. per dozen, 15s. per 100.
BEGONIAS, Tuberous, in great variety, 4s., 6s., 9s., and 12s. per dozen.
CENTAUREA RAGUSINA, 3s. 6d. per dozen.
CHRYSANTHEMUMS and FUCHSIAS in variety, 2s. 6d. per dozen, 15s. per 100
HERBACEOUS and ALPINE PLANTS, 12 in 12 sorts, 4s.; 50 in 50 sorts, 12s.
DELPHINIUM, fine sorts, to name, 6s. per dozen.
PANSIES and VIOLAS, for bedding, in great variety, 2s. per dozen, 12s. per 100.
PLANTS, Stove, in great variety, 6s., 9s., and 12s. per dozen our selection.
" Greenhouse, 6s., 9s., and 12s. per dozen, our selection.
FERNS, Stove or Greenhouse, 9s. and 12s. per dozen, our selection.
CATALOGUES post-free.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

MEXICAN ORCHIDS, PALMS, TREE FERNS, &c.—The undersigned has for several years past collected Orchids, Arborescent Ferns, &c., for some of the largest European and United States Nurseries. He is prepared to furnish price LISTS upon application by mail. The best season for collecting Orchids is now at hand, and will terminate with the month of May. Large orders can be filled at very low rates for cash in advance, or upon satisfactory references—HUGO FINCK, Cordoba, Mexico

MATRICARIA INODORA PLENA (NEW DOUBLE MAY-WEED).
Figured in *Gardeners' Chronicle* of December 13, 1879.
Will bear the severest winter without protection. If grown in a rich border it will flower in the greatest profusion from June till October, and the flowers, which are pure white, are equal to those of a Pompon Chrysanthemum. It is invaluable for cutting. 1s. 6d. each, 12s. per dozen, 75s. per 100. Engraving sent with three plants. The usual discount to the Trade.—Messrs. DICKSONS AND CO., 1, Waterloo Place, Edinburgh.

Myosotis elegantissima.

The new Silver-edged, Blue-flowered Forget-me-not.
RODGER, McCLELLAND AND CO. are now sending out this superb Novelty for the Spring Garden. Good plants 3s 6d. each, 36s. per dozen. Can be sent by post. 64, Hill Street, Newry.

VIOLAS, 20,000 fine strong plants:—
" cornuta, white } 5s. per 100, 45s. per 1000.
" " Queen of Blues, }
LOBELIA, Emperor William, strong autumn-struck, from stores, 2s. 6d. per 100, 20s. per 1000; from single pots, 5s. per 100, 45s. per 1000.
Cash only. Carriage and package free.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

To the Trade,

HOME-GROWN TURNIP SEEDS.
H. AND F. SHARPE invite the attention of the Trade to their fine selected Stocks of TURNIP SEEDS, which comprise, amongst others, the following excellent varieties, viz.:—

Sharpe's Improved Large Swede	Sutton's Mammoth Purple-top
Sharpe's West Norfolk Swede	Devonshire Grey Stone
Sutton's Champion Swede	Pomeranian White Globe
East Lothian Swede	Lincolnshire Red Round
Green-top Yellow Aberdeen	Stratton Green Round
Golden Yellow Aberdeen	White Stone or Stubble

The quality is very fine, and the prices will be found very advantageous to purchasers. For further particulars apply to
Seed Growing Establishment, Wisbech.

Special Cheap Offer of Good Plants.

All for Exhibition or Garden Decoration, and fine named varieties of our selection.
PANSIES, PINKS, PHLOXES and DAHLIAS, 3s. per dozen, 20s. per 100, or 12 of each for 11s.
CHRYSANTHEMUMS, FUCHSIAS, COLEUS, SALVIAS, 2s. 6d. per dozen, 15s. per 100, or 12 of each for 9s.
LOBELIAS and AGERATUMS, best sorts, from store-pots, 1s. per dozen, 4s. per 100.
CATALOGUES of all Indoor and Outdoor Plants for the largest or smallest Gardens, Conservatories, &c. Very comprehensive. Prices very reasonable. Plants true to name.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

Bedding Plants, &c.—Notice.

WOOD AND INGRAM beg to offer their very fine stock of Variegated, Zonal, and other Geraniums, Verbenas, Centaureas, Hollyhocks, Alternantheras, Calceolarias, Iresines, Lobelias, and all varieties of the most useful BEDDING PLANTS. Also the following, in 5-inch pots:—Pelargoniums, 8s. per dozen, 60s. per 100; Herbaceous Calceolarias, 8s. per dozen, 60s. per 100; Fuchsias, 4s. per dozen, 30s. per 100; Tree Carnations, in bud, 12s. to 18s. per dozen, 80s. per 100. For prices of Bedding Plants see Special Trade Offer, which will be sent, free by post, on application.
The Nurseries, Huntingdon, and St. Neots.

NEW PLANTS.

THE BEST and PRETTIEST FOLIAGED ZONAL PELARGONIUM sent out for years. See H. CANNELL'S FLORAL GUIDE, post-free for 12 stamps.

Come and See.

MY POLYANTHUS, AURICULAS, Pansies, Violas, Daisies, Wallflowers, Oxlips, Coleus, Calceolarias, Begonias, Mimulus, Myosotis, Primroses, and many other most interesting Plants, which H. CANNELL obtains his Stock and Seeds from. They are now in full flower, and the choicest of the choice.

THE HOME FOR FLOWERS,
SWANLEY, KENT.

SPRING FLOWERS.

Choice Varieties of POLYANTHUS and Single and Double PRIMROSES and AURICULAS, &c. Fine Strain of SWEET WILLIAM. Apply to
Mr. COOPER, Calcot Gardens, near Reading.

CABBAGE PLANTS, &c.

CABBAGE, SAVOY, CAULIFLOWER, BRUSSELS SPROUTS, BROCCOLI, CELERY.

List of sorts and prices on application, to
CRANSTON'S NURSERY and SEED COMPANY (Limited), King's Acre, Hereford.

Come and See.

MY BEDDING PLANTS.

H. CANNELL begs to announce that he has the largest and choicest stock of Plants adapted for all kinds of outdoor garden decoration ever offered. Small lots by post, and large quantities loaded direct into railway truck.

See H. C.'s FLORAL GUIDE, sixty-nine Bed Designs, with key to same and every information, post-free for 1s.

SEEDLINGS.
PRIMULAS, CINERARIAS, &c.

H. CANNELL begs to announce that he has probably half a million of the above. 1s. 6d. per dozen, 10s. per 100, post free.

It is needless to say that all are from my own unequalled collection, and scientifically fertilised with my own hands Two houses (100 feet each) devoted to their culture, and during last winter they were the admiration of all. This collection was never before approached, nor such a splendid crop of seed ever obtained in England.

THE HOME FOR FLOWERS,
SWANLEY, KENT.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6s. per truck. BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15s. per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4s.; 5 bags, 20s., 10 bags, 36s. Bags, 4d. each.

Fresh SPHAGNUM, 10s. 6d. per bag.
WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE, as supplied to all the Royal Gardens of Europe, useful at all seasons, Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c., Destroys all Slugs and insects. Bags (about 4-bushel), per bag 1s., 15 bags 12s., 30 bags 20s. (all bags included); Van-load at Works, 4s.; ditto delivered within 5 miles, 10s.; Truck-load (about 250 bushels), free on rail, 25s. Terms cash with order.

CHUBB, ROUND AND CO.,
Fibre Works, Westferry Road, Milwall, London, E.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,
3d. per bushel; 100 for 20s.; truck (loose, 250 bushels), 30s.; 4-bushel bags, 4d. each.
LIGHT BROWN FIBROUS PEAT, 5s. 6d. per sack; 5 sacks, 25s.; 12 for 45s., or 36s. per ton.
BLACK FIBROUS PEAT, 5s. per sack, 5 sacks 22s.; 12 for 40s., or 34s. per ton; sacks, 4d. each.
COARSE SILVER SAND, 1s. 9d. per bushel; 15s. half ton, 26s. per ton; in 1 cwt. bags. 4d. each.
YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1s. per bushel.
SPHAGNUM MOSS, 8s. 6d. per sack.
Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH.
10, Castle Street, Endell Street, Long Acre, London, W.C.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE, 4 bushels, 1s.; 120 for 20s.; Truck, 25s.
BEST BROWN ORCHID PEAT, 5s. per Sack, 5 for 22s. 6d.
BLACK FIBROUS PEAT 4s. 6d. per Sack, 5 for 20s. Sacks
COARSE SILVER SAND, 1s. 6d. per Bushel. [1d. each.
YELLOW FIBROUS LOAM, splendid LEAF-MOULD and PEAT-MOULD, 1s. per bushel. TOBACCO CLOTH and PAPER, highly effective—Cloth, 8d. per lb.; Paper, 7d.; Roll Paper, best quality, 1s. Write for Price List.
W. HERBERT AND CO., Broad Street Mews, Broad Street, City, E.C., (turning opposite Metropolitan Railway Station).

FLORVITA.

THE LIFE OF FLOWERS.

For Stimulating and Quickening the Growth of Plants, and producing a rapid and high development of blossoms.

Samples, post paid, 1s. 2d. Prepared only by
PRENTICE BROS., Chemical Laboratory, Stowmarket.
Sold by all Chemists and Florists, in bottles 1s. and 2s. 6d. each, and in jars 18s. and 36s. each.

WEEDS, AND HOW TO DESTROY THEM.—Gentlemen can have the Weeds, Moss, &c., Destroyed on their Garden Walks, Carriage Drives, &c., without disturbing the gravel, by watering them with a solution of SMITH'S WEED KILLER, a liquid preparation destructive to all vegetable growth. It merely requires mixing with cold water, and is applied with an ordinary watering-can. Four gallons of the concentrated solution make 100 gallons of Weed Killer. Price 7s. 6d., carriage paid to any railway station.

References and particulars on application to the Manufacturer and Proprietor, MARK SMITH, Operative Chemist, 8, Mercer Row, Louth, Lincolnshire.

Tobacco Fibre Insecticide.

All who have a Greenhouse and love to see their Plants look clean and healthy should use

DARLINGTON BROTHERS' TOBACCO FIBRE.—Contains more Nicotine than any other Insecticide sold; purer and better than the best Tobacco Paper or Cloth; easy to use; no apparatus requisite; a common garden pot only required; will not flare, is perfectly safe, and is the best article for making Nicotine Juice for syringing purposes. Forty per Cent. saved by the use of this article. Prices, 6 lb., 5s.; 28 lb., 21s. First-class ROLL TOBACCO PAPER or CLOTH, same price as above. Best Paper and Cloth made. *Vide* Testimonials, free on application. Post-office Orders, Darlington Brothers, Chatham. Cheques crossed London and Provincial Bank.

DARLINGTON BROTHERS, Frederick Street, Chatham.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen in Boxes, 1s., 3s., and 10s. 6d. Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

WM. PETERS has still some good colour Soft ARCHANGEL MATS, very suitable for tying purposes, also ARCHANGEL and ST. PETERSBURG MATS, for covering.

JUST TO HAND, *ex Duart Castle*, a parcel of RAFFIA, fine quality, good colour, and extra strong.

SEED BAGS and SACKS. Specially prepared Sewing or Tying, White or Tarred TWINE, ROPES, LINES, &c. NETTING and SHADING CANVAS. RICK CLOTHS and WATERPROOF COVERS of all descriptions.

Prices on application to
44, Tenter Street South, Goodman's Fields, E., and Well Street Warehouses, London Docks, E.

MATS, RAFFIA for TYING,
TRAINING STICKS and LABELS,
Bamboo Canes, Virgin Cork, &c.

C. J. BLACKITH AND CO.,
COX'S QUAY, LOWER THAMES STREET, LONDON.

ANDERSON'S RUSSIA MATS,

For COVERING, TYING, and PACKING, are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

ARCHANGEL AND PETERSBURG

MAT MERCHANTS and IMPORTERS.

All the usual kinds at reduced rates. SACKS and SEED BAGS, new and second-hand, of every description. RAFFIA FIBRE, NETTING, and TIFFANY, TARPAULINS, RICK COVERS, HORSE-CLOTHS, ROPES, LINES and TWINES. Price LIST on application to
J. BLACKBURN AND SONS, 4 and 5, Wormwood Street, London, E.C.

GARDEN STAKES, LABELS, VIRGIN CORK, MATS, RAFFIA, &c. None cheaper. Prices of WATSON AND SCULL, 90, Lower Thames St., London, E.C.

By Royal Letters Patent.

RITCHIE'S GAS LIGHTING and HEATING APPARATUS.

No Flue required. Specially adapted for Drying Newly-built Houses. Silver Medal awarded in 1878 at Wolverhampton Exhibition. The deleterious and unpleasant vapours arising from the burning of ordinary coal gas are prevented from escaping, and are made to circulate within the Apparatus or Stove in such a way that they become thoroughly condensed, and are carried off in the form of a liquid, in which will be found the sulphur and other poisons which are drawn from and would in the ordinary way be left in and mixed with the surrounding atmosphere; consequently health is not prejudicially affected, Works of Art, Plants, Pictures, Books, Furniture, &c., are not injured, and the atmosphere is rendered uncontaminated and perfectly healthy.

Prices from 50s. to £10 10s.

Full particulars and testimonials forwarded on application to RITCHIE AND CO., 23, St. Swithin's Lane, London, E.C.

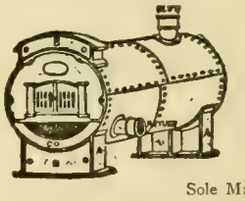
X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for
HOT-WATER PIPES and CONNECTIONS.
4-inch Pipes, 1s. 11d. per yard. Other sizes equally low.
F. AND J. SILVESTER, Castle Hill Foundry, Engineering and Boiler Works, Newcastle, Staffordshire.

REDUCED PRICES.

STEVENS'
TRENTHAM GREENHOUSE BOILER,

After long experience, has proved the most SIMPLE, ECONOMICAL, EFFECTUAL, and LASTING BOILER extant; recently improved.



Sole Makers,
F. & J. SILVESTER,
CASTLE HILL FOUNDRY, NEWCASTLE, STAFFORDSHIRE.

IMPROVED GREENHOUSE GAS BOILER.—From numerous experiments, a Copper Laminated Gas Hot-water Generator has been produced and thoroughly tested. It obviates a failing that usually occurs in Boilers heated by gas, viz., the passing away of the heat through the flue with only imparting a small portion to the water, Price, with Pipes, &c., complete for standing in plaae, £5 10s.

G. P. MARSHALL, Engineer, &c. Temporary Office—St. Mark's Buildings, Leonard Square, Finsbury, London, E.C. Works—32, Trevilee Street, Plymouth.

Hurry's Daisy and Weed Extractor,

FOR LAWNS.

No one possessing a Lawn should be without this wonderfully useful little Invention.

(See the *Gardeners' Chronicle* of August 2, 1879.)

Directions for Use:—

The "Extractor" should be used as early in the year as possible, in the following manner:—Place the tool over crown of weed, and with a slight twist extract it. The plugs so raised discharge themselves (second pushing out first), and should be replaced UPSIDE DOWN while still fresh. The weed will die, and the grass grow better where this has been done. In using mowing machine after "Extractor" the box should be left off as much as possible, and the grass afterwards well rolled. If these instructions are carried out any lawn may be effectually freed from the obnoxious Plantain and Daisy roots which so often offend the eye. Lawn grass should always be kept short, to avoid the weed seeding.

To be obtained of all Ironmongers and Florists. Price 3s. 9d. only. In Polished Wood, fancy handle, 4s. 6d.

Wholesale Agent: THOMAS TILLEY, 12, Walbrook, London, E.C. Cambridge Agents: G. BEALES & CO.;

Or Carriage Free of the Inventor on receipt of P.O.O. for 4s. 3d. and 5s. 3d., payable at Cambridge or Sawston.

ALFRED F. O'C. HURRY,
PATENTEE, PAMPESFORD, CAMBRIDGESHIRE.

NOTICE.

TO INTENDING PLANTERS OF AMERICAN SHRUBS NEXT AUTUMN.

On account of the approaching expiration of the Lease of a portion of "The Fulham Nurseries," the famous old

AMERICAN and GHENT AZALEAS,

so often referred to in the Horticultural Journals (*vide* the *Garden*, April 19, 1879), will be sold. They are now in full beauty, and vary in size from 4 to 7 feet high, and as much through.

ALSO SEVERAL HANDSOME SPECIMEN RHODODENDRONS.

An Inspection is invited.

OSBORN & SONS,
THE FULHAM NURSERIES, LONDON, S.W.

SELECT INDEX OF PLANTS

The Publisher of the *Gardeners' Chronicle* recommends Subscribers who wish to have extra Copies of the Numbers containing the

SELECT INDEX of PLANTS from 1841 to THE END of 1878,

TO SECURE THEM AT ONCE.

The following is a List of those already published:—

1879.—October 11	1879.—November 29	1880.—February 7, 21
,, 25	December 13	March 20, 27
November 8	1880.—January 10	April 3
,, 15	,, 24	May 8

Price 5d. each, post-free 5½d.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

ROSES UNINJURED BY FROST.

WM. PAUL & SON

(SUCCESSORS TO THE LATE A. PAUL AND SON—ESTABLISHED 1806),

PAUL'S NURSERIES, WALTHAM CROSS, HERTS

Have a very large and fine Stock of Roses in Pots, at the following prices:—

ROSES IN POTS FOR PRESENT PLANTING. — All the leading varieties in *hardy, well established plants*, suitable for forming new beds or making good vacancies caused by the late frosts, 9*s.* to 18*s.* per dozen, £3 15*s.* to £7 per 100. The same, of extra size, 21*s.* per dozen and upwards.

ROSES IN POTS FOR GREENHOUSE CULTURE.—9*s.* to 18*s.* per dozen, £3 15*s.* to £7 per 100. The same, of extra, size 21*s.* per dozen and upwards.

CLIMBING ROSES IN POTS.—12*s.* to 18*s.* per dozen.

SPECIMEN AND HALF SPECIMEN ROSES IN POTS.—Superbly set with bloom, the finest collection in the country to choose from, 5*s.* to £5 5*s.* each.

They also beg to announce that Plants will be ready for Sale about the middle of May of their

NEW ENGLISH RAISED ROSES FOR 1880.

CROWN PRINCE (H.P.) MASTERPIECE (H.P.)
LITTLE GEM, or CRIMSON MOSSY DE MEAUX (Moss).

THE NEW FRENCH ROSES OF 1880, now ready, 30*s.* per dozen.

THE NEW ROSES OF 1879 (including Countess of Rosebery and Duchess of Bedford), 21*s.* to 36*s.* per dozen.

Priced Descriptive CATALOGUES post-free on application.

SUTTON'S FLORISTS' FLOWER SEEDS

ARE the BEST | *Post Free.* | ARE the BEST.

SUTTON'S PRIZE PRIMULA.

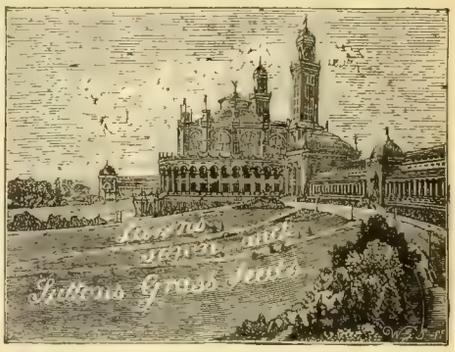
Sutton's Superb Red
Sutton's Superb White
Sutton's Superb Mixed
} 5s. and 2s. 6d. per packet. *Post-free.*

"The Primulas from your seed I have never seen equalled.—Mr. A. BIRT, *Rodborough.*

Particulars of other Flower Seeds gratis and post-free on application.

SUTTON & SONS,
THE QUEEN'S SEEDSMEN,
And by Special Warrant to
HIS ROYAL HIGHNESS the PRINCE of WALES,
READING.

SUTTON'S LAWN GRASS SEED



PRODUCES

THE BEST LAWNS.

Price 1s. per pound; 20s. per bushel; Carriage free.

For full particulars see

SUTTON'S PAMPHLET
ON
Laying Down and Improving Lawns, &c.,
Gratis and post-free on application.

Sutton & Sons

THE QUEEN'S SEEDSMEN, READING.

10,000 ODONTOGLOSSUM ALEXANDRÆ

(Pacho Varieties).

MR. J. C. STEVENS has been instructed by Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, May 27, at half-past 12 o'Clock precisely, an immense importation of

ODONTOGLOSSUM ALEXANDRÆ—the QUEEN of ODONTOGLOTS.

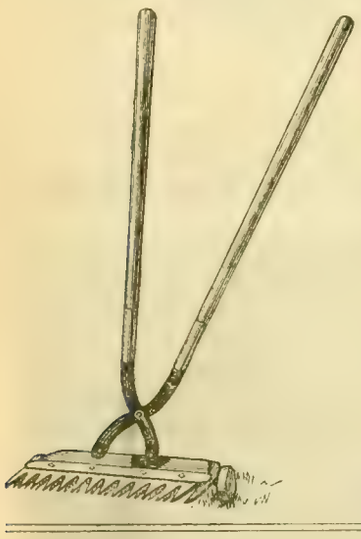
The consignment, taking quality, size, and quantity into consideration, will be found the grandest that have ever reached this land. They were collected by Mr. C. Falkenberg in the neighbourhood of Pacho, the district for the best varieties. The plants being scarce in that locality, no expense has been spared to get this grand lot together. The importation is of an even size, few small plants being among it, and the whole are in the finest condition.

The Sale also contains a large consignment of

CATTLEYA TRIANÆ and other ORCHIDS.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN LONDON, W.C.



NEW PATENT GRASS-CUTTERS

(PATRONISED BY THE BOARD OF WORKS).

W. CLARK, 232, Oxford Street, London, W.,

Begs to call public attention to a Patent Grass-Cutter he has just invented for use in the Garden and Farm, based upon the principle of the well-known "Clark's" Horse-clipping Machine, and which is, by its lightness of construction and rapidity of action, far preferable to the existing implements in use, and supplies a want long felt by every one who possesses a garden, namely, an instrument which will mow grass where inaccessible to the lawn mower, trim grass plot edges, clip Ivy and other creepers, also shrubs and trees, and keep in order Box borders and fancy Trees, &c.; all which this ingenious little instrument is capable of doing.

It is made in three sizes, to cut in breadth 8 inches, 12 inches, and 16 inches respectively; and is so easy in working, and at the same time so effective, that even ladies can work it without feeling fatigued, there being no occasion to stoop on account of the long wooden handles attached to the machine, and a greater quantity of work can be done in a given time than by any other method.

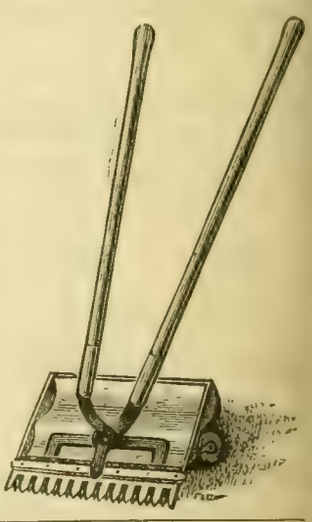
This invention is also applicable for Farm purposes—Reaping Corn and other Crops, Clover, Rye, &c., equally as well as accomplishing the objects for which it is required in the garden; and the cost being so small in proportion to the saving in time and quality of finish effected, it is placed within the reach of all, and needs but a trial to prove its superiority.

PRICES.

The 8-inch Machine, complete with Rollers and Tray	21s.
Ditto, without Rollers and Tray	18s.
The 12-inch Machine, complete with Rollers and Tray	28s.
Ditto, without Rollers and Tray	24s.
The 16-inch Machine, complete with Rollers and Tray	38s.
Ditto, without Rollers and Tray	33s.

To be obtained of all Ironmongers, Horticultural and Agricultural Implement Manufacturers throughout the Kingdom, and of the Patentee,

W. CLARK, 232, OXFORD STREET, LONDON, W.



NOTICE—NOTICE.

THE

GARDENERS' CHRONICLE

For NEXT SATURDAY, May 29, will contain a Coloured Plate of

"HERBACEOUS CALCEOLARIAS."

W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

B. S. WILLIAMS'

PRIZE MEDAL

FLOWER SEEDS.

POST-FREE.

	Per packet—s. d
AURICULA, Show, finest mixed	1 6
AURICULA, Alpine	1 0
CARNATIONS, finest mixed..	1 6
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and	1 6

From Mr. R. CAMPBELL, *Utica, U.S.A., July* 28, 1879.
"Sir,—I may state that the Calceolarias and Cinerarias, from seed imported from you, turned out more than what I expected of them. I may say that each flower was perfect, and not a poor or inferior one to be found."

CINERARIA, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d., and	1 6
CYCLAMEN PERSICUM, Brilliant (New) .. 5s. and	3 6
CYCLAMEN PERSICUM GIGANTEUM, 5s., 3s. 6d. &	2 6
CYCLAMEN PERSICUM GIGANTEUM RUBRUM (New) .. .. 5s. and	3 6
CYCLAMEN PERSICUM, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and	1 6
PANSY, English Show .. .. .. 2s. 6d. and	1 0
PANSY, Belgian or Fancy .. .. .. 2s. 6d. and	1 0

From Mr. A. ANDERSON, *Gardener to* His Grace the Duke of Grafton, *Wakefield Lodge, March* 24, 1880.
"Sir,—I have had some very fine Primulas this winter from your seed. I enclose some blooms, which are nearly 3 inches across.

PRIMULA SINENSIS FIMBRIATA COCCINEA (New).. .. .. 5s., 3s. 6d., and	2 6
PRIMULA SINENSIS FIMBRIATA, Williams' Superb Strain, Red, White, or Mixed, 5s., 3s. 6d., 2s. 6d. &	1 6
POLYANTHUS, Wiggins' Prize Strain	1 0
PICOTEES, finest Mixed	1 6

Illustrated Seed, also New Plant Catalogues now ready, post-free.

VICTORIA AND PARADISE NURSERIES,
UPPER HOLLOWAY, LONDON, N.

NEW PLANTS FOR 1880.

MR. WM. BULL'S
ILLUSTRATED
CATALOGUE FOR 1880

Is now ready, and can be had on application.

Price 1s.

It contains Names, Descriptions and Prices, of the following New Plants:—

ASPARAGUS FALCATUS
,, PLUMOSUS
BERTOLONIA VITTATA
CRINUM AMŒNUM
CYPHOMANDRA ARGENTEA
DIEFFENBACHIA AMŒNA
,, CARDERI
,, DELECTA
,, LEOPOLDII
,, SPLENDENS
DOODIA ASPERA MULTIFIDA
DROSERA DICHOTOMA RUBRA
GENTIANA KURROO
HETEROSPATHE ELATA
IRIS KÆMPFERI CHELSEA HERO
JUNCUS LÆTEVIRENS
,, ZEBRINUS
JUSSIÆA MACROCARPA CILIATA
LITOBROCHIA COMANS DENSA
MARANTA NITENS
OREODOXA GRANATENSIS
PAVONIA MAKOYANA
PHILODENDRON CARDERI
PIERIS OVALIFOLIA DENSIFLORA
POLYSTICHUM LENTUM
,, VIVIPARUM
SARRACENIA ATROSANGUINEA
,, CRISPATA
,, FLAVA ORNATA
SELAGINELLA CAULESCENS GRACILIS
SENECIO SPECIOSUS.

NEW ABUTILONS.

AGATHA | LYDIA
CELEBES | ROSINA
ERMAN | SIDONIE
TRIBUTE.

NEW FUCHSIAS.

"Marvellous kinds, that are sure to be favourites."

AMBROSIA | GASPAR
CLARINDA | MANTLE
CREUSA | SYROS
THERA.

NEW GLOXINIAS, with erect flowers.

ARIADNE | DIONE
AURELIA | FLORIAN
CONQUEST | TEMPLAR
URANIE.

NEW FANCY PELARGONIUMS.

BELUS | SEMELE
GENUINE | TIMON
SCIPIO | UMBRIA

NEW SPOTTED PELARGONIUMS.

GRISON | SYPHAX
MARCELLA | TELAMON
RENDIGO | UKRAIN.

NEW REGAL PELARGONIUMS.

MAID OF KENT | PRINCESS OF WALES

NEW ZONAL PELARGONIUMS.

ARRIAN | SOLON
ENNIUS | THRASEA
FABIUS | TIGRANES.

NEW COLEUS.

"One of the greatest attractions of the season."

ALARM | PHŒBUS
FLAMBEAU | TURBAN
GAIETY | VICTORY
YELLOW GEM.

NEW COLEUS.

The following are very novel and handsome, quite distinct in character to anything yet offered:—

AMAZEMENT | CAPTIVATION
BRILLIANT | CHELSEA BEAUTY.
CHERUB.

PRIZES FOR PLANTS.

Twelve Handsome Silver Cups, *specially designed by Messrs. Elkington & Co., are offered as Prizes for* **Twelve New Plants** *of Mr. William Bull's introduction, at the Great Summer Show of the Royal Horticultural Society, to be held at Kensington, June* 8 *to* 11, 1880.

Establishment for New and Rare Plants,
KING'S ROAD, CHELSEA, LONDON, S.W.

THE

Gardeners' Chronicle.

SATURDAY, MAY 22, 1880.

THE ROYAL ACADEMY.

As far as flower paintings are concerned, this year's exhibition falls far short of its predecessors; in fact, there are no really first-class pictures of flowers upon the Academy walls. The whole exhibition is below the average, many well-known artists being represented by poor or small works, whilst other painters, whose pictures one annually expects to see at this Academy, are unrepresented. On the other hand, there are several very large and ugly productions which might well have been placed somewhere else than on the Academy walls.

Landscape is generally well represented at Burlington House, and this year's exhibition is no exception to the rule. One's attention is soon arrested by the beautiful landscape by Vicat Cole—15, "A Thames Backwater;" the same artist exhibits a work of similar character in 310, and another in 393—"On Silver Thames:" this latter is perhaps the best picture of the three last mentioned. Mr. Cole also sends a fourth work at 1466; all four pictures are worthy of close study on account of their grace, beauty, and fidelity to Nature. In 50 we have "I'm Going a-Milking"—Edw. H. Fahey—a picture remarkable not only for its truthful and beautiful landscape painting, but for its equally beautiful figure. Works of a similar conception have been exhibited several times before by this artist, and the pictures all display the same clear appreciation of Nature, and the same power of figure drawing. In 125 Mr. Fahey exhibits a view introducing the Pyrenees. 126, "Aloes," Edgar Hanley. This picture of plants is so near the ceiling that it is impossible to form any opinion of it; but there is a similar subject by the same artist in 1021, and a third in 1455—"Where the Oranges Ripen." In these pictures the plants are boldly and well drawn and painted, and in all the three paintings figures hold a position similar in importance with the plants. 132, "The Thistle-down Gatherer," Thos. M. Rooke—an illustration to some lines by D. G. Rossetti, in which a very ugly young (?) woman is represented gathering Thistle-down from apocryphal Thistles. The drawing is very feeble, and the colour unnatural. 238, "Eucalyptus," A. F. Mutrie, a study of E. coccifera, the plant illustrated in the present volume of the *Gardeners' Chronicle* at p. 395. The artist has had in this plant no opportunity of displaying her fine talent. 295, "Christmas Roses," W. J. Muckley, is a beautifully drawn and painted picture of white Hellebores. In passing on to other pictures a stay may be made to admire the magnificent night-prowling lions in 298—"The Night Watch," by Briton Riviere, and "A Desperate Venture," in 349, by Gaetano Chierici. The perfect exactness and attention to every detail in the latter picture is most remarkable, still the picture is by no means over-coloured, and it resembles Wilkie at his best in its general style. 367, "Flowers," W. J. Muckley—an excellent

group of Roses, Larkspurs, and Gladioli. Mr. Muckley has failed in his colour of the scarlet Gladiolus, simply because no artificial colour can in any way approach the splendid transparent scarlet colour seen in the living plant. 473, "Roses," H. Fantin, a group of very small Roses, and, as we think, both ill-conceived and ill-executed. According to our estimate of Roses, large or small, the blossoms here painted are weak and unnatural. Again, in 564, "Pæonies," where the Pæonies are represented with corn blue-bottles, the drawing appears to us to be very imperfect, and the colour, as in the last, unnatural. We question, too, whether any well-trained artist would represent a jug with its handle directly facing the spectator, so as to form an ugly upright line in the middle of the picture. 630, "Primula," Mrs. L. Haghe—a Primula in a pot with Hyacinths and Crocuses, well drawn, and though very low in tone, yet better painted than average flower subjects not amongst the first class. 639, "White Chrysanthemums," Letitia M. Parsons, a less than average production; the leaves are ill-drawn and unnatural. 657, "Memory," Wm. S. Herrick—the well-known scraggy Azalea, with naked stem and branches, in this instance growing in a brass pot with blue beads at the base. 681, "Plant of Verbascum or Mullein," Francesco Bensa, is far from being a good representation of a Mullein. 709, "Water Lilies," W. J. Muckley—a group of Water Lilies, Larkspurs, and Roses, admirably drawn and painted, as is usual with this excellent artist. 734, "Chryanthemums," by the same. This group of single and double Chrysanthemums strikes us as being somewhat less perfect than other works from the brush of Mr. Muckley. 742, "Primulas," Grace H. Hastie, is one of the brightest little sketches of Primulas we have seen for some time 860, "Mushrooms," Jabez Bligh, is a fairly executed drawing of a basket of Agaricus campestris. But how many times has this basket of Mushrooms, with one or two specimens upside down, been exhibited at the Academy? We remember the late F. Walker once exhibited a picture exactly in the same style.

When we get amongst the water-colour drawings at the Royal Academy, we have such a flood of little Azaleas, Almond blossoms (in and out of little pots and jars), sprigs of May, with robin red-breasts, bullfinches, Plums with the bloom on, and Oranges and Melons with a piece cut out, that a brief notice for one year does for ten years to come and ten years back. We fancy we have seen them all at each succeeding exhibition of the Royal Academy, since we first bought our own popular paint-box. 975, "Study of Fruit and Flowers," Edith Elmore, is a bold and somewhat rough picture, but an evident improvement on exhibited works of former years. 1029, "Reflections," Emily Mary Osborne. In this large and finished picture it would be a decided improvement to give the blooms of Lilium candidum six petals each instead of five. 1045, "For the Feast of the Tournament," Wm. Hughes. This is a very large and elaborate picture of fruit, exactly in the style of Lance. We have Melons, Grapes, Peaches, and Pears displayed on a piece of rich carpeting. There is also the everlasting tall Venetian glass, half full of hock, and a silver vessel on its side upon the floor. All the objects are very real looking and uncommonly well done, but it is far too like what has so many times been done before. 1448, "Double Daffodil and Azalea," Mrs. R. Marshall. We look upon this work as being very poor in drawing, and as showing no appreciation whatever of plant form. 1457, "Amber and Opal," Laura Alma-Tadema—a picture of Tulips and Daffodils, but hardly better than the last; the flowers are not well drawn, the colour is defective, and the execution is needlessly rough.

We have omitted all notice of the figure subjects, of which there are several in the Academy of great excellence, none being second to Mr. Poynter's 250, "A Visit to Æsculapius." Mr. Alma-Tadema has three pictures, but to us they are all less satisfactory than his paintings of former years; as works of art they of course take a very high place on account of their learned correctness, and beautiful and masterly execution. Of portraits there are as usual many excellent examples, whilst other pictures, as the portentous and ugly production by Mr. Val C. Prinsep of "The Imperial Assemblage," &c., would be better elsewhere. We have passed many landscapes of great beauty, but we cannot close our brief notice without reference to the magnificent picture by Mr. B. W. Leader, 1480. "A Gleam in the Storm." This work possesses all the excellencies of other pictures by this artist adverted to by us many times in former years. Its great power and evident truth to Nature is very striking.

New Garden Plants.

MASDEVALLIA ROSEA, *Lindl.*

The queen of Masdevallias is a veteran. She was described as early as 1845 in the *Annals of Natural History*, xv., p. 257, by Dr. Lindley, and it was one of the discoveries made by the excellent German traveller, Theodor Hartweg. Later on it was gathered up by the late Professor Jameson, who had the honour of being an Ecuadorian *employé*, with a very homœopathic pay, dispensed with great irregularity. Though the plant had always been desired, all attempts to introduce it proved to be vain. The remote corners where the rosy beauty expands its wonderful flowers are nearly inaccessible. After all those difficulties there is the almost certain prospect of losing the plant as soon as it comes into the hot region, just as certainly as all Telipogons die, one only having flowered in the nursery of Messrs. Veitch, although numerous thousands were collected, mostly by Wallis and Bruchmüller. Thus Mr. Lehmann himself declares that he regards his success as a wonder, he not being sure whether the plant may prove importable a second time. It is the coolest of Masdevallias — a fact that growers may keep in memory. We shall shortly give a representation of the plant, taken from one of Mr. Lehmann's drawings. Ah! if I had time I would watch the interesting moments when Mr. C. Stevens swings his hammer over this chaste beauty. It will be one of the *jours d'honneur* of the big room. By-the-bye such days should be noted in red or golden letters behind the rostrum of Mr. Stevens, so that such dates might be kept in the memory of the orchidic world. *H. G. Rchb. f.*

EPIDENDRUM BRACHIATUM, *A. Rich. and Gal.**

This plant was named and "described" by Achille Richard, the son of one of the best botanists of the world, in 1845, in the *Annales des Sciences Naturelles*, with a "diagnosis" nobody could make out. Dr. Lindley thought it was his Epidendrum glaucum (see his *Folia*, No. 16). If I correct him, it is because I am luckier than he was, knowing the plant from the typical specimen, not from the unintelligible "diagnosis." Hence, thirty-five years after its publication the plant is recognisable, I hope. Had Dr. Lindley or any one else described the species after A. Richard, I would, of course, not reinstall A. Richard's name, but keep the newer one, provided it was described with Lindleyan precision. Systematical botany becomes absolutely inaccessible if in our days it is regarded sufficient for the establishment of a species to scribble some lines about a thing, which may be applied to many or to no species at once.

This plant has bulbs and leaves in the way of those of Epidendrum favoris, virgatum, vitellinum, amabile. The ovoid, compressed, glaucous bulbs have one single glaucous, ligulate, blunt, acute leaf. The raceme bears numerous flowers, and is occasionally rather long. It has stellate flowers of a rather strong waxy structure, all six phyllous organs 1 centimetre long. Sepal and petals lightest yellow outside, yellow inside, with numerous cinnamon blotches. The deeply trifid lip is of the lightest yellow, with a few small cinnamon spots. The column is trifid at apex, and the unpair segment has a brown spot at its top. The plant is a botanical curiosity, and may be regarded as one of the forlorn sons returning home. Messrs. Veitch were so very kind as to send me twice very liberal supplies, adding, what must be regarded as a model action, a very good strong living plant. Wild specimens do not appear to have reached European herbaria. A. Richard's type came no doubt from a garden. There is a note quoting Oaxaca as its original place. *H. G. Rchb. f.*

* *Epidendrum brachiatum*, A. Rich. ' Gal. Orch. Mexico, No. 40.—Pseudobulbis ellipticis obtuse ancipitibus monophyllis pruinatis; folio cuneato ligulato obtuse acuto spithamæo pruinato; racemo elongato multifloro; bracteis triangulis minutissimis; flore valde coriaceo; sepalis ligulatis apiculatis; tepalis angustioribus, labello a media columna libero trifido, laciniis lateralibus divaricatis erectis linearibus retusis, lacinia mediana rhombea, callo ligulato acuto antice nunc bidentato per unguem labelli in basin laciniæ anticæ; columna aptera apice trifida, laciniis omnibus triangulis; anthera depressa didyma, bene breviori. Sepala et tepala intus flava cinnamomeo maculata, extus albo sulphurea. Labellum albo sulphureum punctis quibusdam cinnamomeis. Ex diagnosi Richardiani: "40. E. brachiatum. Nob. Pseudobulbis ovoideis 1 phyllis, fol. oblongo elliptico acuto; floribus parvulis numerosis, brunneis, paniculatis; labello albido trilobo, lobis lateralibus angustis falcatis, intermedio obovato acuto." *H. G. Rchb. f.*

ABIES CONCOLOR.*

GREAT have been the confusion and misunderstanding respecting the tree known in our gardens as Abies or Picea Parsonsiana, Lowiana, and lasiocarpa, and proportionately thankful should we be to any one who takes the trouble to unravel the complexity and evolve order out of chaos. Dr. Engelmann has done this for us in the case of the plant now before us. We proceed to quote the description given by this eminent authority, as given in the second volume of the forthcoming *Botany of California*, drawn up from native specimens, and append some remarks of our own, based on the examination of cultivated as well as of herbarium specimens.

"A. CONCOLOR, Lindl.—A large tree, 80 to 150 feet high, with a diameter of 2 to 4 feet, with rough greyish bark; leaves mostly obtuse, pale green, and with stomata on both sides, those of younger trees and lower branches elongated, 2 to 2½ and even 3 inches long, 2-ranked, often slightly channelled and notched, those of old trees and of upper cone-bearing branches shorter (1 inch long), broader, thicker, convex above and often falcate, covering the upper side of the branchlets; cones oblong-cylindrical, 3, 4, or even 5 inches long, and 1¼ to 1¾ inch in diameter, pale green, or sometimes dull purplish; scales (12 to 15 lines wide) nearly twice wider than high; bracts short, enclosed, truncate, or emarginate, with or without a short mucro; wing of the seeds oblique, as long as broad; cotyledons five to seven.

"Journ. Hort. Soc. v. 210; Engelm. *l.c.* 600, and Wheeler's Rep. vi. 255; Picea concolor, Gordon, Pin. 155; Pinus concolor, Engelm.; Parlat. in DC. Prodr. xvi. ?, 426; Abies Lowiana, Murr.; A. grandis of the Californian botanists; A. amabilis (?), Watson, Bot. King Exp. 333.

"A common Fir throughout the Californian sierras, from 3000, or 4000, to 8000 feet elevation, extending into Southern Oregon and through the mountains of Arizona to Utah and S. Colorado. Always readily recognised by the grey bark of the trunk (whence often called in California "White Fir"), and by the pale colour of the foliage, which at last becomes dull green. A very ornamental tree, especially the paler variety, but the timber is not much esteemed. A. Lowiana, known also in nurseries as A. Parsonsiana, lasiocarpa, and amabilis, distinguished by its longer, flatter, straighter leaves, with fewer stomata on the upper side, is a young and vigorous state of this species, which has not yet fruited in cultivation."

We have it then established that the plants commonly grown in English gardens under the names of Lowiana and Parsonsiana, and sometimes also under the incorrect names of lasiocarpa, grandis and amabilis, belong all to one and the same species, the accepted name for which is concolor.

A. Parsonsiana (concolor) was introduced into Britain, according to Dr. MacNab (*Gardeners' Chronicle*, vol. v., 1876, p. 76), by Jeffrey in 1851, under the name of grandis, and plants of this origin are growing in the Edinburgh Botanic Garden. "In its native state Jeffrey reported that it grows to a

* ABIES CONCOLOR, Lindley, Journ. Hort. Soc. v. (1850), p. 210; Engelmann, Bot. Californ. ii., p. 119; Murray, in Gard. Chron. iii. 1875, p. 105; Gard. Chron. 1880, vol. xiii., p. 9, fig. 1. PINUS CONCOLOR, Engelmann ex Parlatore, in DC. Prod. xvi. 2, 426; MacNab, Proc. R. Irish Acad. 1876, p. 681, tab. 46, fig. 6. PICEA CONCOLOR, Gordon, Pinetum, ed. 1, 155; ed. 2, p. 216. Murray, in Gard. Chron. 134, iv. 1875; Syme, in Gard. Chron. 562, iii., 1875; Murray, in Gard. Chron. iii. 1875, p. 464 (var. violacea).

PICEA PARSONSIANA, Barron, Cat. 1860; Parsons, in Gard. Chron. vol. v., 1876, 45; Barron, Gard. Chron., vol. v., 1876, p. 77; MacNab, p. 78.

PICEA LOWIANA, Gordon, Pinet. Suppt. (1862). ed. 2, p. 218; Fowler, in Gard. Chron. 394, 1872; MacNab, Proc. Irish Academy, 1876, p. 681, tab. 46, fig. 5; Low, in Herb. Kew.

PICEA seu ABIES LASIOCARPA, hort. Angl.; Murray, in Gard. Chron. 194, iv., 1875; haud Hook., Lindl. et Gord., Balfour, nec Jeffrey.

Picea seu Abies grandis, hort. quorund. Lobb, in Herb. Kew, nec Lindl., nec Douglas.

Picea seu Abies amabilis, hort. quorund, nec. Douglas.

height of 288 feet, with a stem 15 feet in circumference." Very few plants were raised from Jeffrey's seeds, but in 1853 Mr. Parsons received seeds from California of the same species. In 1855 Mr. Stuart Low again introduced the plant into England, and submitted it to Mr. Barron, of Elvaston, who pronounced it to be "either lasiocarpa or a new species." (See Mr. Barron's letter, *Gardeners' Chronicle*, 1876, vol. v., p. 78.) By lasiocarpa Mr. Barron here means a plant so named by Prof. Balfour, and which he (Mr. Barron) determined to be identical with the grandis of Douglas (referred by MacNab, however, to amabilis, Douglas). In 1859 Mr. Parsons visited England and saw the plant Mr. Low had bought of him, cultivated under the name of lasiocarpa, in Messrs. Waterer & Godfrey's nursery at Woking. In this year, too, Mr. S. B. Parsons called on Mr. Barron at Elvaston, and received from him the assurance that this "tree was a new and distinct species." The name Parsonsiana was forthwith adopted in Barron's *Catalogue*. So published, without, as we presume, description and authentication, the name Parsonsiana could not be accepted in any accurately compiled register of baptisms, though no objection could have been raised and much labour and confusion would have been spared if it had been simply called Parsons' Fir, and if botanists had been left to find out, if so disposed, what exact position and botanical name Parsons' Fir should have. Even now it is not too late for those who wish to retain the name of Messrs. Parsons for a tree made known chiefly through their enterprise, to call it Parsons' Fir, but never either Abies or Picea Parsonsiana.

In 1862 Gordon published the supplement to his *Pinetum*, in which he calls this selfsame tree P. Lowiana, but this name, if applied erroneously in ignorance of the previously named concolor, has no more right to encumber the lists than has the preceding. These two names, then—Parsonsiana and Lowiana—must be allowed to drop. We come now to the name lasiocarpa, the one by which our present plant is, in our experience, most widely grown in this country.

Now the original lasiocarpa of Hooker, *Fl. Bor. Amer.* 2, p. 163 (1840), and perhaps also of Balfour in Jeffrey's *Seeds*, p. 1, t. 4, f. 1, is considered to be the amabilis of Douglas (1836), which latter is referred by Engelmann to A. grandis of Lindley in *Penny Cyclopædia*, No. 3, which latter name has priority. But whether this be so or not we have it in evidence that the lasiocarpa of the Edinburgh Botanic Garden and of Balfour is not the plant which Mr. Barron called Parsonsiana, and so we may set aside the name lasiocarpa, at least as applied to the species before us. There remains the name grandis. The original grandis is credited to Douglas in *Comp. Bot. Mag.* 2, p. 147 (1836). Lindley, Gordon, Parlatore, Engelmann (not Carrière), all mean Douglas' plant by the epithet grandis, although they place it in different genera; but our present plant differs materially in characters from grandis, as we shall hereafter show, and therefore should not be called by the same name.

Lastly, there is amabilis, also credited to Douglas (1836). Douglas' amabilis is referred by Engelmann, with a doubt (?), to grandis of Lindley; Gordon, Carrière, and Parlatore keep it distinct, and Gordon and Parlatore refer to it as Hooker's lasiocarpa. Now our present plant is not the grandis of Lindley, neither is it Hooker's lasiocarpa. It forms no part of our present purpose to disentangle the horrible confusion between the plants above-named. In what we have said we have followed Engelmann, who is at variance as to synonymy with his predecessors. Our only object, however, is to establish the position of the particular plant before us. If, then, the names grandis, amabilis, and lasiocarpa do not—and we believe they do not—properly apply to this species, what shall we call it? By a process of elimination we seem to be reduced to two, Lowiana and Parsonsiana; but, as we have seen, Lowiana is out of court by virtue of the law of priority, and Parsonsiana has only the dignity of a catalogue name. It is a name and a name only. Still we should feel bound to adopt it, and to do our best to justify its admission were it not for the circumstance that, according to Engelmann, the plant in question is to be referred to Abies concolor of Lindley, *Journ. Hort. Soc.* v. (1850), p. 210, and our own comparative observations lead as to adopt the same conclusions.

A. concolor differs from A. grandis of gardens in its long, straight, soft, leathery looking leaves, which are usually considerably longer (sometimes 2 inches long), distinctly channelled on the upper surface, similar in

Fig. 109.—Abies concolor.

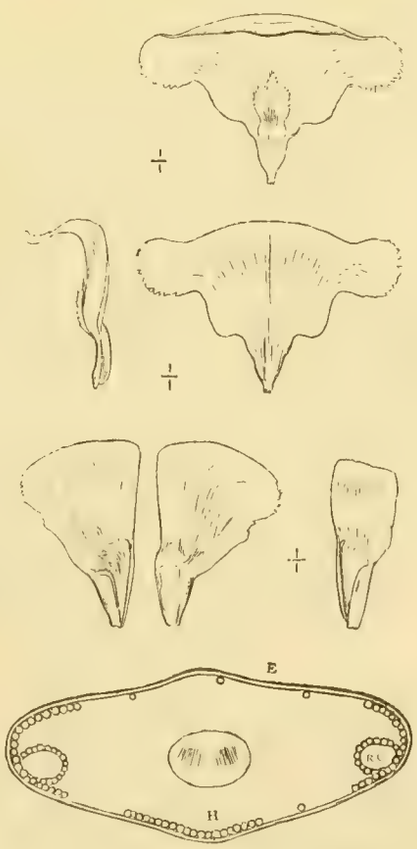


Fig. 110.—Abies concolor (Lowiana, lasiocarpa, hort.).

colour on both surfaces (whence the name), and bearing stomata on both sides (easily seen in the form of small circular spots with an ordinary magnifying-glass. The apex of the leaf has only a shallow and narrow notch. The leaves on the lateral shoots are nearly if not quite distichous, and those on the upper are not materially shorter than those on the lower surface of the branch.

In A. grandis, as generally so called in this country, the leaves are shorter, 1 to 1¼ inch, dark shining green, less deeply channelled, and with no stomata on the upper surface. The under surface, however, is more or less glaucous blue, with lines of stomata. The apex of the leaf is more deeply and widely notched. The uppermost leaves on the lateral branches are not much more than half the length of those beneath.

With reference to the difference between concolor and grandis, Murray writes that before having seen grandis growing wild in its native country he should have considered it and concolor as distinct species, but from the great amount of variation he witnessed in grandis he considered (see *Gardeners' Chronicle*, January 23, 1875) that concolor is only a "marked variety" of grandis. The whitish colour of the leaves is a common attribute of grandis in Utah, while the falcate leaves, also relied on as a distinguishing mark of concolor, also occur in grandis. The cones of the two are identical, while the bracts are also not distinguishable. A very great amount of variation was also observed by Murray in habit, length, and colour of leaf, &c., even in the case of plants growing side by side.

Syme, *Gardeners' Chronicle*, May 1, 1875, p. 563, is of the opinion that concolor and lasiocarpa and Lowiana are distinct. In concolor the upper surface of the leaves is studded with stomata; in lasiocarpa only a central band is so provided; grandis is entirely destitute of stomata on the upper face. In concolor var. violacea the leaves are bluish-white, instead of pale green, as in lasiocarpa, and the seed-leaves are 5—7, in place of 6—8, as in lasiocarpa.

We may now allude to the position of the resin-canals. In A. concolor (type specimen) we find the resin canals as figured by MacNab (*Gardeners' Chronicle*, August 14, 1875, p. 194, fig. 38), and in living specimens of so-called Lowiana from Mr. Mackay we find precisely the same arrangement.

The leaves of grandis, as cultivated, have the same arrangement as that figured by MacNab, *l.c.*

The arrangement of the resin canals in P. lasiocarpa, Hook. type, is, according to MacNab, quite different from those just mentioned, being in the centre of the tissue of the leaf. Anatomical evidence, then, confirms the view that the tree called in gardens lasiocarpa is not the true species of that name, neither is it grandis, but that it is A. concolor.

Lastly, we note that Engelmann, quite cognisant as it appears with the distinguishing characters pointed out by Syme (though he does not specially mention the variety violacea), distinguishes the cultivated forms of concolor (Lowiana, Parsonsiana, lasiocarpa, amabilis) by their longer, flatter, straighter leaves, with fewer stomata on the upper side. As Dr. Engelmann was not aware that this species had fruited in cultivation, we were glad to furnish him with specimens of the cones kindly forwarded to us by Mr. Mackay, of Totteridge, from which also the accompanying illustration was taken. So that we have Dr. Engelmann's confirmation that the plant called Lowiana is really the same as his concolor. Dr. Engelmann suggested that possibly the leaves on the cone-bearing branches might be shorter and more falcate than those on the sterile branches, but this is not the case in Mr. Mackay's specimen. In any case it is one of the most beautiful of hardy trees. *M. T. M.*

COLONIAL BOTANIC GARDENS.

(*Extracts from Mr. Dyer's lecture, continued from p. 616.*)

Ceylon.—The botanical affairs of Ceylon would alone supply me with materials for addressing you at some length. Ceylon, in the crippled state of its Coffee industry, is suffering from the disastrous effect of a policy, the inexpediency of which cannot, I think, be too warmly insisted upon—that of a colony devoting almost all its energies to one object. It is impossible not to feel the deepest sympathy with the planters in their present distress and disappointment. Kew has done, or at any rate tried to do, everything that is possible to alleviate it. But whatever be the result, I do not doubt that one consequence will be to put botanical enterprise in Ceylon on a far sounder basis than heretofore. The cultivation of Tea, Cinchona,

Liberian Coffee, and Cacao will, in a few years, no longer leave the planters, if they are wise in disposing their investments in the soil, at the mercy of the failure of a particular kind of crop. Ceylon is admirably equipped with a chain of three gardens, representing the three different zones of climate which the island possesses. It is to us a place of peculiar interest, and ought indeed to be regarded as the Kew of the East. We feel that when a new plant has been safely conveyed to Ceylon, its distribution over our other Eastern possessions is but a work of time. We have already of late years sent here the three most important Caoutchouc trees of South America, besides Liberian Coffee, and are now organising arrangements for securing for it the very best kinds of South American Cacaos. And when I specify these particularly, you will, of course, understand that they are simply the more conspicuous elements in a crowd of other plants which we have from time to time introduced.

Singapore.

Proceeding eastward, the Singapore garden must arrest us but a moment. It will be the depot for the supply and scientific investigation of the countries yet to be opened up in the Malayan Peninsula and Archipelago. In regard to the latter we have ourselves done but little, except to successfully introduce the Oil Palm from West Africa into Labuan. Our own resources here have, however, been enormously enlarged by the generous kindness of the Director of the magnificent Botanic Garden of the Dutch Government of Buitenzorg, in Java—a circumstance which it is impossible to allude to without regret, since in the untimely death of the amiable and accomplished Dr. Scheffer, every botanist who has entered into correspondence with him must feel that he has lost a personal friend.

Through Singapore we get an interchange of living plants with the French possessions of Saigon, whence we have obtained the Elephant Sugar-cane, which we still hope to succeed in introducing into the West Indies. Monsieur Pierre, the excellent botanist, who has for many years directed the botanical gardens of Cochin-China, has recently paid a prolonged visit to Kew, which he has generously presented with a fine series of specimens of its little known vegetation in graceful acknowledgment of the encouragement which in his early studies many years ago he received at the Calcutta Botanic Garden from Dr. Anderson.

Hong Kong.

I must content myself with the briefest reference to Hong Kong, the botanical garden of which is described by those well competent to judge as possessing every excellence. The liberal-minded policy of the present Colonial Government has redeemed this unique establishment from the risk of sinking into a mere pleasure ground. It is from Hong Kong alone that we can look for the supply of intelligence as to the fascinating flora of China, and the innumerable singular uses to which for ages the products of its endemic vegetation have been put by the Chinese.

Australia.

With regard to our great Australian Colonies and New Zealand, I need not occupy your attention at any very great length. As I have already stated, their floras have been carefully worked out at Kew by the most competent hands, and in these splendid new homes of the English race there are already in the capitals of each colony botanical gardens animated with the entire spirit of Kew, and worthily comparing with it. Nor are there wanting scientific men (and I cannot but instance Fitzgerald, the author of an admirable work on Australian Orchids), who hold their own with those of the mother-country, and who are capable of dealing with any problems that present themselves, except, perhaps, those which even in Europe would be referred to particular specialists. The botanic garden of each colony will, I hope, ultimately possess a compendious reference herbarium of its flora, and an accessory economic museum. Sydney and Adelaide have already taken the lead in organising such departments of their botanic gardens on the Kew plan, and no doubt in due time the rest will follow the example. As long as Sir Ferdinand von Mueller is alive, Australia will possess one of the most learned botanists of modern times who is devoted to the study of her flora and a master of its details. As a scientific man, it is impossible not to envy the freedom which he now possesses from all administrative labour. It is to be hoped that some joint arrangement may be arrived at amongst the several colonies to secure his unique herbarium of Australian plants as a permanent public establishment, to be provided with a moderate but proper endowment, and to be preserved for all time as a standard of reference in the Southern hemisphere for the accurate nomenclature of indigenous plants. It is to the credit of Victoria to possess him upon her civil establishment, but his scientific services have been rendered to the whole world, and I observe that his latest publication is a most useful report on the forest resources of Western Australia.

New Zealand.

In New Zealand, botanical organisation is under the sure guidance of Dr. Hector, the Director of the Geological Survey, but a man whose scientific instinct may be unfailingly trusted in laying down the lines of its future institutions.

In Queensland, there is at present more room for botanical enterprise. A country fitted by every condition of soil and climate for any kind of tropical culture possesses in the Brisbane Acclimatisation Society, in addition to its Botanic Garden, a very active agency for the purpose. The indefatigable secretary corresponds with Kew by almost every mail, and we keep up a vigorous exchange with him as well as with the botanic garden. From an external point of view, there is much to be said in favour of a fusion of the two; there may be sound local reasons why they should remain apart, but there is no theoretical objection that I can see to their amalgamation, and the combined institution would surely be stronger than the separate, and in some respects competing, components. Botanic gardens, or botanical reserves, as they are sometimes called, have been marked out in the new northern towns, such as Rockhampton, Bowen, Townsville, and Cooktown. These have been lately visited by Mr. Bernays, who speaks with warm approval of the work done at the two former places, while at the two latter he thinks the name a misnomer, and that the places "are intended to be, and will probably become, people's parks." In any case, Brisbane is the headquarters of a field of botanical activity, which has already effected a good deal, and has now all the machinery for distributing new plants of importance throughout the colony.

Fiji.

I must take a flying glance at Fiji, where, under the enthusiastic impulse of the Colonial Secretary, Mr. Thurston, a botanical garden has already started into existence. I will quote a few words from a private letter:—"At present I have about 500 Cacaos well established. By propagation I have now nearly 500 Vanillas; 150 Clove trees must also be counted, as well as a few Nutmegs, Gaurinias, Pomelos, and a great number of Palms. Two mails ago Dr. King, of the Howrah Gardens, sent me 208 packets and bags of seed—a tremendous lot. What to do I did not know, so, taking the bull by the horns, I sent a gang of prisoners up to the place, hired a white man with gardening proclivities, made beds, laid water on in pipes, and when germination began, invited the Governor to see it." Unfortunately Fiji has hampered itself with restrictive legislation, on account of the Coffee disease which has broken out in its plantations. It is the more to be regretted, as we had already taken steps to procure the best kinds of Cacao from the West Indies, and were endeavouring to arrange a systematic plan by which these and other plants of importance should be passed on from Kew to Ceylon, thence to Singapore, Brisbane, and Sydney, and so to the Pacific Islands.

(*To be continued.*)

THE CATALPAS.

Several of our American friends have favoured us with lengthy communications relative to the species of Catalpa in cultivation in that country. If we understand the matter rightly, it would seem as if some confusion existed in American nurseries not only between the native American species and varieties, but also between them and those which have been introduced from China and Japan. No doubt the attention which has of late been excited by what has been written concerning C. speciosa by its discoverer, Dr. Warder, has stimulated curiosity as to the other species.

The species known in this country are C. bignonioides, C. Bungei, and C. Kæmpferi, to which we must add C. speciosa (Warder) and certain varieties of C. bignonioides.

C. bignonioides (Walter, 1788) is the best known species, native of Georgia and the neighbouring States, and cultivated as an ornamental tree in the Atlantic States as far north as Massachusetts. This is the Catalpa generally grown in this country. Its bold foliage and loose panicles of whitish or very pale violet red-spotted flowers render it a great favourite. It is a rapid grower, but it is apt to suffer in hard winters, and the young shoots are very often killed by our spring frosts. It is only after unusually hot summers that the long, narrow, ribbon-like pods are produced. In our experience, although liable to injury from the causes just mentioned, the tree has great vitality, so that, though occasionally much crippled, its power of endurance under adverse circumstances is great. The finest specimen known to us is that in the garden of Denne Denne, Esq., near Canterbury, and which was illustrated in our columns in 1876, vol. v. p. 13. There is a specimen in the Kew herbarium taken from a tree at Norton Court, near Faversham, in 1798. It would be interesting to know if this tree is still in existence. Of this species there is a variety with leaves of golden-yellow colour. This is one of the very finest golden-leaved trees or shrubs that we possess, retaining its colour throughout the season, and if injured by frost breaking all the more readily afterwards, though we ought to add that we have no information at present as to how it may have braved the rigours of our past winter. Another variety, called by Carrière C. erubescens (*Rev. Horticole*, 1869, p. 460), is only known to us by name.

Nearly allied to C. bignonioides is C. speciosa, which replaces C. bignonioides in the Mississippi valley. This species was originally discovered by Dr. Warder in 1853, although it had been casually noticed so long ago as 1842 by Dr. Engelmann. Dr. Warder has himself favoured us with some particulars relating to the tree, from which we extract the following remarks:—

"In 1853 I found in the streets of Dayton, Ohio, some Catalpa trees of more erect habit, and that bloomed two or three weeks earlier than the common sort—C. bignonioides. The flowers were larger and more showy, being whiter, hence the name speciosa was applied to it, and nurserymen were urged to confine their propagation to this variety, as it was then supposed to be.

"Two brothers, John C. and Ed. Y. Teas, of Raysville, Indiana, propagated it largely, and distributed it widely, as an ornamental tree, and sent it out under this name.

"Within the past two years I have been investigating this tree, and in tracing out its natural habitats, and comparing it with C. bignonioides, have travelled more than 5000 miles.

"My excellent friend the botanist, Dr. Geo. Engelmann, of St. Louis, Missouri, has made it a species, adopting the name speciosa.

"This tree is the one described as a new Catalpa by me in 1853 on p. 533 of vol. iii. of the serial then under my care, and published in Cincinnati, Ohio, and called the *Western Horticultural Review*."

In the January number of the American *Botanical Gazette* Dr. Engelmann of St. Louis gives a technical description of the species, a portion of which—seeing that our American friends have generously furnished us with seeds which have been widely distributed in this country—it may be well to reproduce:—

"This tree has quite an interesting and instructive history. It was already known to Michaux and to many botanists and settlers of those regions; even the aboriginal Shawnees appreciated it, and the French settlers along the Wabash named it for them the Shawnee wood (Bois Chavanon), and prized the indestructible quality of its timber; but the botanists, even the subtle Rafinesque, who roamed over those very regions, seem to have taken it for granted that it was not distinct from the South-eastern Catalpa bignonioides. To me the fact that these trees, then really not cultivated in St. Louis, produced their larger and more showy flowers some ten or fifteen days earlier than the Eastern or common kind, was well known as early as 1842, and their blossoming has since been annually recorded in my notes on the advance of vegetation, but I had not the sagacity or curiosity to further investigate the tree. It was reserved to Dr. J. A. Warder, of Cincinnati, to draw public attention to it.

"Catalpa speciosa replaces C. bignonioides entirely in the Mississippi valley. It is readily distinguished from it by its taller and straighter growth, its darker, thicker (¼—1 inch thick), rougher and scarcely exfoliating bark

(in the older species it is light grey, constantly peeling off and therefore not more than 2 or 3 lines thick); its softly downy, slenderly acuminate and inodorous leaves (those of bignonioides have a disagreeable, almost fetid odour when touched), marked with similar glands in the axils of the principal veins of the under side; by its much less crowded panicle and by its much larger flower, fruit, and seed. The flowers I found 2 inches in the vertical and a little more in the transverse diameter; in the other they have 1⅔ inch in each diameter; the lower lobe is deeply notched or bilobed in speciosa, entire in bignonioides; the tube in the former is conical and 10 lines, in the latter campanulate and about 7 lines long, in the first slightly oblique, in the other very much so, the upper part being a great deal shorter than the lower one, so that the anthers and stigma* become uncovered; the markings in the flower of the old species are much more crowded and conspicuous, so as to give the whole flower a dingy appearance, while ours looks almost white. The upper lip of the corolla before expansion extends beyond the other lobes and covers them like a hood in the Western species, while in the Eastern it is much shorter than the others and covers them only very partially. The pods of our species are 8 to 20 inches long, 17 to 20 lines in circumference, dark brown and strongly grooved, when dry, the placental dissepiment very thick; in the eastern species the pod is nearly the same length, but only 9 to 12 lines in circumference, its grooves very slight, its colour pale and the dissepiment flat. In both species the pod is perfectly terete before the valves separate, after that the valves of ours remain more or less semiterete, while the much thinner ones of the other flatten out, so that they seem to indicate a compressed pod. The elongated seeds, winged at both ends, are of about equal length in both species, but in speciosa they are much wider (3½ to 4 times) and the wings have more or less rounded ends which terminate in a broad band of rather short hair; in bignonioides the seeds are only 2½ to 3 lines wide, with pointed wings, and their tips terminating in a long, pencil-shaped tuft of hair.

"Our tree is larger, of straighter growth, and being a native of a more northern latitude is hardier than the south-eastern species; the wood of both is extremely durable, perhaps as much so as that of our Red Cedar, and has the advantage over it of a more rapid growth and of possessing only a very thin layer (two or three annual rings) of destructible sap-wood. But of these qualities and of its adaptability to many important uses others, and especially Mr. Barney in a recent pamphlet, have given a full account. It is already extensively planted in our Western prairie States, and especially along railroads, for which it is expected to furnish the much-needed timber in a comparatively short time. *G. Engelmann, St. Louis, Jan.* 1, 1880."

Catalpa longisiliqua, figured by Sims in the *Botanical Magazine*, t. 1094, under the name of C. longissima, is a West Indian species, with ovate oblong leaves and wingless seeds. It is a stove plant, which is perhaps not now in cultivation, and for our present purpose may be dismissed with the mere mention.

C. Kæmpferi, a native of Japan, was recognised by Kæmpfer under the name of Bignonia Catalpa (1784). It is a small tree, with leaves of various shapes, often lobed, slightly hairy, and with branching panicles of relatively small flowers. Corolla clear yellow spotted with reddish-brown, lobes toothed. The pods are apparently much narrower than in the American species. This is considered by De Candolle as a mere variety of the American species, but the points of distinction so obvious in the flowering stage that for practical purposes it is better to treat it as a distinct species, as, indeed, most authors do. Still it is an interesting example of that close resemblance between the flora of Japan and of East America, which has been so profitably noted by Dr. Asa Gray. A dwarf variety is grown in our nurseries, and in some Continental catalogues we have met with the name C. Kæmpferi nana cœrulea, of which, however, we know nothing but the name.

C. Bungei is a native of Northern China. It is a tree, and has ovate, acuminate, entire, or lobed glabrous leaves, and large flowers described as greenish-yellow with red spots in simple clusters or racemes. In our gardens it is shrubby. Sometimes entire and lobed leaves are found on one and the same tree, as in the variety heterophylla. Of this species also some catalogues make a variety "nana," but in all probability the dwarf habit is a mere affair of climate or altitude.

In catalogues we have also met with the name C. Wallichii, but of this we know nothing but the name.

Disregarding C. longisiliqua we may offer the following table as a guide to the discrimination of the species. Were the pods and seeds known in all cases it is probable they would afford better means of distinguishing the forms. The seeds of bignonioides and speciosa, for instance, are very distinct, but they are not likely to be often seen in English gardens. It must also be borne in mind that the characters taken from the habit and the form and degree of hairiness of the leaves are likely to be variable.

Leaves glabrous.	
Leaves mostly entire; flowers large, in racemes.	Bungei.
Leaves downy or hairy.	
Leaves mostly entire; flowers large, in panicles.	
Upper lip of corolla shorter than the lower, which is entire.	Bignonioides.
Upper lip of corolla longer than the lower, which is bilobed.	Speciosa.
Leaves mostly lobed; flowers small, in panicles.	Kæmpferi.

CATALPA KÆMPFERI?

Mr. Hovey sends us copies of letters he has received relating to the Japan Catalpa. We extract therefrom certain passages of interest as regards the description of the trees, but as we are not in possession of specimens of the plants in dispute, we can only refer to the foregoing article:—

"*Carthage, Mo.*—In the spring of 1866 I bought of Malhon Moon, nurseryman, Morrisville, Bucks County, Pennsylvania, a Japan Catalpa. He received the seed and sold the young trees without specific name. My trees soon bloomed and bore seeds. I left the trees at my old house in Indiana, and raised more from the seed of them, here, in 1871. These have made a very rapid upright growth, and are now 25 feet high, with trunks 2 feet in circumference—large open heads—blooming more profusely, and in much larger panicles, than the common American C. bignonioides. The flowers are not quite so large, and a little more coloured, same colours and marblings, but more colour and less white, and quite fragrant, much more so than the common Catalpa. The leaves of the Japan [form] are various generally much like other Catalpa leaves, but quite often lobed, some on one side and some on both, and the lobes generally ending in a sharp acute point, which is a characteristic of this kind, and wholly unlike any other Catalpa I have ever seen. But the most marked peculiarity is the seed-pods, which in the Japan species are very slender, not larger than a goose-quill, though of about the ordinary length. The seeds are also very small, a pound containing 50,000, while a pound of the common contains but little over 20,000.

"Some botanists have supposed, from the seeds and other things, it might be C. Kæmpferi. But it is wholly unlike what we grow as C. Kæmpferi, received from Rochester perhaps fifteen years ago. We had also what appears to be exactly the same, about the same time, from France, as Catalpa nana. Our plants of these last two kinds (which we think one with two names) are now ten years old, the best one 9½ feet high, with innumerable stems from the ground, like a great old Currant bush, and 40 feet in circumference of branches at 4 to 5 feet from the ground. They have not yet shown any bloom, though we have expected it, and have watched them closely for several years. It is a nice bush, but not a tree at all. The leaves are small, slender. The growth is very dense, outline almost as smooth and even as a clipped hedge, though never cut.

"The Japan form grows with, I think, double the rapidity of the common Catalpa, and will probably make a most valuable timber tree.

"Among some seeds collected in Japan by Mr. Hogg, and advertised by Messrs. Thorburn, of New York, were some, advertised as follows:—Catalpa, sp.: Is probably C. Bungei or C. Kæmpferi. In either case it is perfectly hardy: both are fine species.

"And now," continues Mr. Hovey, "as to the true name, which was supposed to be C. Bungei or C. Kæmpferi. It is not the latter, if I have had the true species, as it is only a dwarf shrub. The original description of C. Bungei or C. Kæmpferi would ascertain this, for it now appears that both of the kinds named received in this country have proved to be the same, as well as another called C. nana. Perhaps Mr. Hogg could enlighten us in regard to this tree, for he or his *employés* know enough about it to say in the advertisement 'either C. Bungei or Kæmpferi; both are fine species;' and they could not have well done this had they not seen them growing. This detailed statement may induce Mr. Hogg, should he see it, to tell us something more about a tree which appears from various accounts to be a valuable introduction, and I have thought that this full history was important to record in reference to a tree that seems destined to hold a prominent place in the arboriculture of this country. *C. M. Hovey, Boston, U.S.*"

IN THE RUSSIAN STEPPES.

Sekirensy.—When we speak of the Steppes it is perhaps unnecessary to state that we speak of the almost boundless plains—vast, open, level, naked corn lands—of Russia. In such extensive and sometimes dreary solitudes, it is nothing remarkable to drive along during several hours without coming to so much as a small village. Frequently enough it happens that, in one direction or another, there is neither a bush nor tree to be seen as far as the eye can reach. To find anything like what we should call a garden, it may be necessary to make a journey of 100 or 200 versts. Either from the want of taste or from the want of intelligence or means, the nobles generally do not like to spend money on their gardens. It is difficult to convince them that a garden after a certain time may be made not only to cover its expenses, but to yield a certain revenue. As I have already had occasion to observe, one of the chief causes of this disorder and neglect is the fact that the garden is usually under the control and direction of what is called the *Oopavlayoushtshi—intendant*, or something in the way of a land steward, but not quite that. In this country these are sometimes fine gentlemen who waste a good deal of powder and shot very harmlessly, and in other respects their particular talent is proverbial. From one cause or another, it is rare enough to find a good garden in the Steppes: so it happens that there are favoured spots here and there where all that Nature can bestow—climate, soil, situation, and water—have been profusely lavished in vain. Instead of order, beauty and abundance, we sometimes find only a barren wilderness, where anything like intelligence, and a practical scientific plan, either respecting the arrangements of the ground or its profitable cultivation, have never been taken into account.

In such a country it is a treat of no ordinary kind to find out a long established and well kept garden such as may be compared to what is generally seen in England. I was fortunate enough in the autumn to be able to pay a visit to one or two such gardens, and my notes contain some things which, from their unusual character, I think may be worthy of notice in your columns.

About 150 versts from Kieff in the direction of Koorsk, the railway branches off to the scattered town of Romny, remarkable chiefly for its numerous avenues of stately old trees, and its immensely long and wide streets or roads. As the houses are all more or less detached, like our suburban villas, it is easy to understand that there are everywhere a great many small cottage gardens. Especially in the low-lying parts of the outskirts, there are some very pleasant places. In general, the landscape in this part of the country is sufficiently varied in hill and dale, wood and water, but the trees are, of course, only of the commonest sorts, as Limes, Elms, Oaks and Willows in particular.

About 40 versts westward from the railway we come to Sekirensy, the estate of His Excellency the General Galagan, one of the oldest and most honoured names in this part of Russia, a gentleman with immense wealth and highly-cultivated tastes. M. Galagan has spared neither expense nor pains to have his mansion and grounds in keeping with princely grandeur and beauty. After a dreary drive of several hours it was a pleasure of the most exquisite kind to come at last to this place, and stroll freely about the garden and park, which strongly reminded me of Chiswick and other places at home.

M. Galagan informed me that the grounds were originally laid out some fifty years ago by a German landscape-gardener called Bisterfeld, and though I consider that there are some things which are not beyond the reach of criticism, it is only fair to allow that the plan in general has been well studied, carefully carried out, and perseveringly followed up to the present time. The broad and gracefully winding walks, the spacious well-kept lawn and majestic trees charm the eye at every turn. Here Nature herself has furnished the essential conditions of a splendid garden, and with-

* I may here remark that Catalpa, probably like all its allies is proterandrous; the anthers open in the morning and the lobes of the stigma separate and become glutinous towards evening, the upper lobe remaining erect, the lower turning down close upon the style. I have not ascertained how they are impregnated, as at that time the anthers are effete, and by the following morning the lobes of the stigma are again closed.

out that condition in a climate like this Art would never do so much. There are plenty of trees, indeed Sekirensy seems to have been formed in a wood or forest. Though occupying a somewhat elevated position, the mansion and grounds are surrounded on all sides with dense masses of old and noble trees. Another condition of not less importance in all successful gardening must also be taken into account. Unlike other grand people in this part of the country, who seem to expect their gardeners to work miracles in a few months, General Galagan has adopted the wise plan of making few changes. Almost everybody employed here has had a long lease of service. The head gardener, Herr Hæger, has been in his situation not less than thirty-six years; the foreman, Herr Yanetschek, over twelve years. Most of the workmen, too, have been here from ten to fifteen years, so that it may be safely said every man is well accustomed to his duties. In that way it is easy enough to have something resembling a garden, whether on a large or small scale, especially where the gardener, as here, is master in his place, and has nothing to do with the steward.

Before I proceed with details respecting the garden I must make a short digression. In Russia we find a church connected with every public institution, and in the Steppes what we should call the village church is very near the seignor's house, sometimes within the grounds. But here in Sekirensy there are two splendid churches in the very middle of the garden, about 100 paces from the mansion. Before the emancipation of the serfs the nobles were much richer than now, and it was only in keeping with their wealth and rank to have a church for themselves as well as the great number of people always in their service. For that reason one of the churches here was built long ago. The other, a few paces further off, is very modern, having been erected only some ten years since to commemorate the death of a much lamented only son, who lies buried in a vault at one side, so that it is a mausoleum as well as a church. But service, I believe, is only performed there on particular occasions, such as anniversaries, "name-days," and the like. The bereaved parents have also perpetuated the memory of their son, by founding an educational college bearing his name in the town of Kieff.

The very day after my arrival happened to be the anniversary, and I was enabled to be present at one of the grandest church services which I have seen for some time, and view the magnificence with which the interior has been arranged. In the Russian church what we should called the altar or *sanctum sanctorum* is always enclosed, leaving three folding-doors of communication for the priests. This enclosure on the outside is always elaborately covered with pictures derived from sacred history. This is called the *ikonostass*, and it is usually a work of great beauty; but I have rarely seen anything to equal the taste and dazzling splendour that have been lavished on the *ikonostass* in this church. From the ceiling to the floor the whole width of the space is a display of the most gorgeous and brilliant kind which it is possible to conceive; not only are the pictures beautifully painted, but the ornamental carving and gilding have been done with a masterly hand. The music, too, under the direction of an intelligent leader, was exceedingly solemn and affecting. Happy are they who live in a paradise on earth, and have all the means of preparing for another in Heaven! *P. F. Keir.*

(*To be continued.*)

How Should Winter Fruit be Stored to Preserve it for the Longest Possible Period?—This is a question that concerns growers and consumers alike, and any information on the subject, whether of a positive or negative character, cannot be too widely published. Dr. Paul Sorauer, Director of the Proskau Experimental Station of Vegetable Physiology, has lately published the results of a series of experiments carried out by him to ascertain the best means of preserving fruit in a marketable condition. It is hardly necessary to say that the longer we can keep Apples and Pears, &c., the more valuable they become. We have not space to follow him through his experiments, but as each experiment was limited to a small number of Apples the results are not altogether convincing. The one condition indispensable to long-keeping in all cases was an intact skin.

GARDEN GOSSIP.

By a Lady.—No. VI.

Old-fashioned Gardens. — England still possesses a few out-of-the-way nooks and corners where time appears to stand still, and where old fashions still linger, in spite of the spread of railways and education. In such places we may still occasionally meet with an old-fashioned garden, by which I mean a garden in which flowers, fruits, and vegetables are all intermingled, instead of being confined to different parts of the ground.

Fifty years ago such gardens were still common, especially at country parsonages and among the dwellers in small towns. There was a charm of their own about them, with their gravel walks bordered by flowers or Strawberry beds, behind which espaliers formed a screen to the vegetables beyond.

The old people who had grown up among such gardens did not relish the new-fangled notion of putting everything out of sight except flowers. "There's

Fig. 111.—Tulipa Kolpakowskyana, as imported.

naught for the mouth," was the favourite remark of one old lady when walking round the "flower gardens," which were to her a modern and objectionable introduction.

In her days a good housewife was one who looked after her kitchen, and personally superintended the cooking, if she did not actually take part in it, and it necessarily followed that interest in the kitchen would lead to interest in the kitchen garden, and to personal superintendence of the fruits and vegetables; therefore, why poke them away out of sight? I can quite believe that when this was the state of affairs the herbs and vegetables received as much attention from the mistress of the house as did the flowers, and that she would have been horrified if mackerel had appeared on table without fennel sauce through any neglect of the gardener; or if, while the greenhouse was filled with flowers, her cook had to beg Parsley and Horse-radish from more careful neighbours. Yet I have known these misfortunes to happen in this year of advance and progress—1880.

Perhaps now that it is the fashion for ladies to attend cooking schools they will begin to realise that delicately flavoured soups and gravies cannot be produced without the necessary herbs and vegetables, and their re-awakened interest in cooking may re-awaken their interest in the kitchen garden.

The modern fashion of putting nothing but flowers and fruit on a dinner-table must bear some part of the blame; it necessitates a greenhouse, if "dinner parties" are to be given, and there is nothing on which a gardener can fritter away so much time—often to the neglect of less pleasant work. Thus it sometimes happens that in small establishments, where only a man-of-all-work is kept, Pelargoniums may be met with in abundance, while the cook is at her wits' end to find materials for the proper furnishing forth of the dinner which is replaced by them on the table.

Some other old-fashioned habits in the arrangements of the dinner-table must have had their share in stimulating gardeners to do their best with other things than fruit and flowers. I remember a gardener of ours, who took pride in his Cucumbers, told one of the "young gentlemen" of the house, that he liked to fancy the master taking up the Cucumber and admiring its size and shape before proceeding to cut it. Poor man! he did not realise that the cook alone would see it in its beauty, and that it would only reach the table in slices, drowned in vinegar and pepper, when its flavour would be as dependent on the skill of the cook as on that of the gardener.

Fig. 112.—Van Thol Tulip, starved.

Whether horticultural shows supply the place of the old-fashioned dinner-table in displaying the gardener's skill in growing vegetables, is doubtful. Probably they do in many instances, but not often in the particular cases to which I allude, and they are no test whatever of the gardener's care in providing everything necessary to the cook. He may carry off prizes for Broccoli and Cucumbers, while his salads are a failure and his herb-ground neglected; the neglect does not appear at the show, and what does it matter to him if the cook is obliged to buy dried Mint and Thyme at the grocer's to supply the place of what he ought to have furnished?

The remedy lies in the hands of the mistress. If she takes as much interest in the kitchen and kitchen garden as her great-grandmothers did, the cook and gardener will take increased interest in them too; but if the lady thinks only of her flowers the gardener will do the same, and the unfortunate cook will bear the blame, because her dinner cannot compare in excellence with the table decorations. *A. B.*

Bignonia capreolata. — A remarkably handsome variety of the old and well-known Bignonia capreolata is now flowering in the No. 4 house at Kew. It differs from the type in its dark, blood-red flowers. A figure of it will, we believe, shortly appear in the *Botanical Magazine*.

WHAT CULTIVATION CAN DO.

THE accompanying illustrations (figs. 111, 112, 113), which are taken from specimens kindly furnished by Mr. Elwes, and which were shown before a recent meeting of the Scientific Committee of the Royal Horticultural Society, show in a very striking manner the pliability or intrinsic property of variation possessed by plants. The first figure is that of Tulipa Kolpakowskyana as imported, with its small flowers, whose segments are prolonged into sharp points, acuminate, and its simply lobed stigma. Compare this with flowers of the same species after three years' cultivation, and note the greatly increased size of the flower, the rounded apex of the segments of the perianth, and the markedly lobed and crumpled stigma. The pollen grains are, as Mr. Worthington Smith tells us, in point of size the same, but in the wild plant they are yellow, in the larger form greenish-yellow. The illustrations are valuable, not only as showing what can be effected after a very short period of cultivation, but also as affording evidence of the wide variations possible in plants of the same species, and *pro tanto* of the unsatisfactory character of the points relied on to distinguish species. Fig. 112, p. 652, represents a flower of the scarlet Van Thol purposely starved to reduce it to its wild condition.

FIG. 113.—TULIPA KOLPAKOWSKYANA, AFTER THREE YEARS' CULTIVATION.

PLANT GOSSIP.

THUNBERGIAS.—What a sensation would be caused if some one were to cultivate the representatives of this genus as they deserve to be grown, and exhibit them in flower at one of the meetings of the Royal Horticultural Society. Seedsmen tell us—and it is a statement to be received with something akin to sorrow—that year by year the demand for seed of these beautiful annual climbers lessens. Thus there is a danger these plants will become, to a large extent, lost to cultivation. In all probability many of the younger race of gardeners are wholly unacquainted with them, and yet they are extremely ornamental greenhouse twiners, largely possessing the charms of beauty and distinctness. It is curious to note how wide apart geographically were the sources from which the plants were derived. T. alata came to us from the East Indies; its variety alba from Madagascar. Two other varieties, viz., Bakeri and flava, came from America, and the rich yellow-flowered aurantiaca from Madagascar. For years these plants were very popular; but by slow degrees they have fallen away from cultivation. Perhaps the fact that they are very subject to attacks of red-spider when grown in an ordinary greenhouse tells against their cultivation in pots, but in the flower garden, for rustic baskets, vases, &c., they are very valuable. The seeds can be sown at once, but April is the best month in which to raise them; and it is recommended that the seeds be moistened before sowing, and then raised in a strong hotbed, and when large enough that they be potted into sandy loam and peat, and at later shifts be treated to a good portion of poor lime rubbish.

—— BOUGAINVILLEA GLABRA IN COOL QUARTERS.—This Bougainvillea, which has so much to recommend it—in being easily grown and free to bloom, the flowers effective on the plant, and amongst the best and most enduring when cut—will evidently succeed in a lower temperature when at rest than most people usually try it in. Mr. Jaques, the gardener at Davenham Bank, Malvern, has it in company with Maréchal Niel Rose, planted out and trained on the back wall of a high lean-to Peach-house that is forced so as to have the crop ripe about the end of May. The plants in question cover the upper portion of the wall, where their heads are not much shaded by the Peaches, and are in a healthy vigorous condition. The Bougainvillea will necessarily be later in blooming than where subjected to more heat early in the season, and in such company it must evidently be submitted to a very much lower temperature through the latter part of the summer and autumn than it is generally considered to require. Doubtless its flowers under these conditions will be finer coloured than when grown in a hotter, more confined, moist atmosphere.

—— TRIPHASIA TRIFOLIATA.—This very peculiar shrub, the hardiest of all the members of the Orange family, is now flowering in the open air at Kew. The cream-coloured blossoms, nearly or quite scentless, are not at all showy, but still fairly conspicuous on the rigid, dark green, spinous branches. The leaves, which are produced much later on, are composed of three oval leaflets. The beautiful red-skinned, Gooseberry-like fruits, preserved in syrup, are sometimes imported to this country. A native of Southern China, but now naturalised (and cultivated throughout the East Indies, and grown in the West Indies and elsewhere.

—— AMARYLLIS BELLADONNA.—Some two or three years ago Mr. Roberts planted at Gunnersbury Park a bed of Belladonna Lilies along the south front of a plant-house in two divisions, the eastern division of which is used for the growth of stove plants, where a high, moist temperature is maintained; the western division being for the growth mainly of New Holland plants, where the temperature is much cooler. It is interesting to notice how the difference in temperature of the two houses has affected the Belladonna Lilies in the outside border; in the first case the growth is free, luxuriant, and robust, and the border is well furnished with foliage: in the other case, owing to the colder temperature within, the foliage is poor, uneven, and weakly. It similarly affected the production of flowers in the autumn; and the moral to be deduced is, that it is an advantage to plant against a house when the temperature is high; but whether there is induced a certain undue excitement, that may prove inimical to the durability of the bulbs, remains to be seen.

—— EUCALYPTUS POLYANTHEMOS.—The fine specimen of this tree, near Museum No. 1, at Kew, looks far worse now than it did two months ago. The frosts and the cold winds of the last fortnight seem to have had a considerable effect on the foliage, which the past winter with all its rigour had apparently spared. Most of the leaves are now fallen, all those remaining are very brown and dry-looking, and the tree altogether presents a woeful aspect. It is to be hoped that this specimen, which is looked upon with especial interest by large numbers of foreign and colonial visitors to the Royal gardens, may again recover; at present, however, such a prospect seems somewhat doubtful. Several Pines, too, have within the last ten days or a fortnight apparently given up the struggle for existence. Large plants of P. muricata which, after winter had passed away, seemed, in spite of brown patches here and there, likely to grow out of the damage which had been inflicted on them, are now hopelessly ruined. P. insignis is one which has suffered very severely, but its injuries were evident from the first.

—— ERYSIMUM PULCHELLUM.—This very dwarf perennial is a pleasing addition to our stock of hardy spring flowering plants. Unlike the annual Erysimums that grow so tall and ungainly, this new kind does not exceed 4 inches in height, and forms a dense compact carpet of foliage and sulphur-yellow bloom. It really resembles a very dwarf form of Cheiranthus alpinus, but the two plants are closely allied. In the Reading seed-grounds seed of this was sown in the spring as an annual, but not blooming during the summer was permitted to stand over till now, and is very effective and found perfectly hardy. We also met with it lately in the nursery of Messrs. CRIPPS at Tunbridge Wells.

—— DELPHINIUM TRICORNE.—This pretty and distinct species of Larkspur is now in flower in the gardens at Loxford Hall. It is a tuberous-rooted perennial, the leaves of which are more deeply cut than in the ordinary garden forms, such as D. formosum. The whole plant is not more than a foot high. The flowers are dark blue, borne on dense spikes about 6 inches long. It is the earliest Larkspur to flower, and is well adapted as a rockwork plant or for the herbaceous border. It was introduced by Messrs. Backhouse, of York.

—— AERIDES VEITCHII.—This very fine representative of the genus is now in rare condition in the East India-house at Gunnersbury Park, the plant having put forth a very fine spike with four spikelets

issuing from it. There is something most captivating in the pale soft and yet lustrous lilac of the colour, and as the spike is massive and the individual flowers fine, this aspect is intensified. All the Aerides and Saccolabiums look remarkably well, and there is a rare promise of bloom from the whole of them.

—— Dendrobium chrysanthum.—In Mr. Wyatt's collection of Orchids at Cheltenham there is a large example of this fine old Dendrobe that gives one of the many evidences continually occurring of the great mistake that is made in growing Orchids from comparatively cool countries in a high temperature. The plant in question is a large one, and it has been grown as usual in a basket hung up, and had been kept for years in a house amongst such species as require a good deal of heat. It made stout strong bulbs, 3 feet in length, which used to produce here and there a few flowers, but nothing proportionate to the number the plant might be expected to afford, and on this account early last summer it was condemned to be thrown away. Meantime Mr. Simcoe, the gardener, hung it up near the light in a potting shed, a portion of the roof of which is glass; here it received only very slight warmth, but as it kept on growing it had now and then a little water given, and completed stout bulbs, about 2 feet in length. It remained in this position all through the autumn and cold winter, when the thermometer was several times down to 35°, showing flower. Later on it was moved into a house a little warmer, and when we saw it recently it had eleven bulbs blooming profusely, several of the largest having over forty flowers a-piece; five or six of the nodes on each of them produced as much as five flowers at a joint. It is evident that this plant will do very much better with less heat and moisture, as well as more air than is generally given to it.

Forestry.

The diseases which affect forest trees may be divided into three classes, viz., such as affect the roots, those confined to the stems and branches, and those connected with the leaves. These diseases assume many different forms, and each of the three classes may be divided and subdivided almost without end. It is not within the province of this article to define the term disease, and it is, therefore, only to be understood in the general sense, and regarded as the abnormal state of health of the subjects to which it refers.

If in any case the producing cause of the disease is thoroughly known, the most important step in advance towards effecting a cure may be said to have been attained, and it is doubtless one of the chief reasons why so comparatively little progress has been made in the attainment of sound knowledge, that secondary causes have been regarded as primary ones, or that what is thought to be the cause is only the effect. What makes the detection no less than the treatment of disease more difficult than it would otherwise be, is the circumstance of their being not simple or single, but a combination; and most diseases, if not a combination at first, in a short time usually become so.

The leaves, for example, when from any cause prematurely arrested in their growth, do not, probably for a single day, remain without contracting some new disease, or at least developing some new phase of it. The young and tender foliage, for example, singed by a few hours' frost, blasted by a cold east wind or northern blast, or by the sea-breeze if within its influence. Mildew, honeydew, or blight, from whatever cause, are succeeded by a host of insects almost invariably following in their train: for who does not know that diseased leaves are always infested with insects in one or other of their numerous forms? Or again, excessive drought or heat, superabundance of moisture, whether in the ground or the atmosphere, dull, cloudy, sunless weather, dampness, or cold—sudden transitions from one state to another, as from cold to heat, or heat to cold, submerging the roots in water, or suddenly depriving them of it—any one of which, or either singly, will produce that state termed disease.

It is well that some forms of leaf disease are preventable, since few are susceptible of cure. That little can be done to cure leaf diseases in forest trees is obvious — first, because the disease is too far advanced before it is observable; and, second, when it is discovered and known to exist it cannot be reached, for who would attempt to dust, fumigate, or syringe the foliage of an Oak or Elm from 50 to 100 feet high, and with an expanse of branches as many feet wide? It is a very simple and comparatively easy task to collect the various species of caterpillar that attack the plantlets in the nursery and destroy them, but who would undertake to go over a forest of hundreds or thousands of acres in search of the Pine beetle or other insect, larger or smaller? The bark of trees bears close analogy to the skin of animals, and what the skin does for the latter the bark does for the former. Now we well know, and yet the knowledge is not so general as could be desired, that the clean and healthy skin contributes as much to the health and comfort of an animal as food and water do. By the skin the health of an animal is pretty correctly judged of, and by the bark of a tree the experienced eye detects much. Now while it is very obvious that diseased bark cannot exist upon a tree whose sap and secretions are pure and healthy, yet it is quite within the scope of possibility that a diseased bark may contaminate the whole structure of the tree; and when this is the case, it is not an unreasonable thing to inquire can the diseased bark be cured? I think several forms of bark disease can be cured, but as the experiments I have made are only of comparatively recent date, and have not been sufficiently established, I shall avoid saying too much in their favour lest I should mislead. What I have done has been to apply R. Davidson's composition for preventing ground game injuring trees by barking them, and in doing so I have noticed some very remarkable and interesting results. The composition so far softens the outer bark of the tree as to relax the whole structure and impart to it a freshness and succulence such as is usually found in young vigorous growths. The greatest improvement observable is in the case of stunted, bark-bound trees of slow and rigid growth. The outer bark of such trees is usually as light and compressed as ligatures of leather, and this probably prevents the sap flowing, or the woody matter forming so perfectly as it should, and would do, but for the compressed nature of the bark. It also completely clears the tree of every form of lichen and moss. This latter effect I am well aware some will demur to, as they like and admire these lower forms of growth as much if not more than they do the higher or tree products. I do not dispute their title to admire the beautiful lichens and hoary or shaggy mosses which adorn the old and mature denizens of a century's growth; but while these are natural, beautiful and commendable in an old and mature tree, they are not so in young or middle-aged ones, and such as are prematurely old on account of adversities from which they cry for deliverance. *C. Y. Michie, Cullen House, Cullen, Banffshire, May* 17.

Garden Operations.

KITCHEN GARDEN.

Cabbage.—This esculent is so universally grown that it would hardly be possible to find out a garden in which it is not cultivated, or a household where, as a common culinary vegetable, it is not in frequent or almost daily use. These and other considerations in connection with it, as the duration of its season and the appreciable qualities it possesses, emphatically prove that it is one of the most useful products of the garden. As a crop it is a very exhaustive one, and also a profitable one. In common with all other plants of a succulent nature, it is a gross feeder, and therefore it needs the very richest of soils to produce it in the highest state of excellence. In order to have a supply of it in some form or another, either heads or sprouts, at all seasons of the year, it is necessary to make several sowings of it at various periods. By a course of practice and careful observation I have come to the conclusion that, for private purposes, these should be made in the following order: For the earliest crop in the spring at about July 24, for the subsequent or general crop about August 8; in both cases the requisite number of plants obtained from these sowings are to be planted out as soon as they are ready for the operation, and a number of the smallest plants from the latter sowing should be pricked out into beds, where they may remain until the following March or April, and are then to be planted out finally. These come in as an intermediary crop between the former and that acquired by the next or spring sowing, which should be made in a snug place or in a cold frame towards the end of February. The fourth and last sowing of the season should be made the first week in June: at this time an ample supply of seed of that useful hardy and compact little Cabbage, the Rosette Colewort, should be included. A most important fact in connection with Cabbage cultivation which is either overlooked or totally disregarded in many instances, is the preparation of the plants prior to planting them out. These should be formed in the sturdiest manner possible, a condition acquirable only by means of pricking out the plants at an early stage of growth, or by making larger seed-beds and sowing it very thinly. In my opinion the former process is the most commendable, and of such importance at the stage of growth described that it merits further recommendation; indeed, it should be adopted generally in connection with every class of similar vegetables. Cabbage plants should always be planted out as soon as fit for the operation, and have the soil pressed firmly about the roots; they should be placed slightly below the level of the surface, for which end drills from 2 to 3 inches deep are necessary, the distance apart of course varying according to the requirements; large varieties should have from 18 inches to 2 feet every way, and for those of lesser growth and for Rosette or other Coleworts a foot will be enough. Hoeing and stirring the soil about the plants are not only required to free the surface from weeds, but their effect during the early stage of growth is such as to accelerate it marvellously. It has become a settled rule here to keep a certain quantity of the stems after the Cabbages are cut from the general crop—those plants which were sown August 8 preceding hot dry seasons; these stems invariably produce cleaner heads at a certain period than those obtained from individual plants which come into use at about the same time. Like most other culinary vegetables this has a number of varieties, known under various names, many of which are found to be identical in most respects: we select for our private requirements the following kinds, namely:—Bailey's Selected, a most useful early variety; Heartwell Marrow, the best of all for general purposes; and the Rosette Colewort, a pre-eminently excellent little Cabbage for winter use, provided the seed be sown at the proper time, namely, the first week in June. Another sort, which is absolutely indispensable to some extent everywhere, is the red variety for pickling; this sort can be obtained either by sowing the seed about August 8 or otherwise, with the advanced sowing of the other kind about the end of February.

Ordinary Work.—A dry period such as we are experiencing, although very beneficial in some respects will on the other hand entail considerable labour in watering, an operation which at this period should be performed before mid-day, and will be indispensably necessary in the case of plants in seed-beds, to those pricked out under similar circumstances, and to early crops of many other subjects, as Turnips, Carrots, Lettuce, Radishes, &c. The absence of showers this spring is rather inimical to the free growth of Asparagus, which as yet does not come up kindly and shows unmistakably the want of the water. The cutting of this subject should be seen to almost daily, in order to have it in a proper condition. My plan is to cut all the "grass" that comes up until a certain period, and then let the growth proceed altogether. In the first instance, we cease cutting from plants which will be wanted for forcing purposes; this takes place as soon as the early crop of Peas comes in for use; but cutting is continued from the others until such time as the demands grow less, when another portion is allowed a free course of growth; and the rest of the beds as soon as practicable afterwards. If not already done, remove winter crops of Spinach from the ground without further delay; this is essential for the wellbeing of the land. In some places it may be turned in in the process of digging the ground, but this is hardly to be recommended in others; as, for instance, where the roots of wall trees abound it would not be advisable to do so. Our early plots of Brussels Sprouts and Cottagers' Kale are already put out between the rows of the main crop of the early Ashleaf section of kidney Potatos, and now stand at a distance of 3 feet by 2 feet apart. The earliest batch of plants of Dickson's Eclipse Cauliflower is likewise planted on an open quarter. Other plantings will forthwith be proceeded with in the way of spring sown plants of Parsley for a general crop, of Leeks and Celery for an advanced crop, and of Savoys and other kinds of winter stuff as soon as the plants are fit and ground becomes available for the purpose. Wherever mulching material has been this spring it will indeed be beneficial, particularly to crops of Peas, Cauliflowers, &c. As is systematic practice this really cannot be too urgently enjoined. The condition of early crops of Peas in general at the present time (May 17) is highly promising; those placed out-of-doors are blooming satisfactorily, and those within roughly constructed frames with lights over them are ready for use—in fact, we have made our first gathering to-day of Laxton's Unique; this unmistakably shows the advantage in time which is obtained by means of such contrivances, apart from the consequent risks to which they are amenable when fully exposed. Tomatos,

ridge Cucumbers, and other half-hardy plants which have been somewhat hardened by exposure should be put out into their respective places without further delay. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

Pines.—A fair share of sunshine has this year, so far, been of considerable importance in contributing towards the wellbeing of exotic subjects of every description—these plants not excepted. When we possess such seasonable influences they should be fully utilised, as under such conditions the growth in these plants may be advanced more expeditiously with safety from harm, providing proper care be bestowed on the ventilation, which, whenever a prospect of a sunny day is imminent, should be attended to early in the morning, because, in Pine cultivation, too much moisture cannot well abound within the houses or on the plants, subject to its being dispelled from off the leaves of the plants before powerful sunshine operates fully upon them. In order, therefore, to maintain such a condition, freely moisten all available surfaces about the house whenever they become dry, and especially is this required just prior to the closing up time, which should be sufficiently early in the afternoon to keep up the temperature at 85° or 90° for a considerable period afterwards. The outside condition of late will involve repeated syringings, and almost daily: this operation, however, must necessarily be regulated by the condition and character of the house and plants. In the case of the latter the axils of the leaves are the best criterion to go by; these during the growing season should never be allowed to become intensely dry, because many feeding roots exist around the stems of Pine plants which only derive support from this source. At this, the growing season, be cautious not to let any of the plants suffer from want or from an inadequate supply of water, and in all cases let this be improved by some stimulating agent, taking care to avoid giving it in strong doses. Give the requisite attention to shading; the thinner the material is for this purpose so much the better, as only enough shade is required to prevent the sun from scorching the leaves or fruit, as the case may be. Use no more fire-heat than is absolutely necessary in the fruiting or other departments. *G. T. Miles, Wycombe Abbey.*

Figs.

When the fruit in the succession-house begins to swell for ripening, a higher and drier temperature will hasten maturity: but care must be observed in giving plentiful supplies of tepid liquid to the roots and syringing the foliage regularly, as any sudden check might prove injurious to the crop. As the Figs approach ripeness it will not be advisable to wet them if it can be avoided, neither will it be necessary, as atmospheric moisture can always be secured by keeping the mulching, walls and paths properly moistened; and this can be prevented from condensing on the fruit by maintaining a steady circulation of air with gentle fire-heat. When grown in a hot, dry house the Fig soon becomes infested with spider and scale, and as a natural consequence the ripening period is shortened—the trees rest simply because they are exhausted, and the second crop is puny, rusty and unsatisfactory: but feed them liberally with generous food, ventilate freely with heat, and syringe as often as they are divested of ripe fruit, and they will become perpetual bearers. The late Mr. Cramb had a very nice lean-to Fig-house, in which he allowed several large pot-trees to ramble root and branch, until the thin layer of rotten leaf-mould once used for plunging his pots in resembled a cocoa-nut mat. Feeding with liquid manure, syringing and ventilation, were not neglected; and although the trees presented a free and easy appearance, I never saw them through the summer months without an abundance of fruit in every stage of growth, not over-large, but beautifully coloured and of exquisite flavour. To keep a Fig in continual bearing, it must be constantly growing, and for this reason the extension-rod system well answers the purpose, as the leading shoots are allowed to extend without stopping until they reach the extremity of the trellis, when they are cut away at the winter thinning to make room for others succeeding them. Figs in cold houses and on open walls, notwithstanding the cold, wet, sunless summer of 1879, seem to be showing plenty of fruit, and in the event of a continuance of this bright sunny weather, they will be found very acceptable in August and September. Assuming that the roots are confined to reasonable limits inside the house, and that the borders are concreted and thoroughly drained with broken brick and old lime rubble, a material upon which they will live and thrive, the treatment recommended for succession-houses will apply, with this difference—in cloudy weather the afternoon syringing may be dispensed with, and in bright weather it may be performed early with all the solar heat that can be shut in, to insure the proper drying of the foliage before nightfall. The young growths in these structures should be trained a good distance apart, as overcrowding impedes the free passage of light and warmth, so essential to the ripening of the fruit and wood. Neither is close stopping in cold houses a good plan, as it results in the production of a number of late growths which do not get properly ripened before the leaves fall; but the safest course is to secure firm short-jointed wood, and to allow the points to grow up to the glass, a position in which they will form an abundance of embryo Figs ready for swelling with the first flush of sap in the spring. *W. Coleman.*

Orchard-house.

The trees in the earliest house will now be in a condition requiring much water, the fruit either having passed through the stoning period or it will be now stoning. Inexperienced cultivators not unfrequently become alarmed at the condition of the fruit during this period, especially if they are anxious and of an observant turn. To all appearance no growth is made for several weeks, while the growth is as free as ever really, only it is inside the fruit; the stones are becoming matured, and growth of the fleshy parts of the fruit for a time ceases. It is during this period that a portion of the fruit drops off, although I must say this seldom happens if the trees are in good health, and the atmospheric conditions such that the trees require. If the fruit is stoning it is not desirable to over-heat the house, either by shutting up too early or by artificial means; indeed I would rather not shut up early, nor close the ventilators altogether during the night. Where the fruit has set and taken its second swelling, a high temperature just suits the requirement of the trees. See that they do not want for water at the roots, and thoroughly syringe them over twice a day. We have a garden engine that holds about 20 gallons of water; this is filled after the house is syringed, and the water is always about the same temperature as the house. In the original orchard-houses constructed by Mr. Rivers, or according to his plan, the ventilators are simply shutters or hinges to open outwards, and they must either be quite open or shut close up. The same successful cultivator recommended worsted netting to be placed over the ventilators to moderate the violence of cold east winds. This plan is certainly very desirable, especially near smoky towns, where the sooty particles are also caught in the meshes. Attention must be given to pinch the growing shoots. It requires some experience to do this right, as some of the shoots may not require to be stopped; others (the vigorous ones) should be stopped at the fourth or fifth leaf. The labour attendant on watering trees with all the roots inside of the pots now rapidly increases, and strict attention is necessary, as an hour or two of neglect may ruin the crop. *J. Douglas, Loxford Hall.*

PLANT HOUSES.

Orchids.—Now that so many of these plants are in flower it is a fitting time to caution both owners and growers against the too frequent practice of allowing small and weakly plants to overflower themselves. Those who have been interested in the growth of Orchids, even for a short time, will have noticed how prone some species are to flower even after they have got into so debilitated a state that they have neither strength nor stamina left to push new breaks and roots. Such plants in their native habitats might throw one or more perfect flowers, and if such got impregnated might as a last effort bring to maturity a sufficient number of seeds to insure reproduction of species. Growers as a rule do not care in the least for Orchid seed, but would rather see some rare plant make good growth each year than that it should mature a peck of seed. Vigorous growth in every plant is the thing to be aimed at, carefully avoiding over-flowering, which is undoubtedly antagonistic to it. The cutting away of spikes immediately they show should only be done when the plant is extremely weak, and when it is thought that even bringing to perfection one flower might end its career. It is well known that flowering is, with a large majority of Orchids, part of their annual programme; to prevent them entirely from flowering is therefore certainly likely to bring them into irregular habits, not the least mischief of which would be to cause them to make their growth during a period well known by experience to be not the best for proper development. They would of course make their growth earlier, as they would miss the retarding influence of flowering. Such a weak-growing plant as the rare and chaste Cattleya Reineckiana would, if allowed, soon entirely exhaust itself by carrying one or more of its large flowers on every break it makes. Such plants can be saved either by cutting away the flowers so soon as they show, by thinning the buds out, or by gathering the flowers immediately they are fully opened. These flowers, if stood in the cool house with their ends in water, will retain their beauty for any reasonable length of time. It is almost unnecessary to say that thousands of such beautiful Oncidiums as O. crispum, O. concolor, O. Marshallianum, O. Forbesii, O. prætextum, and O. varicosum have been irretrievably ruined by flowering too often, and by having to sustain for two or three weeks gigantic many-flowered spikes. After these plants have undergone the trying ordeal of importation they ought not to be allowed to flower until they have made a good supply of young roots. Even then it is wise to take the future into consideration, and by reducing the number or size of the spikes to husband the plant's strength. Judging from the numbers which have been sold there must at this moment be thousands of imported Odontoglossum crispum trying to recover themselves from the rough usage they have received. Those who possess any of these plants will, of course, be very anxious to see them flower, for there remains still the dread of O. Lindleyanum, and the hope of O. Andersonianum or O. Ruckerianum turning up. For this reason it is best when a spike shows up not to entirely remove it, but to leave just one or two flowers to determine the variety. The variety known, let the sole object be to grow the plant stronger and stronger, until it has so thoroughly established itself that it can bring to perfection yearly, without distress, a spike of from twelve to eighteen noble flowers. Should such a plant by any means get out of sorts ease it for one season of its flowers, and the chances are, all other conditions being favourable, it will regain its strength. Occasionally this and other Odontoglossums, such as O. Pescatorei, will throw an extraordinary many-branched spike: on no account let such a spike remain on too long, or the plant may be permanently injured. A strong plant of O. Pescatorei here eighteen months back threw a spike of 101 perfect flowers; from this strain, although eased of all subsequent spikes, it is only just now recovering. Another Orchid, Oncidium stelligerum, threw two spikes of 240 flowers each, and got so exhausted that it actually failed to break for a twelvemonth. Perhaps no class of Orchids lose so much of value and appearance by over-flowering as Vandas, Aerides, Saccolabiums, and Angræcums. Seldom indeed do we meet with a collection of these plants where the conditions of their existence are so nicely balanced that the plants make and retain ample foliage and also throw plenty of flower: quite common is it to see plants with abundance of flowers and with but little foliage. To right such plants it is necessary, not only to ease them for one season of their flower, but also to give them the whole year round a more generous treatment. This in many cases would mean less exposure to the sun, less air, more atmospheric moisture, and less fire-heat during the short dark days and long cold nights of winter. Many Orchids are injured when in flower by removing them from their moist-growing quarters to a dry and, what is worse, draughty place. To ask any cool Orchid to sustain its flowers in a dry atmosphere, is to ask it to work harder and eat less. Keep the syringe away from Orchids when in flower, and there will be no need to remove the plants to drier quarters. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

Lawns and Shrubberies.—At the time of writing the drying east winds still prevail. We have had to cease mowing for a time, so brown is the grass getting in places through the drought, and if we do not get rain soon we shall have to use the hose. All spring-planted trees and shrubs should be well watered, and Rhododendrons coming into flower should have a good soaking, and the subsequent application of a good mulching of newly-mown grass will be a great advantage in protecting the roots from the drying winds.

Lobelias for Carpet-Beds.—Lobelias should be used with great caution for carpet-beds. I have seen several beds where Lobelias have been used that would have been gems if it had not been for the failure of the Lobelia. I do not mean to say that they ought not to be used in carpet-beds, but they ought to be used with great caution, for the reason that they are out of bloom so soon, and make the bed look gloomy afterwards.

Succulents for Carpet-Beds. — Succulents used too largely in carpet-beds, especially the green kinds, which have a rude or ragged appearance, the milky or glaucous-foliaged ones being much the best. The most suitable place for succulents generally is a bed to themselves, or on a mound; set well up they have a very noble appearance, which there is nowhere shown to better advantage than on the "alpine point" at Battersea Park.

Beds and Borders.—All newly-planted plants should have special attention now, having the soil stirred up well around their roots, and then well watered. Annuals, which are very shallow-rooted, if not attended to in this dry time will fail to give satisfaction hereafter. Ornamental grasses form a very attractive class of plants when arranged either in mixed borders or in flowering beds. When dotted in a bed of scarlet or other Pelargoniums they have a very pleasing effect. *W. Gibson, Chelsea.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	May 24	Anniversary Meeting of the Linnean Society, at 3 P.M. Sale of Established and Imported Orchids, at the Auction Mart, by Protheroe & Morris
Tuesday,	May 25	Royal Horticultural Society: Meeting of the Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M. Sale of Bedding Plants at The Nurseries, Hornsey, by Protheroe & Morris.
Wednesday,	May 26	Royal Horticultural Society's Conversazione.

NOW that hardy herbaceous plants are regaining that attention they should never have lost, we may fitly call attention to the hardy EUPHORBIAS. At this season they are particularly attractive, from the profusion of their greenish-yellow flower-leaves, which in the bright sun gleam with an almost golden hue. There are several of them deserving cultivation—if cultivation it can be called—for, for the most part, they require merely to be stuck in the ground and let alone. Not the least handsome of these Spurges is E. amygdaloides, a common plant in copses and woods, especially on limestone soils: of this there is a variety with the leaves margined with white. Then there is the Caper Spurge, E. Lathyris, a tall-growing plant, with glaucous leaves in pairs, arranged crosswise—a noble-looking plant, which comes up almost a weed in some gardens. E. Paralias—as its name implies, a seaside plant—is another very distinct-looking object, and may be commended not only for its striking appearance, but also because, from the creeping habit of its rootstock, it is valuable on sandy or shingly sea beaches. E. Cyparissias is a low-growing kind, of neat habit and with dense linear leaves, which have suggested a resemblance to the Cypress. It is well suited for rockworks.

Then there is E. pilosa, a tall growing species with linear-oblong leaves and dense terminal tufts of greenish-yellow flower-heads, very striking in appearance, and in bright light very brilliant in colour. All these are natives of Britain, but they are by no means to be despised as border plants for all that. E. corollata, a North American species, is remarkable for the pure white of its floral leaves. It is a handsome plant, rarely met with now-a-days, but one well worthy of cultivation. E. aleppica is another half-shrubby species, with crowded, linear-oblong leaves and dense terminal heads of flowers. It also is one of those very striking plants which every one asks the name of when they see it, but which so few people cultivate, although there are few more distinct looking plants within the reach of the everyday gardener. E. dendroides, a noble species, which grows so finely on the shores of the Mediterranean, is rarely met with in our gardens. E. Characias, the species we now figure (fig. 114) from Mr. WARE'S nursery, is a remarkably handsome plant, native of the South of Europe, and long since introduced to our gardens though rarely met with. The flower-stalks are all about of equal length and verticillate, which gives the plant a different look from its near allies.

All these, as we have said, are plants of the easiest culture, and few of their class are more distinct and stately. All have milky juice, and may be suspected to be more or less poisonous. At first sight it would seem a strange association to put the fleshy Cactus-like species and the Poinsettias and Pedilanthus of our stoves with our Spurges, but the floral arrangements of all are nearly identical, and, we may add, exceedingly curious.

—— THE PHYLLOXERA IN SOUTH AFRICA.—The recent order by the Government of Cape Colony, says the *Colonies and India*, prohibiting the importation into the colony of all kinds of foreign plants, with the intention of preventing the possibility of the introduction of the Phylloxera, was made the subject of complaint by a deputation which waited on the Secretary of State for the Colonies on Tuesday last. The dread of disease ever finding its way into the vineyards of Constantia was so great among all classes of colonists, that pressure was brought to bear upon the colonial authorities to prohibit the importation not merely of Vines, but of everything [considered] likely to harbour the pests. Grave inconvenience and considerable losses have been experienced also in the strict application of the prohibition to all kinds of vegetable products, and it is apparent that the full effect of the order was not foreseen when it was promulgated. In one case the importer of some Beech trees which had been sequestrated and were about to be destroyed in accordance with the regulations, brought an action against the Government and obtained an injunction restraining their officers from destroying the trees on proving that it was not possible for them to harbour the Phylloxera. The facts brought forward by the deputation in opposition to the measure adopted by the Government of Cape Colony will, no doubt, receive careful consideration on the part of Lord KIMBERLEY. Though it is absolutely necessary that the Cape vineyards should be thoroughly protected from a disastrous invasion, it is not desirable that this object should be gained by measures which, it seems now proved, are unnecessarily stringent.

—— THE VINE LOUSE LAWS.—A meeting of French horticulturists was held in the rooms of the Central Horticultural Society of France on the 6th inst., with a view of obtaining a modification of the absurd regulations recently enacted to prevent the spread of the Phylloxera. The members present protested against the absolute uselessness of the proposed interdict, and suggested certain alterations in the terms of the Convention of Berne, which while still leaving reasonable precautions intact, have for their object the doing away with absurd and mischievous prohibitions. MM. ED. ANDRÉ and LOUIS ANAT. LEROY are the secretaries of the committee. It may be mentioned that M. PLANCHON, who is one of the leading authorities on the Phylloxera question, gave in his adhesion to the proposals made for modifying the terms of the Convention of Berne, and it may be further stated that the fact that the insect will live on the Vine and on the Vine only, is asserted on the authority of the Academy of Sciences after careful experiment by the most competent observers.

—— PHYLLOXERA IN FRANCE.—An official paper issued during the past few days states that the amount placed at the disposal of the French Minister of Agriculture and Commerce for the purpose of encouraging research and experiments as to the best way of dealing with the Phylloxera amounted in 1879 to 500,000 fr., and this will be increased during the present year by supplementary grants to 969,750 fr. Of this amount 200,000 fr. are devoted to the treatment of diseased Vines in the districts specified by the superior commission, while 250,000 fr. will be given to doubling the votes granted by the various departments and municipal bodies. Societies and companies formed for the investigation of the disease will also be assisted by bonuses to the aggregate amount of 300,000 fr. A further sum of 100,000 fr. is set aside towards encouraging the propagation of American Vine stocks and the distribution of new plants and cuttings from the Agricultural School at Montpellier. Rewards to the amount of 100,000 fr. will be given for furthering microscopic researches, and 50,000 fr. are left for dealing with individual cases. *Times.*

—— NOTEWORTHY HARDY SHRUBS AT KEW.—In the Rhododendron dell, where some time ago we noted fine flowering specimens of R. fulgens, another, and a wonderfully different Himalayan species, is now in bloom. This is R. blandfordiæflorum, which is represented by several forms of unequal merit. The finest of these is—in spite of its rather ugly habit—a very desirable plant, and its long, tubular, vivid orange-red trusses make a fine display. The other forms have smaller flowers of a greenish-yellow colour. On account of its sparingly leafy, twiggy character this species is unsuitable for planting singly, but amongst other Rhododendrons where its defects can be quite hidden, it is well worth attention; it is one of the discoveries of the present Director of Kew, who found in Eastern Nepal and Sikkim at elevations of from 10,000 to 12,000 feet. A Californian Gooseberry, Ribes subvestitum, is just now particularly attractive in that portion of the Arboretum set apart for the collections of shrubby Saxifragaceæ; it is remarkable for the large size of its flowers, which have deep purple reflexed sepals and erect white petals—the entire blossom exhibiting a decided Fuchsia-like character. The Kew plant seems to be a finer form than that figured nearly a quarter of a century ago in the *Botanical Magazine*, tab. 4931, and differs from that in having copious aciculi on branches. Originally the species was sent to Messrs. VEITCH & SONS by LOBB. R. speciosum, another Californian species of the highest merit as a decorative wall plant, has strikingly handsome, deep glossy crimson flowers, with very long exserted stamens of the same colour; it has small, irregularly toothed oblong-lobed leaves, and the whole plant is spiny and glandular. Its prolonged season of flowering adds considerably to its value.

—— OVER-CROWDING.—That was excellent advice an old gardener once gave to amateur cultivators of plants when he cautioned them against overcrowding their greenhouses, and pointed out the harm flowing from the practice. "Above all things, never be tempted to beg or purchase plants unless you have room for them; overcrowding is the great bane of English gardening. Many cram their gardens as manufacturers do their workshops, until debility and weakness take the place of vigour and health." It is a passion in human nature to acquire, hence it is that some with limited accommodation attend plant sales, and occasionally purchase many more plants than they require or have room for, and the consequence too often is great disappointment. It is far better to grow a few subjects, and cultivate them as well as possible; and there is much reason to believe that the amateur gardeners who get the most enjoyment out of their gardens are those that are termed "specialists," who make pets of two or three subjects, and give their whole attention to them. How many there are who have but little enjoyment out of their annuals, because they sow thickly, and leave to flower all the plants that come up. It is much better to thin out the plants to an inch or so apart, pressing the soil firmly about those that remain, and giving them a top-dressing with some good soil. How can it be expected that plants growing close together, and that need room for development, can do well or produce flowers of a satisfactory character? If plants are to do well they should receive the warmth of the sun and the full benefit of refreshing showers; and they enjoy these best when standing a little isolated. Plenty could be written on this subject, but a few suggestions will suffice by way of illustrating the evils resulting from over-crowding.

—— PRESERVING DAHLIA TUBERS.—A correspondent of the *Gardeners' Record* writes:—"Though carefully dried before storing away in the autumn, I used continually to lose them by the rotting of the crown, till at length it occurred to me it was occasioned through the decay of the long stalk left attached to the tubers; this becoming partially charged with fluid kept the crown constantly wet. My remedy has been to leave not more than 4 inches of stalk; from this to scrape the whole of the outer covering or bark, and at the base to make a small opening which permits any watery deposit to escape. The result has been, I have preserved the whole of my tubers, while experienced gardeners around me have complained of loss, notwithstanding that every precaution from damp or frost has been taken."

—— LARGE CONSIGNMENT OF JERSEY POTATOS.—On Tuesday morning, May 11, the steamer *Guernsey* conveyed from Jersey to Southampton 1517 packages of outdoor grown new Potatos. The *Guernsey Advertiser* remarks that, considering the earliness of the season, this is an enormous quantity to export in one day.

—— RUSTIC SUMMER HOUSES.—We understand that Mr. J. CAVEN FOX, of the Royal Horticultural Society's Garden, South Kensington, has recently received the warrant of appointment as manufacturer of rustic summer-houses, &c., to H.R.H. the Prince of WALES.

FIG. 114.—EUPHORBIA CHARACIAS. (SEE P. 656.)

—— Bush Fruits.—The promise of fairly good crops of Gooseberries and red Currants is unfortunately considerably qualified by the too evident almost entire failure of black Currants, the produce on the bushes being of the most meagre character. Gooseberries are good where the bushes are well grown and the leafage abundant, but sparse where they are thin and starved. In some cases the latest wood of the red Currant bushes has been killed back for several inches by frost, and the best promise of fruit is where the bushes are sheltered by overhanging trees. Black Currant bushes appear entirely unaffected by weather, are very robust and healthy, but lack the one thing needful—fruit. The bloom came abundantly, but fell in the process of setting. Market growers, who are again likely to be so far heavy losers, generally ascribe this lack of fruit to the recent frosts, but it is exceedingly doubtful whether these, which have scarcely touched Potatos, were sharp enough to injure well-leaved and sheltered black Currants. It is too probable that the mischief was done during the hard hoar frosts of January, whilst the fruit-buds were yet in embryo. Almost unique in this respect amongst deciduous shrubs, the black Currant plumps up its buds, just as though about to burst into leafage, early in the winter, and it is most likely that the intense frost of the winter then entered these stem-buds and injured the fruit-germs. This seems to be a more probable explanation than the one, also assumed, that the sunless summer prevented the due ripening of the wood because the growth of the black Currant is made very early in the season.

—— Rose Houses.—The taste for cut flowers which is constantly growing calls for the Rose as one of its favourite victims. In the open air Roses may be had in sufficient abundance if patience to wait for them can be exercised. With the introduction of the more robust Teas, such as Maréchal Niel, Homer, Cheshunt Hybrid, and dozens of others, have come a demand for their culture under glass, and thus the Rose-house is rapidly becoming just as much a garden adjunct as is the vinery or Peach-house. But there are few places in which Roses may not be grown under glass without any considerable outlay, and in structures that, perhaps little suited for other things, yet suit Roses admirably. At the Wilderness, near Reading, Mr. Lees, the gardener, has run up a low span-roof house, excavating the earth to permit of head-room inside, and forming borders both inside and outside for the Roses that are to run over the roof, which also are planted in the inside, but can thus permit their roots to range where they list. All the best kinds, and most suited for this mode of culture, are planted and are doing well. When the house is full of growth the quantity of flowers produced will be very large. In addition to these there are also growing in pots some very large specimen Hybrid Perpetual kinds, intended both for exhibition and to furnish cut blooms. These get plenty of light and air, and are vigorous and full of flower.

—— Standard Fruits.—The extraordinary tenacity with which the Apple bloom holds on compares well with its speedy fall a couple of years since, when the Apple crop was so thin; now the bloom is fine and vigorous, and on most kinds abundant, and, further, is setting freely. Plums about London have set in immense quantities, and the crop bids fair to be enormous. Cherries have also set well, and as the bloom was unusually abundant this means a large crop. Standard Morellos were a beautiful sight when in bloom, and will be singularly beautiful when in fruit. This tree is most ornamental in both stages, and it would be good policy to plant it largely in pleasure-grounds, if but for the purpose of supplying the birds with plenty of food, rather than sending them to attack the cultivated fruits. Pear trees have suffered largely from frosts, the Jargonelle especially so, many trees being nearly dead; the bloom is thin, and the crop will be but moderate. A very singular feature in connection with the Apple may be seen in some West Middlesex market gardens. In one a large number of what were fine robust young trees of the Wellington, were last year so blighted that the fruit was valueless. The past winter has nearly killed these, and it will take several years to make them as good as they were a year since. In another a long row of fine young King Pippin trees were so largely affected by the severe winter that they have scarcely pushed a green leaf; the effect has been the same throughout the entire row. On the other hand, many good old kinds on either side are full of health and vigour, and promise large crops of fruit.

—— Messrs. Cripps' Nursery at Tunbridge Wells.—A visit to a good nursery is sure to be a visit well paid to the lover of plants, whatever his special tastes may be. None have better opportunities of judging upon this point than those connected with the horticultural Press. Under this impression we recommend those who may have it in their power to avail themselves of the opportunity when it presents itself. The particular instance we have in view at the moment is the nursery of Messrs. Cripps, at Tunbridge Wells. There is enough in all conscience to gratify the lover of Nature in this town and its environs, and amongst its attractions for the plant lover not least is the nursery aforesaid. The main walk is bordered with choice specimens of choice Conifers and other ornamental trees and shrubs, which are sure to attract the attention of those who are interested in such matters. Here are to be seen in the form not only of small nursery stuff, interesting mainly to the proprietor, fine specimens more likely to attract the attention of the casual passer-by, noble Araucarias, good well grown specimens of Abies polita, concolor (Lowiana), A. Pinsapo (punished by the winter even in this favoured locality), Thuyopsis dolabrata, Cryptomeria elegans, Abies nobilis, Wellingtonias, Golden Ash, Weeping Larch, Retinosporas of feathery aspect and golden and bronzed hue. All these, and many like them, are to be seen, while in the houses is a profusion of Lapagerias, of the best brands, such as the white, and the variety sent out by Messrs. Fisher Holmes & Co.; the Golden Larch (Abies Kæmpferi) in quantities; Torenia Bailloni, which promises to be one of the best among decorative stove plants of its class; Tacsonia insignis, more beautiful even than the ever-lovely T. Van Volxemii; Clematises in profusion, for which this firm has a well-established reputation, but of which few were in bloom at the time of our visit; Tea Roses in plenty, but, as we can well believe, not too many to supply the ever increasing demand; Blandfordias, those showy Australian plants, whose beauty is not appreciated as it should be; Yucca albo-spica, with its singular leaves edged with white threads; Weigela nivea, remarkable not only for its beautiful white flowers, but also for the circumstance that its blooms are produced on quite small plants. These and a hundred other things that might be noted render even a passing visit to this nursery very interesting, and suggest what might be seen on a more thorough examination.

—— The Weather at Edinburgh.—The following is an abstract of a paper read by Mr. Sadler, Curator of the Royal Botanic Garden, Edinburgh, at a meeting of the Botanical Society, on the 13th inst.:—Throughout the month of April there were generally low night temperatures, with bright sunlight during the day, while the wind, with one or two exceptions, was continuously either northerly or easterly. The thermometer was at or below the freezing-point on six occasions, while in April of last year it was so thirteen times. The following were the six lowest readings:—April 2, 27°, or 5° of frost; April 4, 30°, or 2° of frost; April 12, 30°, or 2° of frost; April 26, 30°, or 2° of frost; April 27, 28°, or 4° of frost; April 30, 29°, or 3° of frost. For the month there were registered 18° of frost, as compared with 19° for the corresponding month last year. During the first part of April there was somewhat changeable weather, with bright sunshine, showers of rain and hail, and the wind in the north-east. On the 16th the wind changed to the south-west, which raised the temperature considerably. The wind gradually increased until it reached the violence of a storm, and ended in a heavy fall of rain. On the 22d it changed to the west, then to the north, and ultimately settled in the north-west, thus verifying the excellent meteorological observations of King Solomon, "The wind goeth towards the south, it turneth about unto the north, it whirleth about continually, and the wind returneth again according to its circuits." At this stage an electric condition occurred in the atmosphere, which resulted in a thunderstorm, with hail and rain. After this there were frosty nights, and during the day very bright sunshine and cloudless skies. During the month 140 species and varieties of alpine and herbaceous plants came into bloom in the rock garden. Since the present month (May) commenced the thermometer has been at or below the freezing-point on three occasions, viz.:—May 5, 30°, or 2° of frost; 8th, 29°, or 3° of frost; 9th, 32°. The cold dry easterly and north-easterly winds still continue, and are retarding the progress of vegetation to a great extent. Notwithstanding, vegetation is far in advance of the corresponding period last year. Since May 1 forty-five species and varieties of plants have come into flower in the rock garden, which is at present very attractive to all admirers of alpine and herbaceous plants. The members afterwards enjoyed a walk in the gardens under the guidance of Mr. Sadler, who pointed out the principal novelties in flower.

—— Gold-laced Polyanthus. — Intending raisers of seedling gold-laced Polyanthus will do well to avoid seed saved naturally from the best named kinds. A bed of about six hundred seedling plants, raised from seed saved without cross fertilisation from that best of all laced kinds, Cheshire Favourite, has given the most shocking lot of rubbish—so inferior, indeed, as to show what the progenitors of the Polyanthus were perhaps two hundred years ago. The best seed is got from pin-eyed flowers of a fairly good strain that have been crossed with pollen from the best kinds. It was in this way that Mr. Barlow obtained his beautiful seedling, Sunrise. Quality, left to itself, seems but to generate a miserable progeny; but adding to quality new robust blood, and something good will, as a rule, result. The best average seed strain is found in kinds that are robust, are fairly well marked, and have a good proportion of pin-eyed flowers, as these are usually cross-fertilised either by insects or the passing air. It is worthy of note that the seedlings from Cheshire Favourite give plenty of size and strength, but all lack the one property of the parent—quality; this evidently can only be had by intercrossing.

—— Apples.—There is no fruit more popular with the English people than is the Apple, and probably none more wholesome or useful. As an article of trade it excels all other hardy fruits, and its long-keeping qualities make the Apple as available over a long season as is the Potato amongst vegetables. The prospect of a crop, therefore, becomes a matter of considerable moment, not merely to the market growers, who have to live by their crops, but also to the numerous persons who make it an article of sale and barter, and, though last not least, to that most numerous section of the community, the consumers. We have passed through the customary spring season known as Blackthorn winter with safety. Cold winds and very moderate frosts, owing to the exceeding dryness of the atmosphere, have done but a minimum of harm, and the Apple bloom is sound and uninjured. Lately the Apple orchards have been all aglow with colour; the bloom being most abundant and apparently vigorous. On many trees the bloom presented a glorious spectacle, the rich rosy-red hues being almost unequalled amongst hardy flowering trees. The popular Manx Codlin is perhaps the most floriferous, whilst the late Wellingtons as a rule have least bloom. Very largely last year these trees suffered from the excessive wetness of the summer and absence of sunshine. The growth was stunted, the leaves blighted or charred, the fruit mere scrub or rubbish. The past hard winter has severely injured the late unripe growth, and wherever these features were presented the trees have so much suffered that it will require two or three favourable seasons to bring them back to health and fruitfulness. Nearly all other kinds, however, are presenting a most encouraging appearance, and there is hope that, spared any further visitations of frost and biting wind, we may have a really good Apple year. That the crop should not be too abundant is almost to be desired, as this means few or no Apples the next year. We must, however, be pleased to accept the goods the gods provide, even if they give us rather more than for the time we can profitably utilise.

—— The Winter Garden at Kew.—Besides a wealth of Acacias and other equally well known greenhouse plants, there are in this house a number of fine ornamental plants which deserve to be more generally cultivated. In the north octagon are some fine pots of Agapetes buxifolia, a lovely Vacciniaceous shrub from Eastern Bhotan, where it grows epiphytically on the moss-covered trunks of trees in

damp forests at elevations of from 2000 feet to 3000 feet. Under cultivation it grows remarkably well in peaty soil, and its long coral-red tubular blossoms contrast well with its deep green, glossy leaves. Jamesia americana, a rare Rocky Mountain Saxifragaceous shrub, with softly pubescent leaves and terminal cymes of white flowers, is worth a place even in a select collection of cool-house plants. Viburnum plicatum, a perfectly hardy Guelder Rose, of dwarf habit and free flowering qualities, forces readily and makes a very attractive object. So does the common Broom, if grown in pots and kept nicely pinched in—indeed the display made by this common native shrub puts into the shade completely scores of rare and valuable exotics. Grown under these conditions, too, the leaves develope at the same time as the flowers, thus adding to the effect. One of the most curious and interesting of the Azaleas is the rare Japanese A. linearifolia; it is a small bush covered with spreading red-brown hairs, the leaves are narrow, linear-lanceolate, and the colour of the long narrow petals is a reddish-purple. Vaccinium caracasanum flowers freely in a young state; it has neat, Box-like leaves, and clustered, terminal racemes of waxy white flowers.

—— The Arboretum at Kew.—This is year by year becoming more "ship-shape," though without a plan the visitor is still "in wandering mazes lost." Something has been done of late in placing direction labels—"To the collection of Elms, Oaks, &c.," as the case may be, but much more needs to be done in this direction. The buds and young foliage of many of the trees are, as any practical forester knows, as characteristic, and in some cases more so, than the fully-developed foliage. Moreover, the spring tints of many of the trees are as beautiful if less intense than the autumn coloration. Take, for instance, the Oaks, wherein we may note the purplish bronze of Quercus pubescens, the deep olive of Q. Brutia, the golden-yellow of Q. Louettii, the coppery tint of Q. cuprea. The Oaks and the Elms may be found by the riverside facing Sion House, and divided one from the other by the noble Horse Chestnut whose branches dip down and kiss Mother Earth, and, as it were refreshed by the contact, uprise again on all sides. The bloom on the Horse Chestnuts is comparatively scanty this year. The Rhododendrons are not yet quite in full beauty.

—— An Orchid Show.—Some of Mr. Bull's houses in his annexe at Chelsea are just now a sight to be seen—a profusion of Odontoglossum crispum (Alexandræ) and an equal wealth of O. vexillarium. Of the many scores of each scarcely two are alike, size, form, hue all different, yet all alike are beautiful. Contrasted with them is a fine batch of Epidendrum vitellinum majus. In smaller numbers are the singular Masdevallia bella, Odontoglossum Hallii, O. cordatum, with its white lip shaped like an ace of spades; Masdevallia Veitchiana, with its inimitable colouring; Vanda Denisoniana, a rarely seen Orchid, with ivory-white flowers of great substance; and many others. The collection of Sarracenias, Droseras, Dionæas, and other so-called insectivorous plants, is very large and attractive.

—— Edward Smith Hill.—The *Sydney Morning Herald* records the death of Mr. Edward Smith Hill on March 17, sixty-one years of age. He was a native of Sydney, and, after retiring from business, devoted his time to scientific investigations for the last eighteen years. He made a voyage to the South Sea Islands, and wrote some valuable papers and pamphlets on their flora. He wrote for the New South Wales Government a report on the flora of Lord Howe Island, and the condition of its European inhabitants. Among his contributions to Sydney journals was a series of articles describing the fishes found in the harbours and rivers of New South Wales and along the coast. He was a great friend of the aborigines, and they looked upon him as a chief, and made his grounds their head-quarters whenever they came to Sydney. *Times.*

—— Ixiolirion Pallasii.—Mr. Barr sends us cut flowers of this very beautiful Amaryllideous bulbous plant. The stems are slender, with long grass-like leaves, and bear a terminal umbel of long-stalked, funnel-shaped flowers, with an inferior ovary, and six narrow, deep violet recurved perianth segments. The plant is a native of the Southern Caucasus and Turkestan. According to the *Gartenflora* there are several varieties of this plant, varying in colour from deep violet to pink.

—— Royal National Tulip Society.—The meeting of this Society for the present year has been fixed to take place on Saturday, the 29th inst., at the Manchester Botanical Gardens. The schedule of prizes has been issued with the notice of the meeting, and provides nine classes for rectified Tulips, and four classes for breeders. Schedules may be obtained of the Honorary Treasurer and Secretary, Samuel Barlow, Esq., Stakehill, Castleton, near Manchester.

—— Effects of Frost on Pear Blossoms.—It has been frequently observed that in Pear blossoms the effect of frost on the bud is not apparent for some time. At last all are found to be abortive in consequence of the frost having destroyed the stigma while the other points are uninjured. The yellow form of the Crown Imperial has been affected in the same way, except that the sepals and stamens have never been fully developed, though apparently untouched by the frost, while the stigma and style are brown and dead. *M. J. B.*

—— Indian Tea.—Those unacquainted with the progress of Tea-growing will be astonished to learn that, whereas the Indian yield in 1870 amounted to slightly more than 13,000,000 lb., it had been nearly trebled in 1878, when it was 37,000,000 lb., and that this year's harvest is estimated to give 70,000,000 lb. of Tea. That the rate of production should be almost doubled in two years is indeed marvellous, and affords another instance of the grand resources of our Indian Empire, which, by-the-by, some few prejudiced agitators would have us believe is a useless and expensive dependency of the British Crown. The demand for Indian Tea in the United Kingdom has increased amazingly of late, and is increasing every day; and we have no doubt whatever that Indian growers will find a ready market in our Australian colonies by means of which both producer and consumer will be abundantly benefited. *The Colonies and India.*

—— Whit-Monday at Kew and South Kensington.—Kew Gardens were visited on Monday by 62,000 persons, or 5000 more than in 1878, which, we believe, was a full year. At the Royal Horticultural Society's Gardens 19,188 persons passed through the turnstiles on payment of 2*d.* each.

—— Town Gardening.—Messrs. J. & R. Thynne, of Glasgow, have recently executed a very unusual order for James Carter Haughton, Esq., of 20, Devonshire Place, Portland Place, W., and which well illustrates how much may be done in the way of town gardening by those who have a love for plants, and the means to gratify so pure a taste. Under the personal superintendence of Mr. J. Thynne McCallum, the firm in question have built and completely furnished for Mr. Haughton a range of glass 120 feet long, divided into five compartments, four of them hip-roofed and 20 feet wide, placed in pairs on either side of a larger structure, intended to be kept decorated as a show house. The first and second divisions are designed for the cultivation of Orchids and fine-foliaged plants respectively, and each has a plunging-bed 3 feet wide in front, a path 4 feet wide, with staging against the back wall, which in turn has been wired and lined with moss. In the Orchid-house Bomarea Carderi, Dipladenia Brearleyana and Stephanotis floribunda have been put in position for occupying some wires under the roof, from which also hang numerous small Nepenthes. A small but choice collection of Orchids, which included a fine specimen, amongst others, of Dendrobium Dalhousieanum, and Vanda suavis with five spikes of sixty-six flowers, has already been got together. The fine-foliaged plant-house contains a great variety of subjects of this character, mostly small and in the bloom of youth, but including a sufficient number of handsomely-furnished specimens of the finest new sorts of Dracænas, Crotons, and Palms. The show house is gay with Pelargoniums, Heaths, Calceolarias, &c., toned down with Palms and other fine-foliaged plants, such as the Norfolk Island Pine, Yucca aloifolia variegata, and Encephalartos, &c.; while on the roof are trained Lapageria rosea and alba. The next compartment is a fernery with a rockery at the back, which, when the plants grow up, will be nicely clothed; and the last house is to be employed in the growth of plants to produce cut flowers, for which purpose a range of heated frames about 80 feet long has also been erected in front of the houses. Perhaps, however, by far the most pleasing bit of Mr. McCullum's handiwork is a combined plant case and aquarium, which has been erected in the house at the head of the first flight of stairs, and which is certainly one of the happiest examples of permanent decoration of this character that we have ever seen in any mansion.

—— The Rhododendron Shows.—Arrangements have been made with the Messrs. J. Waterer & Sons, of Bagshot, for a display of Rhododendrons in June next, to be held in the gardens of Cadogan Place, Sloane Street. We also understand that the plants from Knap Hill, which are to form the exhibition in the Royal Botanic Society's Garden this season, are already in their places.

—— Southgate Horticultural and Cottage Garden Society.—The annual show of this Society will be held on July 3, in the grounds of Holmwood, Southgate, the residence of J. N. Mappin, Esq.

—— Law Notes.—We quote the following from a Scottish newspaper:—"John Sutherland, nurseryman, Greenock, sued Mr. Reid, shipbuilder, Glenhuntly, Port Glasgow, for £8 9*s.*, as the price of bulbs, plants, seeds, supplied to defendant through his gardener. Defender repudiated the claim on the ground that he had not ordered the plants, and only learned of the transaction when the gardener, who, it seems, had given the order, had left his service. The evidence led showed that it was a very general custom with gentlemen's gardeners to order plants, &c., for their masters' garden without having previously obtained their master's sanction. The Sheriff held that it had been proved that this custom was pretty general in the trade, and on that ground decreed for the pursuer for the amount claimed."

—— The Weather.—General remarks on the weather during the week ending May 17, issued by the Meteorological Office, London:—The weather has again been generally clear and very dry in all parts of the kingdom; in Ireland, however, the sky was cloudy or overcast at the commencement of the period. A thunderstorm occurred at Loughborough on the 11th, and a second in some parts of southern England on the 15th. The temperature has been several degrees higher than during the week ending on the 10th. It was equal to the mean, for the corresponding period in the thirteen years 1857-69, in "England, S." and "Ireland, S.," but below it in all other districts. On the 14th and 15th the thermometer was much higher than at any other time during the period, and in the south of England very high readings were registered—the maxima being 78° at Southampton, and 75° at Hastings and in London. The nights were rather sharp, and some slight frosts were experienced at some inland stations. The rainfall was scarcely measurable in any district; the largest amount was two-tenths in "Ireland, S." Bright sunshine shows a marked increase over Great Britain, but scarcely any alteration in Ireland. The number of hours registered was greatest in "England, N.W.," and the least in "England, N.E." and over Ireland. The wind was between north-east and east all over the country. In force it was light in the north, but generally fresh or strong elsewhere, and at the close of the period blew with the force of a fresh gale on our southern coasts and in the Channel.

—— Lord Bacon on the Rose of Jericho.—Turning over Bacon's *Sylva Sylvarum* we lighted upon the following curious paragraph, which probably refers to the Rose of Jericho, Anastatica Hierochuntica. The paragraph has the marginal title, "Experiment Solitary touching Plants without Leaves," and runs thus:—"There be scarce to be found any vegetables that have branches and no leaves, except you allow Coral for one. But there is also in the deserts of S. Macario in Egypt a plant which is long, leafless, brown of colour, and branched like coral, save that it closeth at the top. This being set in water within house spreadeth and displayeth strangely; and the people thereabout have a superstitious belief that in the labour of women it helpeth to the easie deliverance."

—— Gardening Appointments.—Mr. Henry Falkner, late Gardener to H. Welch Thornton, Esq., Beaurepaire Park, Basingstoke, has been appointed Gardener to Edwin Crawshay, Esq., Blaisdon Hall, near Gloucester.

ANACARDIUM OCCIDENTALE.

The tree bearing this name is one common to the tropics, its favourite home being on hot plains in situations exposed to the full blaze of the sun. Its fruit is the well-known Cashew-nuts (pronounced Koosho in Jamaica), which are borne on a peculiarly enlarged and fleshy pyriform pedicel of a beautiful crimson or yellow colour. The tree is of quick growth, bearing fruit in suitable situations in about three years. It flowers during the months of February, March, and April, ripening its fruit from the latter month to the end of June. The succulent portion is used in a variety of ways, but varies much in flavour with the individual tree, some being very astringent, while others are deliciously refreshing when eaten fresh. It is preserved in many ways, but in the candied state is in its best form, it then being scarcely distinguishable from fine Eleme Figs. The juice of this part stains linen with an indelible dark brown spot wherever it falls, and it is also frequently used as a remedy in attacks of dysentery.

The nut is one of the favoured delicacies of the country when properly prepared, in which consists the chief secret of its quality. It is kidney-shaped, of a light lead colour, containing between its integuments numerous cells filled with a very caustic oil. To prepare for use the nuts are placed in some shallow, thin, metallic vessel over a slow fire in the open air. They are heated until the oil contained in the integuments takes fire, and stirred briskly until it is consumed; being then removed from the fire they are carefully cracked, and the roasted kernels removed and placed in hermetically sealed bottles until required for use. They are equal if not superior to any nuts found on the best tables in European countries. During the flowering season, and immediately previous to it, a fine transparent gum exudes from the tree, useful for many purposes in place of gum-arabic, but it cannot be obtained in large quantities.

Macfadyen mentions that a preparation of the kernel is described in *Dict. Mat. Med.* i. 275, as having the effect of exciting the faculties, especially memory, and is called "Confection des Sages." It is commonly sold here prepared in sugar, similar to Almonds, but whether it has the effect mentioned requires further proof. *J. H., King's House, Kingston, Jamaica.*

SEMPERVIVUM DISEASE.

It often happens that a disease which only produces slight effects amongst wild or hardy plants will, if it attack carefully nurtured plants, prove deadly in its results. Such has been the experience of horticulturists with the fungus of the Potato and Tomato murrain and the disease of Hollyhocks; in each instance the distemper has been slight amongst wild plants and disastrous amongst cultivated ones.

Fig. 115.—A fungus—Endophyllum sempervivi—attacking Sempervivum monticolum. A, entire plant; B, C, leaves.

Botanists have long been acquainted with a disease of the Houseleek produced by a fungus named Endophyllum sempervivi. The fungus is very rare, or Sempervivum tectorum must be easily able to withstand attacks of the parasite, for plants affected by the fungus have seldom been seen by any one.

A few days ago a firm at Chester sent on to us an entire plant and some detached leaves of Sempervivum monticolum, badly affected by the parasite, Endophyllum sempervivi. The entire plant was dead, and nothing could exceed the miserable condition of the specimen, of which we here append an illustration (fig. 115). The leaves were covered with pustules, blistered and withered, and with edges corroded away by the attacking fungus. Every part of the dead plant was finely dusted over with the orange-coloured spores of the parasite. The leaves, of which two are illustrated natural size in figs. B and C, were still green, but thickly covered on both sides with ulcerous spots, each spot discharging innumerable orange-coloured spores. Many of the pustules were confluent, as in bad cases of small-pox, and numerous patches were eaten out of the edges of the leaves as if by insects; in fact a more wretched and hopeless case we have never seen.

As we are not acquainted with any published figures of this pest we here illustrate its appearance as seen under the microscope. In fig. D is seen a section of the leaf of Sempervivum monticolum, enlarged 5 diameters, showing the roundish pustules (peridia as they are termed by botanists)-immersed within the tissues of the leaf: hence the name of the parasite—Endophyllum. Some of the peridia have burst their fine cellular coat and opened their mouths, and can be seen discharging the spores with which they are at first densely filled.

At E is illustrated a section through a flask enlarged 20 diameters, and it will be seen at a glance how innumerable are the contained myriads of minute seeds or spores. How many hundreds of thousands or millions of these reproductive bodies are contained within each peridium, flask or pustule, or within one leaf, or on an entire plant, may perhaps be imagined, but can hardly be calculated. There are probably enough spores on one plant to infect every plant of Sempervivum in Europe. Some of the spores are emerging from the mouth of the peridium, others are seen resting on the surface of the leaf. It may be remarked how much smaller the spores are than the constituent cells of the leaf.

The spores themselves are still further enlarged at

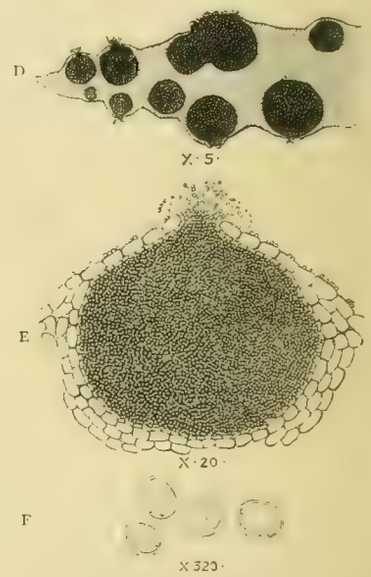


Fig. 116.—D, section through affected leaf, magn.; E, section through pustule, magn.; F, spores, magn.

F to 320 diameters, and when thus magnified it becomes apparent that each spore, minute as it is, is furnished with a distinct skin or bark, which encloses the vital material within.

Endophyllum is a close neighbour with the Rœstelia parasite of the Pear, with the Peridermium of the Scotch Fir, with the Æcidium of the Berberry (said to be a condition of the corn mildew), and of many too well-known pests of garden fruits and flowers.

There can be no doubt but infected plants are highly dangerous amongst collections of Sempervivums, and we are, therefore, glad to hear that the nurserymen in question have destroyed all their affected plants. Should the disease, however, appear elsewhere and gain a mastery, Sempervivum may probably soon be in the same condition as the Hollyhock, the Potato, and the Tomato. If one could stop the ravages of these pests it would indeed be a good thing. Many minute fungi can be destroyed by a dilute solution of permanganate of potassium, but there is a difficulty in its thorough application so as to ensure the solution coming into contact with all the affected parts. *Worthington G. Smith.*

Bahamas Oranges.—The Orange crop gathered on the island of New Providence (Bahamas), and exported, amounted to four and a half millions in quantity, and to over £6500 in value. The crop from the whole colony amounted to seven millions in quantity, and to more than £10,000 in value. *The Colonies and India.*

Home Correspondence.

Plants Changing their Name.—My friend, Mr. Harpur-Crewe, to whom I sent a flower of the plant praised by me in last week's *Gardeners' Chronicle* under the name of Heuchera botryoides, writes me word that he has it as Mitella bifolia, or M. lævis: no doubt his names are more correct than mine, as he is a far better botanist, and lives nearer to botanical centres; but may I ask what is to be the limit of this name-changing nuisance? My friends will compare me with Gracchus, complaining of sedition, for I confess to having changed my name twice in my life; but then a prescribed and legitimate method was employed. A formal document was drawn up in the Herald's College and signed in one case by King George IV., in the other by Queen Victoria, and published in the *London Gazette*, and last, but not least, it cost £120 each time; but plants seem to change their names as often as they please without notice and without authority. [Unluckily without having to pay fees. Eds.] It is true that the question of scientific names may be complicated by being an international one, but what botanical king authorised the change of name of our old friend, St. Bruno's Lily, first from Anthericum to Paradisia, and now from Paradisia to Czackia, and in what *Gazette* was the change advertised?—and when did the China Aster take the name of Callistephus? That worthy florist, Mr. W. Thompson, of Ipswich, whose name I mention with honour and respect for the services he has done to horticulture by collecting and distributing the seeds of choice plants, when I wrote to him, remonstrating with him for having no China Asters in his seed catalogue, wrote in reply that there is a morality amongst botanists which forbids them to continue to call a plant by a name which they have found out to be wrong. But why can they not find out the right name at first? and how much must we regret that Solomon's work on universal botany has been lost! But probably modern botanists would not have respected his classification and names any more than they have those of Linnæus. If I am asked what harm I suffer from these changes, I answer that I often write for an advertised catalogue and order some two dozen plants which I do not know, on the faith of the recommendations contained in it, and find when they come that one-third or more of them are old acquaintances under an *alias*, and this, it must be admitted, is very provoking. *C. Wolley Dod, Edge Hall, Malpas, Cheshire, May* 15. [Where possible and not misleading it is better, in gardens where accuracy is not a *sine quâ non*, to use the English names, such as China Aster. To take an instance from chemistry, a dozen different names have been given to Calomel, in some cases leading to dangerous mistakes. In such a case unscientific people had better adhere to the names that do not change. Eds.]

Cantua dependens.—I send you a few sprays of Cantua dependens, that you may see what a strikingly beautiful thing it is for growing up the pillars of a light conservatory—the way we have it here, where two plants, one on each side of the main entrance, are now clothed from base to summit with their lovely pink flowers. As these plants are some 12 feet high and 3 feet through, well furnished throughout, some idea may be formed of the splendid display they make, as nearly every shoot is terminated with blossoms like those brought under your notice. I cannot claim any credit for cultural skill in this, as all the attention the plants have is about the same as that afforded to the rest of the climbers, except that these, being subject to red-spider, get a dusting of sulphur occasionally during the summer after having been syringed; and when it is thought that this has done its work in making matters uncomfortable for the insects, it is washed off by using water with some force from the garden engine, which attacks, with the aid of the sulphur mentioned, keep the foliage in a tolerably clean healthy condition. Greenfly, too, is often troublesome, and as we cannot smoke the house owing to its connection with the mansion, we have recourse to tobacco-water or powder, either of which has the desired effect in ridding them of these pests. Generally, the Cantua dependens is considered very shy blooming, and from these being so exceptional I am inclined to think that their free-flowering habit is brought about by the exposure they get, as they are close to a clear plate-glass front, where all the shade they receive is from the pilasters behind, and as the atmosphere is always very dry, the wood must of necessity get thoroughly ripened and hardened. I am the more confirmed in this opinion from the fact that the plant which makes least growth looks the most mature, always blooms the best, and yet the summer of last year cannot have helped either much, but for all that I have never seen them better. Both plants were turned out in their present positions twenty-three years ago, and the borders they are in are only 15 inches wide, and about 8 feet long, the soil in which bricked-in space has to be shared wit a Passion-flower and a Trachelospermum jasminoides in the one case, and a Passion-flower and Kennedya in the other, which furnish the girders and adjacent pillars. Although these two Cantuas are only of the height stated, I am convinced that they would have gone right across the roof of the house long ere this had we so desired, but as they are so satisfactory where they are, and would not associate so well with Passifloras as do Begonias, Tecomas, and Tacsonias, we have never carried them further. Their pendulous habit, however, quite fits them for roof plants, and I would strongly advise those who have not a light wall or pillar on which to train, to try one in the above-named position. The soil we have ours in, and which has never been renewed or added to, is a light turfy loam with a good deal of sand in it, and the drainage being free, we give plenty of water when the plants are growing. *J. S.*

Single and Double Flowers.—Flowers, as we find them in a state of Nature, are nearly all single, that is, the organs of reproduction are simply so far enclosed by their covering of sepals and petals as suffices to protect them through their advancing stages and until fertilisation has taken place. Double flowers, it is needless to say, are usually the outcome of an exuberant condition resulting from cultivation, whereby the plant is fed up to a state of repletion that must find vent somewhere, and in so doing forces the stamens to an unnatural development, which results in their extension so as to increase the number of petals, by which means the flower becomes more or less double. In the case of some flowers this condition, as seen from the florist's point of view, is looked upon as an advantage, notably with plants such as the Dahlia, Hollyhock, Ranunculus, and others. The cause of the preference for double flowers is twofold; first, a full globular or broad circular form comes nearest up to the florist's standard, as opposed to the more loose, narrow-petalled but more elegant shape usually met with in flowers in their natural state. Beyond this there is no question that double flowers last longer than single ones, which alone is so much gain, especially in times like the present, when the effect which a flower produces as it is seen on the plant is only half the consideration on which its merits need to be assessed, the length of time it will last when cut being now, and likely to continue, of equal importance with that of its appearance when growing. Yet, although durability is [a very desirable property, and one that, when writing on the subject of flowers for cutting, I have before this urged, still it would be a mistake to attach more importance to it than it deserves, and to lose sight of the fact that single flowers have an elegance about them which double ones are almost always deficient in. This to me was never more apparent than in looking at the double varieties of Cineraria that have recently made their appearance, flowers that, so far as being perfectly full and double, are very much in advance of other double ones that have preceded them; but for all that constitutes simple elegance in form and pleasing contrast in combination of colour, they are not by any means equal to the single varieties. Double Fuchsias are not nearly so handsome as the single kinds, and except as novelties have never been held in such estimation. The flower when double loses much of its natural elegance, and in this state what is gained in size of flower is lost by the inability of the plants to produce numbers equal to the single sorts. The superiority of the single varieties of Dahlias which have recently been brought under notice for use in arrangements of cut flowers, over the double forms of the plant, is most decided. The tuberous rooted Begonias, of which such immense numbers have of late years been raised, are now making their appearance in double form; but few people, I think, will look upon them as improvements on the single kinds—rather the reverse. Even the large massive single varieties of recent date, considered by many more deserving than the productions from seed that preceded them, have attained size at the expense of elegance in form of flower, and decidedly so in the general habit of the plants. With these and a good many other things it is quite possible to get too far in one direction, particularly if those who take the lead in the raising of new varieties are not careful to breed from sorts that possess a graceful habit of growth. In saying this much let me not be misunderstood—no one is disposed to stand up more stoutly for the florist's highest standard in such flowers that have hitherto been understood to come legitimately within the good old muster roll of the florist, but there is now the manifest mistake being made of ranging under the florist's standard and bringing within the florist's code of properties, every flower that is sought to be improved or altered; indeed sometimes the alteration lacks the improvement. The day for this has gone by, for if there is one thing more than another now apparent it is the perception and appreciation of simple beauty in natural objects, flowers included, by the majority of people who may be said to come fairly within the influence of education. And it would be a wonder if it were otherwise, even so far as regards the lower grades of society, for every town and every village that is large enough to possess a Mechanics' Institute has its drawing-school, and the pupils do not exercise their pencils in delineating pedigree cattle or prize florists' flowers, but choose subjects which are nearer the state to which Nature and ordinary cultivation have brought them. *T. Baines.*

Chamærops Fortunei and Bambusa Metake.—It will, I think, be readily admitted that the winter has been severe enough to test the powers of endurance of most plants, and that those which have passed through it without protection may be safely considered as hardy and treated accordingly. I am glad, therefore, to be able to say that Chamærops Fortunei and Bambusa Metake have stood unscathed, and that in cases where they have not been exposed to cutting winds they are now looking as fresh and green as ever. Taking into consideration their highly ornamental character, the wonder is they are not more extensively planted, and more particularly so as regards the Palm, which in prominent positions in the outdoor fernery produces a most striking effect. Where it shows best in such situations is on irregular-shaped mounds, as elevated in that way its bold outline and fan-shaped foliage rising from its shaggy tree-like stem is seen to great advantage, and by associating suitable Ferns with it a most pleasing and natural group may be formed. Not only is it fine in the summer retreat already mentioned, but it is equally so in certain sheltered spots on lawns, where, backed by other plants of bold type, it helps much to break up the too regular outline of shrubs, and to give more character and finish where such things are used. Bambusa Metake is so easy looking that it cannot well be misplaced, but as it is of a reed-like habit it is specially adapted for planting near the margins of water, over which it droops and waves gracefully, and looks quite at home. Unfortunately, Thamnocalamus Falconeri (falcata), the most elegant of all the Bamboos, is much too tender to stand such winters as last without protection, and even with all that can be done in that way it is impossible to save the canes, which get killed down to the hardier and more mature parts near the crown, from whence, if the soil and situation suit, they break again and make rods of a great length. I regret to record that all the fine plants we had of this fine grass are now dead, their demise having been brought about through flowering and seeding, which the whole of them did some years back, and which was remarked on at the time. What was most singular was, that this effort at flowering was general throughout the kingdom, and resulted in most cases in utterly exhausting the plants. Here they never started again, although the rods looked green and fresh, but they have done us good service in affording neat and almost imperishable stakes for the support of Lilies and such-like things requiring that kind of assistance to keep them erect. *J. S.*

Cloth of Gold Double Primrose.—I send you for the purpose of comparison flowers and leaves of this new double yellow Primrose, and the same of the old late double yellow variety. The former is represented by flowers obtained from plants had direct from Messrs. Carter & Co., the latter from plants obtained from Scotland and other places. I have no doubt but that Messrs. Carter & Co. sent out their Primrose in thorough good faith, believing it to be a new and distinct variety, and the Floral Committee shared the same opinion when they gave it a First-class Certificate of merit. I was one of several who doubted its distinctness at the time, and the result justifies our hesitation. *A Lover of Hardy Primulas.* [We can see little or no difference between the specimens sent. Eds.]

Figs for Town Planting.—No one acquainted with gardening who happens to pass through either of our thickly-populated cities or towns, can fail to notice the wretched appearance of many of the trees and shrubs there planted, and to feel sorry for them in their forlorn condition, dragging out, as it must be admitted the majority of them do, a miserable existence—a state of vegetation which, as before remarked, produces aught but pleasant feelings in any observer. This unsatisfactory state of town trees arises in a great measure from planting the wrong kinds, which, owing to their thin woolly leaves, suffer much from the impurities of the atmosphere, as they not only gather and hold the dust and dirt in a way that stops all the breathing-pores, but the tender tissues are destroyed; and as the foliage has to be renewed again and again, the plants can only just live—making progress, therefore, is quite out of the question. I have seen Limes and Horse Chestnuts look as if they had been subjected to fire and almost defoliated at a time when they ought to be at their best and full of verdure, thus showing unmistakably how unsuitable they are, and yet, strange to say, they are the sorts that are generally selected. It is not my intention now, however,

to condemn any particular kind, or to do more than point out how adapted the Fig is for the work, as it is not only a plant of bold type and character, most striking to look at, but it stands well and holds its leaves till very late in the autumn. It need hardly be remarked that the Fig will not do for shrub planting, but for forecourt gardens and enclosed areas of that kind its habit renders it specially suitable, as it is dwarf and bushy—or it may be made so, by stopping the ends of the shoots or using the knife; and an additional recommendation is, that it will grow and thrive in almost any kind of loose, hungry soil that would be starvation to most other plants. In cities and towns builders have a way of burying the mortar rubbish, brick chips, and other *débris*, which form the staple of most gardens, and in these the roots of Figs are at home, and it is just the stuff to build up hard wood and bring about fertility, as the shoots they make under such *régime* are short-jointed with a fruit at every bud. In a general way the planting of deciduous trees or shrubs should be carried out in the autumn; but the Fig may be transplanted with safety quite as late as this, as plants of it always lift with plenty of fibres, and as the branches are so full of sap at this time of year, they retain their plumpness till the roots get to work. Removed in the autumn or winter they frequently suffer much from the frost, and have all the vitality dried out of them long before the weather is sufficiently warm to give them a start. The best way, however, just now, is to obtain plants in pots, as these are certain to live, as they may be turned out into the positions assigned with the balls of earth entire, which will save them from feeling a check. *J. Sheppard.*

Robin Redbreasts' Nests.—Summerhill Redbreasts are not alone in providing a snug place for their young. A similar case happened during the summer of 1878 at Kilmaron Castle, Cupar Fife. A redbreast built her nest in a plant of Gymnogramma tartarea, but our garden cat watched it very carefully, and at length plundered it. Little robin, nothing daunted, built a second time in a different plant in the stove, and successfully reared her brood. *D. R., Wigtonshire.*

—— Strange places have been chosen for nesting-houses by birds and animals—hats and bonnets we have heard of, queer corners of buildings, and odd corners of fields and wood-stacks, but never till now did we hear of a teapot as the chosen place for a bird's nest. Robins are proverbially bold, but everyone encourages his boldness, for grouped round the little creature are legends of interest which begin with the old, old nursery rhymes of our childhood. The robin is not only bold but rather given to domesticity, as our readers will admit when told that one of these little winged creatures has made its nest in a teapot not 2 feet from the fireplace in a room of Mr. Burnett's house at Forton (about 2 miles from Chard), and not only made its nest, but deposited six eggs therein. How or when it approached its strange nest no one seems to have known. No one can deny the robin's boldness and courage after such a fact. In the south-east of Ireland the peasants believe that if a robin enters a house it is a sign of severe, unseasonable weather; what they would suppose to be prognosticated by a robin's making its nest in a teapot not far from a fireplace we cannot pretend to say. *Chard and Ilminster News.*

Caladium argyrites.—Most people acquainted with gardening matters will admit the necessity of hardening off stove plants when intended for use out of those structures, but what readers of the *Gardeners' Chronicle* would probably like to be informed on is how to harden Caladium argyrites sufficiently to render it capable of standing in winter with scarlet Pelargoniums in the way advised by Mr. Hinds, for, as is well known, if subjected to the air of a room after November, or to a degree of heat and an atmosphere different to that of an ordinary hothouse, it would be down in a few hours. *J. S.*

Autumn Strawberries.—At p. 599 of the *Gardeners' Chronicle* of May 8 your correspondent, Mr. E. Williams, has expressed grave doubts respecting some remarks of mine upon the subject of "Autumn Strawberry Growing" in a previous number of the *Gardeners' Chronicle.* The tone of Mr. Williams' remarks is both friendly and reasonable, and he evidently writes from conviction; but his logic is not by any means sound, and his arguments are manifestly based upon hypothesis. Mr. Williams thinks the practice of planting out forced Strawberry plants for fruiting the year after being planted an excellent one, but he doubts if plants that are allowed to fruit in the autumn would be worth much the following year. In other words Mr. Williams thinks that to obtain crops in such rapid succession would be like burning the candle at both ends. Well, if facts are worth anything, I can assure your correspondent the case is different. Now for the proof. When forced plants are planted out the nature of the circumscribed conditions under which they have been grown causes them to root vigorously into the fresh soil, and the crop they yield in the autumn has never, in my experience, interfered with their fruiting the following year unless the plants were lifted and repotted for winter forcing, in which case it is not worth while to plant them out a second time. Mr. Williams talks of the "little vitality" left in forced plants, while as a "matter of fact" they grow into large clumps in a short period after they are planted out when once their roots are not closely restricted. Again, it is erroneously assumed that the fruits would be small on account of the roots not having sufficiently established themselves in the soil to support a crop, but this is obviated by planting the plants out in proper time, say from the middle of April to the beginning of June, according to the season the plants are required to come into bearing. Mr. Williams further thinks that success in autumn Strawberry growing would very much depend upon a nice open dry time, which is cheerfully admitted; but are not the same remarks applicable to the spring months, which are often more unfavourable to Strawberry crops than the autumn months, which of late years have been bracing and fine, while as regards the ravages of birds I should think a net would be as efficacious in protecting the fruits in September or October as in the months of June and July. *W. Hinds.*

New Zealand Spinach.—Those who have anything to do with growing vegetables know how difficult it is to keep up a supply of Spinach during the summer and early autumn months, as, sow it where one may, the position always seems too hot and dry for it, and the result is, it bolts up to seed without forming leaves enough to afford a good picking. This, when cooks are demanding it almost daily, is very trying, but in the New Zealand kind we most fortunately have a very good substitute, for although perhaps not quite so good in quality, it answers every purpose, and may be grown in quantity with the certainty of being able to obtain a dish whenever required. All that is necessary to get it early is to sow in small pots, putting about three seeds in each, which soon germinate in gentle heat, and when the plants are up and are becoming strong, they may be hardened off and then planted out. If this is done on an old spent dung bed, or heap of decomposing weeds and rubbish, or in a trench where the same has been buried, they soon spread and grow with surprising vigour, the stems and leaves under such circumstances being much more succulent and tender than they are when the roots have only the common garden soil to feed on. Being fond of warmth, a sunny position where there is plenty of shelter will be found to suit this Spinach best, and if well watered once or twice in dry weather, that will improve it greatly and check the tendency to flower and seed. As the first sharp frost kills it, a sowing of the winter kind should be made towards the end of July to succeed it when destroyed, as got in later the plants are not strong enough in time to be robbed of their leaves. I have always found that for Spinach intended to stand till the spring, soot is the best dressing for the ground, which if spread over the surface somewhat thickly before digging, rids the soil of grub and wireworm that prey so much on the roots of the plants as frequently to spoil a whole bed. Manure, especially if not well decomposed, simply harbours these pests, but soot, if not fatal to them, is so obnoxious as to keep them at bay, and besides this it is one of the most valuable stimulants that can be used, as may readily be seen in the effect it has on all crops. *J. S.*

Crimson Primroses. — The interesting note of "M. J. B.'s" in your last number as to a popular idea of the origin of coloured Cowslips calls the following to my mind:—A few weeks ago I was in the brickyard at Hoxne, in Suffolk, where the stone instruments were found by Mr. Frere at the end of the last century. Very near this yard or pit I observed a cottage garden full of beautiful crimson Primroses. As the old lady (more than eighty years of age) was in the garden attending to her flowers I asked her where she procured her beautiful Primroses. She said she had gathered them herself in the woods and hedgerows, always looking after the white varieties. The white variety, she said, would speedily change to crimson when cultivated in a garden, whilst the yellow variety either would not change at all or would be very slow in changing. In most instances, she said, the yellow Primrose would never change, but the crimson plants I saw were all a few years back pure white. *W. G. S.*

Obituary.

We regret to record the death, on the 11th inst., at Chatsworth, of the wife of Mr. Thomas Speed, after a brief illness. The many personal friends of Mr. Speed, and those who have called to see Chatsworth during the last twelve years, will, we are sure, be grieved to hear of his misfortune.

Reports of Societies.

Manchester Royal Botanical and Horticultural: *May* 14—21.—The Grand National Horticultural Exhibition of this Society was opened on the 14th inst. and closed yesterday, having in the meantime afforded a memorable floral treat to thousands upon thousands of the Whit-week holiday makers of Manchester and its environs. The early incidence of Whitsun season and the cold weather of the past few weeks were circumstances antagonistic enough to give rise to some apprehension lest there might be a falling off in the supply of materials to make up a grand exhibition, but no falling off was apparent. Indeed we question if there has ever been a fuller or better furnished show, though the proportions of some of its elements were changed, as they necessarily are, by the seasonal peculiarities of each recurring year. In Orchids, which before all things might have been supposed to be too delicate to face the bitter north-east winds which prevailed, the display was fully equal to that usually brought together, and which is no doubt the finest to be seen in this country. Stove and greenhouse plants, if not quite up to the standard of those shown a few years since by Mr. Shuttleworth and Mr. Pilgrim, now both retired, were exceedingly well represented by the collections of Messrs. Tudgey, Cypher, and others. Large pot Roses were wanting, neither of the Rose champions being prepared to bring them so long a journey, but their place was well supplied by a grand lot of Clematises from Messrs. G. Jackman & Son and Mr. R. Smith, and which, as having never previously been seen in Manchester in such perfect condition and in such abundance, were perhaps fairly to be regarded as the chief attraction—the sensation of the show, as the *Manchester Guardian* puts it. Another most attractive feature consisted of the groups of Fancy Pansies and Violas which were largely shown and most effective, strong even well-furnished plants in 8-inch pots, bearing from a dozen to a score of flowers, the bold rich spotting and quaint colours of which in the case of the fancy Pansies, and the soft hues of the Violas, producing a very charming effect. Indeed we look upon the Orchids, the Clematis, and the Pansies as the most telling elements of the show. The attendance was very large, owing to the fine dry weather, the number of visitors up to Wednesday evening having been as follows:—Friday, 5000; Saturday, 6000; Monday, 17,000; Tuesday, 7000; Wednesday, 7500.

Orchids.

The classes provided for amateur competition were for fifteen, nine, and six plants, and one plant respectively, those for nurserymen being for collections of sixteen and ten. The premier amateur prize for fifteen goes this year to G. Hardy, Esq., of Timperley (Mr. Hill, gr.), who now wins his spurs, the present being the first occasion on which he has adventured the trying number of fifteen. It was a grand lot of plants which procured him this position. There were four fine Cattleyas, C. Mossiæ with twenty-one flowers, C. Mossiæ aurea with eighteen, C. Mossiæ marmorata with twelve, and C. Mendelii with ten blossoms—all clean, bright, and fresh-looking. Masdevallias were also finely shown, there being of M. Harryana, M. Veitchiana, and M. Lindeni respectively, strong tufts with from three to four dozen flowers on each; a fine mass of Ada aurantiaca; Dendrobium densiflorum, with sixteen racemes of its showy yellow flowers; Saccolabium ampullaceum; Odontoglossum cirrosum, good, and a pan 18 inches across of Odontoglossum Cervantesii smothered with blossoms. The 2d prize fell to R. B. Dodgson, Esq., Blackburn (Mr. Osman, gr.), who had a large healthy Vanda insignis with five flower-spikes; a fine Oncidium Marshallianum, which was shown well in several other collections, and was very attractive from its large bright yellow blossoms; Dendrobium densiflorum, with fully three dozen racemes; Cypripedium Stonei, with four flowering stems, and dense masses of C. villosum and C. barbatum; well-bloomed specimens of Odontoglossum vexillarium, of O. triumphans, and of O. cirrosum; Masdevallia Harryana cœrulea, and Dendrobium Schröderi. W. Leech, Esq., Fallowfield (Mr. Swan, gr.), was 3d, with an Aerides Fieldingii, with five spikes; Dendrobium Falconeri, well flowered; Dendrobium densiflorum and D. thyrsiflorum, each with about a dozen spikes; Odontoglossum cirrosum with seven flower-spikes; a good Masdevallia Veitchiana, Phalænopsis Lüddemanniana full of blossoms, Cypripedium Stonei with four flower-stems, a large pan of C. spectabile, and C. caudatum superbum with about a dozen fine flowers; Cattleya Mendelii with four bloom-spikes; a pretty small Odontoglossom vexillarium with four flowering stems, and a good spike of Odontoglossum Andersonianum.

The 1st prize in the class for nine was taken by F. Yates, Esq., Blackburn (Mr. Thompson, gr.), who showed a capital lot of plants, although several of the "specimens" consisted of square shallow boxes filled up by a number of absolutely distinct plants—a system which rather suggests a long pocket than high-class cultivation. The collection consisted of Masdevallia Lindeni, and M. Harryana, with over a dozen plants in each box plunged distinctly apart, like the plants in a flower-bed; Odontoglossum cirrosum; O. vexillarium, a made-up mass, with numerous flowering stems; Dendrobium pulchellum, a very beautiful little basket specimen; Cattleya citrina, Oncidium Marshallianum, with three fine spikes; a grand Dendrobium Wardianum, with upwards of a dozen good flowering stems; and D.

thyrsiflorum, with five good spikes. Dr. Ainsworth, Broughton (Mr. Mitchell, gr.), was placed 2d. He had a fine specimen of Vanda suavis, with seven spikes; Aerides affine, with four very fine branching spikes; Calanthe vestita, with about a dozen expanded spikes; a beautiful form of Odontoglossum Pescatorei, with O. crispum, citrosmum, and vexillarium; Phalænopsis Luddemanniana and the brilliant orange Epidendrum vitellinum majus. W. Leech, Esq., was 3d with a nice lot of plants, in which a good Dendrobium densiflorum, D. Devonianum, beautifully flowered; Odontoglossum Hallii xanthoglossum, and O. triumphans were the most conspicuous examples.

In the smaller class of six, Joseph Broome, Esq., Didsbury (Mr. A. Williams, gr.), was 1st, with neat, well-flowered, small plants of the following species:—Dendrobium crepidatum and D. thyrsiflorum; Cypripedium villosum and C. barbatum; Lælia purpurata and Cattleya lobata. The 2d prize went to W. Turner, Esq., Winsford (Mr. Bolt, gr.), who showed Lælia Williamsii and purpurata, Vanda suavis, Cattleya Mendelii, Cypripedium Crossianum, and Odontoglossum Roezlii. The 3d prize was awarded to J. Heywood, Esq., Stretford (Mr. Elphinstone, gr.), in whose group was a fine Dendrobium Dalhousianum, with about a dozen of its lateral spikes of nankin-coloured showy blossoms. The single specimens were not very remarkable. R. B. Dodgson, Esq., was 1st with a small Odontoglossum vexillarium; W. Leech, Esq., 2d, with a fine Dendrobium thyrsiflorum, bearing fifteen of its drooping trusses of butter-and-egg-coloured flowers. J. Fildes, Esq., was 3d.

The nurserymen's contingent was unusually strong, Mr. Williams showing with his accustomed spirit, and a formidable rival turning up in the person of Mr. James, Castle Nursery, Lower Norwood, who entered in both the classes, and, morever, showed well. For sixteen, Mr. B. S. Williams, Holloway, was 1st with a grand bank, which included a dense mass of Epidendrum vitellinum majus, with nearly fifty flower-spikes; Bollea cœlestis, with six flowers; Lælia purpurata, with three grand spikes; Masdevallia Veitchiana, with eighteen flowers; Cattleya Mendelii, with eight flowers; Masdevallia ignea aurantiaca, with thirty flowers; Cypripedium Stonei, with two good spikes; Cattleya Warneri, with nine flowers; and Oncidium macranthum hastiferum, a fine specimen, with its curious brown-tinted sepals and bright yellow petals. Mr. H. James, Lower Norwood, was 2d, with a very showy group, including a fine Odontoglossum cirrosum, with about twenty flower-spikes; a good Dendrobium Wardianum, with about six stems; a very showy plant of Oncidium Marshallianum, with its large bright yellow inflorescence; Odontoglossum Roezlii and Roezlii album, each with about a dozen flowers; Odontoglossum vexillarium, with four spikes of very large flowers; a large mass of Cypripedium villosum, and of the somewhat similar C. Boxallii; a good C. barbatum, and Dendrobium chrysotoxum, with five blooming spikes. Mr. Cypher, Cheltenham, was 3d; his collection, consisting of small plants, amongst which was a nice plant of Dendrobium lituiflorum, and another of Cypripedium Stonei.

In the next class of ten plants Mr. B. S. Williams was again 1st, with a group consisting wholly of good well-bloomed plants. It consisted of Cattleya Mossiæ superba, with fourteen flowers; Cypripedium Boxallii, and C. barbatum superbum; Epidendrum vitellinum majus, as large as in the preceding class; Vanda tricolor, Dendrobium suavissimum, with seven flowers; Masdevallia Lindeni, with thirty flowers; Lælia purpurata, with four good spikes; and Odontoglossum Alexandræ. Mr. James was 2d, his plants being all good specimens and well-flowered; amongst them were Dendrobium nobile, D. Wardianum; Oncidium Marshallianum, with four, and O. concolor, with fifteen flowering stems; Oncidium crispum, with five spikes; Odontoglossum crispum with seven spikes, O. citrosmum roseum with six, and O. vexillarium with eight spikes; a fine mass of Cypripedium barbatum superbum, and a Cattleya Mossiæ with fourteen flowers. Mr. Cypher came in 3d, and had a beautiful little plant of Vanda cœrulescens, with eight spikes of its small but lovely bluish flowers; Epidendrum vitellinum, rich orange; and the following Odontoglossums, cirrosum, Bluntii, Hallii, and luteo-purpureum.

Clematis.

The class was for thirty specimens, and there were two competitors, so that these alone made a fine display. The 1st prize went to Messrs. G. Jackman & Son, Woking, the 2d to Mr. R. Smith, Worcester. Mr. Jackman's plants averaged about 3 feet high, of globular outline, and were well furnished with foliage and flowers on every part. They were mostly of the patens group, and included all the best varieties of that type, namely, Sir Garnet Wolseley, Lord Derby, Stella, Vesta, Maiden's Blush, Fair Rosamond, Mrs. S. C. Baker, Lady Londesborough and Miss Bateman, with a few of early-blooming hybrid lanuginosas such as the Queen, Princess of Wales, and Robert Hanbury. Mr. Smith's plants were on the whole larger, being trained in a more pyramidal form, and several of them 4 feet high; they were varieties of lanuginosa, and at first sight, from the large size of their flowers, seemed to have the advantage over the Woking plants, but a closer inspection showed them to be all faced or one-sided plants, and though some of them were very good the group of thirty contained about one-third of quite inferior specimens. We remember when "faced" Indian Azaleas used to be shown at Manchester, but a low position on the prize list on one occasion when this defect was very pronounced, did away with half-furnished Azaleas at Manchester shows; and the hint must be taken in the case of Clematises. The best of the Worcester plants, as we have said, were very attractive, and included Anderson-Henryi and Madame Van Houtte, very large whites; Marie Lefebvre, in the way of Lady C. Nevill; Fairy Queen, white with red bars; Sensation, Mrs. Bush, and Gem, shades of mauve; Lord Napier, mauve-purple—these all being lanuginosas; and Mrs. Quilter, a white patens with purple stamens. Most of these were showy plants, as also was purpurea elegans, a large bluish-purple—one of the best plants shown. By choosing late-flowered sorts Mr. Smith had necessarily been compelled to push them on in heat, and they showed unmistakable evidence of the enforced haste; while the fact that Mr. Jackman's sorts were those of the natural season permitted him to bring them out with that exquisite finish and symmetry of growth and bloom which eventually carried the day and placed him in the 1st position on the prize list. This is a point that might be well considered in the schedule another year—we mean that the type of Clematis invited might very well be regulated by the early or late incidence of the date of the show, which would be better than leaving it an open question, and thus allowing subjects of distinct character to come into close competition.

Besides the thirty competing plants Messrs. Jackman showed an additional seventy plants, making up such a group of the hardy spring-flowered Clematises as had never been seen previously in Manchester. For these a special award was made.

Stove and Greenhouse Plants.

The principal class in this section of the show was for twenty plants, ten in flower and ten foliage. The 1st prize was nobly won by J. F. G. Williams, Esq., Henwick Grange, Hallow (Mr. Tudgey, gr.), who staged a group of grand plants which had been in every way skilfully handled, though less bulky than some we have seen occupying the same position. The flowering plants, which were in robust health and profuse bloom, included Erica ventricosa magnifica, E. ventricosa coccinea minor, E. Cavendishiana, and E. tricolor Wilsoni, and Aphelexis macrantha purpurea. Amongst the foliage plants were a large Cycas circinalis, Pritchardia pacifica, Cycas revoluta, a big Latania borbonica, Cocos Weddelliana, a small but fresh looking Cordyline indivisa whose beautiful orange-ribbed leaves are very effective, and a well coloured Croton pictus, which stands well even now amongst the numerous novelties of late years. The 2d prize fell to J. Rylands, Esq., Stretford (Mr. G. Smith, gr.), who had a good Azalea Roi Leopold, a small but well flowered Erica profusa, Clerodendron Balfourianum, Darwinia Hookerii, Bougainvillea glabra, a good mass of Alocasia, Lowii, in fine health, the whole backed up with large Palms and well coloured Crotons. The 3d prize went to H. Samson, Esq., Bowdon (Mr. Lingard, gr.), in whose group was an immense Gleichenia Speluncæ, a good Statice profusa, and two well-flowered plants of Aphelexis. In a group shown by Sir Wilfred Lawson (Mr. Hammond, gr.), were two grand Crotons, and a remarkably fine Maranta Veitchii.

The class for eight plants brought out some specimens of remarkable excellence from J. F. G. Williams, Esq. (Mr. Tudgey, gr.), all being models of high cultivation, free in growth, and with a profusion of flowers. They consisted of Erica Victoria, Aphelexis macrantha rosea, Erica Cavendishiana, and a splendid Erica elegans, forming the front line, backed by a large Pimelea decussata, Clerodendron Balfourianum, and two fairly good Indian Azaleas. S. Schloss, Esq., Bowdon (Mr. Beddoes, gr.), was 2d, his collection containing an Imantophyllum miniatum splendens, with about a score of its umbels of showy flame-coloured blossoms; a fine Anthurium Scherzerianum; a well-coloured Darwinia tulipifera; and a grand Acrophyllum venosum, 4 feet across, full of flower.

The nurserymen's class for twenty plants, ten in flower and ten foliage, was well filled. Mr. J. Cypher, Cheltenham, was well 1st with a remarkably fine lot of plants, not only well grown and well flowered, but well brought out and judiciously set up, so as to be specially effective. Amongst them were some of the best specimens in the show. Here were Darwinia tulipifera, 4 feet by 3 feet, superbly flowered and brilliantly coloured; a large Erica Cavendishiana, Clerodendron Balfourianum, on a globular trellis 5 feet by 4 feet, which was completely covered with flowers; a small Erica Victoria, richly flowered; a grand Anthurium Scherzerianum, with thirty-six of its crimson spathes; Bougainvillea glabra, a capital moderate-sized Acrophyllum venosum, 3 feet by 2 feet; and a neat and well-bloomed Erica depressa. These had a background consisting of a grand lot of foliage plants, comprising two very large and fine Crotons, an immense Gleichenia flabellata, in perfect health; a dense specimen of the variegated Phormium, and the very elegant Cycas intermedia. The 2d prize was won by Mrs. E. Cole & Sons, Withington—a fine lot of plants, some of which had suffered from too sudden exposure. The group contained four good Indian Azaleas, Ixora Fraseri, 4 feet by 3 feet, well bloomed; Croton Disraeli, a grand bushy specimen; a large Erica Victoria, in splendid bloom; and a fair Anthurium Scherzerianum, the whole backed up by large Palms, &c.

For eight *Foliage Plants* the 1st prize went to R. B. Dodgson, Esq., who showed a massive Anthurium crystallinum, a very effective specimen; a large Gleichenia rupestris; and a fine example of Cycas revoluta. The 2d prize lot, from T. H. Birley, Esq., Pendleton (Mr. Elkin, gr.), contained a capitally-grown large plant of Cordyline indivisa; Cibotium regale, large and feathery; Croton Weismanni, rather deficient in colour; a large Phormium tenax variegatum, Cocos Weddelliana, and a large Latania borbonica.

Greenhouse Ericas.—The 1st prize in the amateurs' division for six was awarded to J. F. G. Williams, Esq., for a set of neat, moderate-sized plants, amongst which were good examples of E. depressa, mutabilis, ventricosa magnifica, and mirabilis, the lovely pink flowers of which recall those of the equally lovely Daphne Cneorum. The 1st prize in the nurserymen's group of eight fell to Mr. Cypher, who had in his group beautiful examples of the yellow-flowered E. depressa, 3 feet by 2 feet; another yellow-flowered sort, E. affinis, 2 feet by 3 feet; and E. Victoria, which is one of the best of the retorta set, 4 feet by 4 feet. The 2d prize was given to Mrs. E. Cole & Sons, in whose group was a good E. Cavendishiana, and a pretty plant, 3 feet by 2 feet, of the seldom-seen E. Spenceriana, a soft-wooded Heath, with purplish-lilac tubular flowers of considerable beauty.

Greenhouse Azaleas.—These were very indifferently represented on the amateur side. The nurserymen showed better, Mrs. Cole & Sons being 1st in the class for ten with a fairly good group, in which figured the old and still effective Stanleyana, Stella, Roi de Holland, Duc de Nassau, and Duchesse Adelaide de Nassau, all nicely bloomed. Mr. Cypher came in 2d.

Crotons.—In the class for eight Mr. B. S. Williams, the only competitor, was placed 1st for a group of well-grown plants, consisting of C. Burtoni of the Veitchii type, C. Williamsii, C. Wilsoni, C. Henryanus of the Andreanus type; C. Truffautii, the base-central part of the leaf yellow; C. Disraeli, and C. Evansianus, one of the sub-lobate series. In the class for six Sir W. Lawson was 1st; S. Schloss, Esq., 2d; and J. Rylands, Esq., 3d.

Dracænas—For ten Mr. B. S. Williams was 1st. For six the prizes went to J. Duffield, Esq., 1st; R. B. Dodgson, Esq., 2d; and Sir W. Lawson, 3d. The plants were neat and of moderate size, and were mostly utilised to form a dividing line down the central table in the tent devoted to the various fruits, to Pansies and herbaceous plants, &c.

Palms.—In the class for four J. Broome, Esq., was 1st, with a pretty Geonoma gracilis, 5 feet high, and larger plants of Kentia rubricaulis, Livistonia altissima, and Thrinax elegans. J. F. G. Williams, Esq., was 2d, with Kentia australis, Geonoma princeps, Chamærops stauracantha, and Cocos Weddelliana. Lord Howard, Glossop (Mr. Irvine, gr.), was 3d, and had in his group a tall and elegant plant of Cocos filifera. Mrs. E. Cole & Sons had a 1st prize for a pair of greenhouse Palms.

Yuccas.—A class was provided for two pairs of Yuccas, and brought several interesting exhibits. The 1st prize fell to S. Schloss, Esq., who exhibited a pair of aloifolia variegata 8 feet high, and two fine filamentosa variegata. J. Broome, Esq., was 2d, with a pair of aloifolia variegata and a pair of quadricolor, respectively 4 to 5 feet high. D. McClure, Esq., Heaton Mersey (Mr. Rose, gr.), was 3d, with smaller but even sized pairs of filamentosa variegata and aloifolia variegata.

Pitcher Plants.—Prizes were offered for the best collection of Sarracenias, Nepenthes, &c., the 1st of which was awarded to J. Broome, Esq., who had a large and well-grown group, consisting mostly of Nepenthes. J. Fildes, Esq., Chorlton-cum-Hardy (Mr. Bruce, gr.), was 2d, with a group containing several Sarracenias and Droseras. One, called Sarracenia Fildesii, is of large growth, much larger than flava, the lid of the pitcher broadly cordate, with a mucronate tip, and marked on the neck by a few prominent red veins.

Ferns.

For eight *Stove and Greenhouse Ferns* S. Schloss, Esq., was 1st with a very finely-grown lot, including Davallia tenuifolia, at least 6 feet through; good fresh-looking plants of Gleichenia Speluncæ, G. dichotoma, and Mendelii, of very large size; Davallia Mooreana, an immense dense bush 8 feet through; and a charming bit of Brainea insignis, remarkable for its vigour of growth, and showing off to advantage its chocolate-red young fronds. H. Samson, Esq., was 2d. He had four Gleichenias from 5 feet to 8 feet across, finely grown, consisting of G. dichotoma, G. flabellata, G. rupestris, and G. Mendelii; a small neat Brainea insignis, Davallia Mooreana, Cyathea medullaris, and Dicksonia antarctica. J. F. G. Williams, Esq., was 3d, the most remarkable plant in his group being a fine Cibotium regale, with a spread of fronds of 10 to 12 feet; a well-furnished Microlepia hirta cristata, and a fine Cheilanthus elegans in this collection had been injured in transit, or it would probably have stood higher on the prize list.

Hardy Ferns.—In the amateurs' class of twelve, W. Brockbank, Esq., Didsbury (Mr. Morris, gr.), was 1st with a fine lot, including Osmunda regalis and regalis cristata, Osmunda spectabilis, cinnamomea, and Claytoniana, a grand Adiantum pedatum, and fine stools of Lastrea Filix-mas cristata, and L. Filix-mas Barnesii, dense masses, 3 feet high by 3 feet through. A. Birley, Esq., Pendlebury (Mr. Hesketh, gr.), was 2d, and showed several fine examples of the varieties of Lady Fern, Athyrium Filix-fœmina todeoides being especially good. G. Hodgkinson, Esq., Dunham Massey (Mr. Boardman, gr.), was 3d; in his group of good even plants was a fine fresh Onoclea sensibilis. In the nurserymen's division, also for twelve, the 1st prize was given to Mr. C. Rylance, Aughton, who amongst others of a well-grown group showed noteworthy examples of Athyrium Filix-fœmina Elworthii, tortile, plumosum, and Craigii, and a grand plant of Lastrea Filix-mas cristata.

Adiantums.—A special class was provided for a group of six, and was filled to overflowing. The 1st prize was awarded to G. Hodgkinson, Esq., Dunham Massey, who had large plants of A. formosum, concinnum, cuneatum, gracillimum, assimile and farleyense, not only large but clean and fresh. R. B. Dodgson, Esq., was 2d, also with large plants of A. tenerum, formosum, gracillimum, farleyense, cuneatum, and curvatum. J. F. G. Williams, Esq., who was 3d, showed a nice plant of A. macrophyllum.

New Plants.

Of these nurserymen were required to show twelve and amateurs six. The 1st and only prize for the former went to Mr. B. S. Williams, who had an interesting group, consisting of Croton Wilsoni, with leaves 1 foot

long and 1 inch broad, with yellow rib and blotches; Croton Warrenii, with long, narrow, drooping leaves, both undulated and twisted, freely blotched with yellow soon passing to red; Dracæna superba, a narrow leaved red-edged kind; Dracæna Goldieana, now pretty well known, one of the best of the genus; Kentia Wendlandii, Microlepia hirta cristata, Cocos elegantissima, Anthurium Warocqueanum, with elongate cordate leaves of velvety green with white ribs; Katakidozamia Hopei, a Cycad, with pinnate glossy leaves of rather a bold character; Encephalartos Frederici-Guilielmi, Cupania elegantissima, with large shining pinnate leaves; Dieffenbachia antioquiensis, a desirable species, of neat habit, with erect leaves, oblong acuminate in form, having white rib, and a dark green surface freely blotched with yellowish green patches. In the amateurs' class R. B. Dodgson, Esq., was placed 1st, with large plants of Croton Queen Victoria, C. Disraeli and Microlepia hirta cristata; a good example of Anthurium Warocqueanum, Dracæna superba, and Lomaria discolor bipinnatifida. Sir W. Lawson was 2d, with smaller plants of Croton Evansianus, Lomaria discolor bipinnatifida, Kentia Macarthuri, Croton nobilis, and Anthurium Veitchii and A. Warocqueanum. The 3d prize went to J. F. G. Williams, Esq.

Florists' Flowers.

Roses.—Few Roses were shown, but these popular flowers were represented by a group of twenty in 9-inch pots, shown by Messrs. Paul & Son, of Cheshunt, to whom the 1st prize was awarded. They were nice well-flowered dwarf plants, and amongst them we noted specially interesting examples of the white Madame Lacharme, the blush La France, and the yellow Céline Forestier. One or two sets better than usual came from private gardens, but somehow or other pot Roses from private gardens seldom take a very high position.

Pelargoniums.—Mr. C. Rylance was 1st for a group of eight, amongst which Wellington and Vesuvius, scarlets, and Mrs. Leavers and Softness, pinks, were most attractive. In the amateurs' class for six, W. J. Legh, Esq., Disley (Mr. Cooper, gr.), was 1st with a set containing good examples of New Life and Samuel Plimsoll. In the class for Show Pelargoniums Mr. C. Rylance was 1st, showing in his group Kingston Beauty, one of the market breed, with densely clustered flowers, white, with small rosy spots on all the petals but smallest in the three lower ones. The same grower had the 1st prize for six Fancy varieties.

Pansies.—For six in 8-inch pots, J. G. Adami, Ashton-on-Mersey (Mr. Beard, gr.), was 1st; W. Joynson, Esq., Sale (Mr. Critchley, gr.), 2d; and E. Coward, Esq. (Mr. Johnstone, gr.), 3d. For twenty in 8-inch pots, a nurseryman's class, Mr. H. Hooper was 1st. For six Fancy in the same size pots, W. Brockbank, Esq., was 1st, J. G. Adami 2d, and W. Joynson, Esq., 3d. In the nurserymen's class for six Fancy, equal 1st prizes were awarded to Mr. S. Robinson and Mr. W. Brownhill, Sale; and the 3d to Mr. Hooper, Bath. These, as we have already stated, formed a very striking exhibition.

Violas.—For six in 8-inch pots, A. Lumbers, Esq., Heywood, was 1st; D. M'Clure, Esq., 2d; and J. G. Adami, 3d. For twenty in 8-inch pots, Mr. Hooper was 1st, Mr. S. Robinson 2d, and Mr. W. Brownhill 3d. Like the Pansies, these made a very interesting show.

Hardy Evergreens.

Hollies, Conifers, Rhododendrons, and other hardy plants, were shown in limited quantities, the Rhododendrons, with Ghent Azaleas, being useful as supplying some colour in the annexe. They were mostly sent by Messrs J. Waterer & Sons, of Bagshot, who also exhibited a group of Japanese plants. In this department Mr. Jackman showed Thuja orientalis densa glauca, a compact obtusely conical hardy evergreen, with the spray very fine and dense, and when perfectly developed of a glaucous green colour.

Hardy Perennials.—Very interesting groups of these were shown by W. Brockbank, Esq., and by Mr. W. Brownhill, of Sale, both of whom gained 1st prizes in their respective classes. They were greatly admired, and contained many subjects of great beauty and interest. In Mr. Brockbank's group was a Verbascum Malcombei, with white flowers which we had not seen before; it was very much like a white form of V. phœnicium.

Fruit.

Collections.—Three collections of forced fruits were staged, and, as usual, were scrutinised by many longing eyes. They were all meritorious, the best, which was awarded the 1st prize, being sent from the garden of Joseph W. Pease, Esq., Hutton Hall, Guisborough (Mr. McIndoe, gr.), and contained good Black Hamburgh, Madresfield Court, and Early Saumur Muscat Grapes, the latter nicely ripened, and, though small, having a much better appearance on the exhibition table than the immature white Grapes so commonly seen at early shows; three sorts of Melons, Brown Turkey Figs, five sorts of Peaches—Hale's Early, very fine; Bellegarde, Rivers' Early York, Royal George, and Barrington; Lord Napier Nectarine, in capital condition; and good examples of the large-fruited James Veitch Strawberry and of the Vicomtesse Héricart de Thury. The 2d prize was taken by Lord Carington, Wycombe Abbey (Mr. Miles, gr.), who had well-ripened Black Hamburgh Grapes, unripe Muscats, Sir Joseph Paxton and President Strawberries, three Melons, fine Elton and a splendid dish of Black Circassian Cherries, two Pineapples, and a grand dish of Brown Turkey Figs. Lord Hill, Hawkstone Park (Mr. Pratt, gr.), came in 3d. He showed Brown Turkey and Castle Kennedy Figs, President and Sir Harry Strawberries, Black Hamburgh and Foster's Seedling Grapes, and two Melons.

Grapes.—The classes for both black and white Grapes, two bunches, were well represented, the former being the more abundant of the two. Mrs. Ackers, Congleton (Mr. Bruce, gr.), was placed 1st for black, and showed good bunches of well finished Black Hamburghs, short and compact in form. The 2d prize went to J. W. Pease, Esq., who showed Madresfield Court in moderate sized bunches, well coloured, and with a beautiful bloom. The 3d prize was given to W. Blinkhorn, Esq., St. Helen's (Mr. Smith, gr.), who showed squat bunches with smallish berries of the universal favourite Black Hamburgh. J. W. Pease, Esq., was 1st for whites, with neat bunches of well-ripened Early Saumur Grapes; Mrs. Ackers 2d for Duke of Buccleuch, with very fine berries, perfectly clear and spotless; and W. Blinkhorn, Esq., 3d, with unripe Muscats.

Pine-apples were small and not up to the average of merit. J. W. Pease, Esq., was 1st for two fruits with Prince Albert and Charlotte Rothschild. H. Bramwell, Esq., Worcester (Mr. Hilman, gr.), was 2d, with two small Black Jamaicas; and F. G. Summer, Esq., Hayfield (Mr. McGaw, gr.), was 3d with two small Queens.

Strawberries were invited in groups of twelve pots, and some excellent examples of good cultivation were shown by the Earl of Ellesmere, Worsley (Mr. Ujpohn, gr.), who was awarded the 1st prize; the 2d prize going to F. J. Summer, Esq. Amongst extras in this department was a capital dish of Stamfordian Tomato, from the gardens at Hutton Hall, Guisborough, which were large, characteristic, and well-coloured, and had an appetising appearance.

Miscellaneous.

Several mixed groups were staged, the most extensive being that of Mr. B. S. Williams, which included small plants of many new and interesting older plants. Amongst these we particularly noticed Croton Hanburyanus, with longish leaves 2 inches wide, the costa and adjacent parts yellow at the base of the leaf, but the colour not extending to the apex; C. Chelsoni, with narrow drooping leaves having a yellow costa, the foliage altogether fine and elegant, forming an exceedingly pretty plant; and Pelargonium Maid of Kent, one of the market sorts, with dense heads of white flowers having rose-coloured spots, small on the lower petals, and somewhat larger on the two upper ones. Messrs. Standish & Co., Ascot, had a fine and varied group of Japanese Maples, in which were two very fine specimens of the charming Adiantum gracillimum, and a quantity of small plants of the same all admirably grown and very characteristic. Messrs. Dickson & Robinson, Manchester, Messrs. G. & W. Yates, Manchester, and Messrs. F. & A. Dickson, Chester, had interesting groups of small nursery stock; Mr. B. S. Williams, a fine group of Amaryllis; and H. G. Adami, Esq., some well-bloomed plants of Lilium auratum.

Certificates.

The following Certificates were awarded:—To Mr. B. S. Williams for Dieffenbachia antioquiensis, for Cupania elegantissima, for Croton Warreni, for Croton Evansianus, for Croton Chelsoni, for Croton Hanburyanus, for Katakidozamia Hopei, for Encephalartos Frederici-Guilielmi, and for Pelargonium Maid of Kent.

Royal Botanic: *May* 19.—Though somewhat thin, the first summer show, held in the Society's incomparable exhibition ground on Wednesday, was as a whole quite up to the average, and as regards pot Roses and Orchids much superior to what has been seen at the May shows of late years. The Roses from Slough and Cheshunt were simply superb, but it was a Slough day *par excellence*, Mr. Turner taking the 1st prizes for nine and twenty plants respectively, and Messrs. Paul & Son the 2d in the former class. Mr. Turner's nine were not quite so evenly a matched lot as we have seen him show before, but there was no denying their superiority. Perhaps the most remarkable example amongst them was a specimen of the Tea Madame de St. Joseph, a perfect model of what a pot Rose should be, the plant being somewhat flatter than usually shown, from 5 to 6 feet through, well clothed with splendid foliage, and finished off with a beautifully balanced lot of blooms of rare quality. An immense bush of Juno, right to the day, stood next in point of merit, this being followed by a similar example of La France, perfection itself in foliage, and carrying a fair number of grand blooms. The familiar specimen of Charles Lawson was larger than ever, and in rare condition, while the examples of Edward Morren, Victor Verdier, Céline Forestier, and Paul Verdier, were all that could be desired. Madame de St. Joseph was also grandly shown by Messrs. Paul & Son, together with noble specimens of Céline Forestier, Anna Alexieff, La France, Victor Verdier, Souvenir d'un Ami, Dupuy Jamin, and Dr. Andry—the latter being a perfect picture of health and beauty, regularly, but not too stiffly trained, and splendidly bloomed; Mr. Turner's twenty consisted of half specimens in 8 and 10-inch pots, well done in all respects. From Slough there also came a small group of new Roses, in which were notably fine blooms on plants of the Hon. G. Bancroft, Countess of Rosebery, Madame Lambard, Duchess of Bedford, Madame Eugenie Verdier, Ægeria, Gaston Leveque, &c. To the miscellaneous class Messrs. James Veitch & Sons also contributed a large and strikingly effective group of half-specimen plants, tastefully blended with the richly-cut foliage of various Japanese Acers.

The Orchid bank was well furnished, and the plants added to the general display a very effective mass of diversely coloured and quaintly formed blossoms. In the amateurs' class for twelve the 1st prize was won by Mr. Heims, gr. to F. A. Philbrick, Esq., Q.C., Avenue Road, Regent's Park; the 2d by Mr. Ollerhead, gr. to Sir H. W. Peek, Bart., M.P., Wimbledon House; and the 3d by Mr. Douglas, gr. to J. Whitburn, Esq., Loxford Hall. Mr. Heims' best specimens were of Thunia Marshalliæ, Cattleya Mossiæ and its variety superba, Odontoglossum cirrosum, Dendrobium thyrsiflorum, Masdevallia Harryana cœrulescens, Odontoglossum citrosmum roseum, &c. A fine mass of Odontoglossum vexillarium, with eighteen spikes, with a fine pan of Cypripedium barbatum, and a good Cattleya Mossiæ were the most striking examples in the Wimbledon House collection; while of the Loxford Hall plants a good Odontoglossum vexillarium, with seven spikes, a grand Cattleya Mossiæ superba, and a large Dendrobium nobile were the leading features. In the corresponding class for nurserymen, Mr. B. S. Williams had no difficulty in securing the 1st prize with a capital group, which included excellent examples of Cattleya Warnerii, a lovely bit of colour; Lælia purpurata, Cypripedium barbatum superbum, Odontoglossum Alexandræ, Masdevallia Harryana splendens, M. Lindeni, Odontoglossum sceptrum, O. vexillarium, and Cattleya Mossiæ. Messrs. T. Jackson & Son, Kingston, were 2d.

Of stove and greenhouse flowering plants by far the best specimens came from Mr. Chapman, gr. to J. Spode, Esq., Hawkesyard Park, Rugely, who won the 1st prize easily in the amateurs' classes for ten and six respectively. In both of his groups Mr. Chapman staged large, well-furnished, and superbly flowered examples of Tremandra ericifolia, and in the group of ten his other most noticeable specimens were of Acrophyllum venosum, Statice profusa, Clerodendron Balfourianum, Erica Cavendishiana, and E. affine, &c. Dracophyllum gracile, Ixora coccinea, Azalea Mars, and another large bush of Erica Cavendishiana were the most conspicuous objects in the group of six. Mr. Child, gr. to Mrs. Torr, Garbrand Hall, Ewell, was 2d for ten; and Mr. G. Wheeler, gr. to Lady Louisa Goldsmid, 3d for ten and six. In the nurseryman's class for twelve Messrs. T. Jackson & Son beat Messrs. B. Peed & Son, of Lower Streatham, for 1st honours, with fairly good plants of Darwinia fuchioides, Imantophyllum miniatum, Erica ventricosa tincta rubra, E. Lindleyana, Pimelea Hendersoni, &c.; and the best of the Messrs. Peed's plants were examples of Dracophyllum gracile, Anthurium Scherzerianum, Erica eximia superba, &c.

Fine-foliage plants were represented by the usual assortment of Palms, Crotons, &c., of various sizes, but which need not here be named. In the amateur's class the awards went to Mr. G. Wheeler, Mr. J. Douglas, and Mr. R. Butler, gr. to H. H. Gibbs, Esq., St. Dunstan's, Regent's Park; and in the trade class to Mr. B. S. Williams and Mr. J. W. Wimsett, Asburnham Park Nursery, Chelsea, in the order named. Mr. B. S. Williams also secured the highest award in the nurserymen's class for six exotic Ferns, for large and telling specimens of the distinct Alsophila australis Williamsii, Cyathea Burkeii and C. dealbata, Gleichenia flabellata, G. Mendelii, and the very singular Aglaomorpha Meyeniana. Amongst amateurs Mr. Douglas was 1st, and Mr. Wheeler 2d, the former showing a handsome plant of Adiantum concinnum latum, and good examples of Todea pellucida, Adiantum cuneatum, &c. For twelve Heaths Messrs. B. Peed & Son were 1st and Messrs. Jackson & Son 2d, both showing small plants, which call for no further comment. Of Azaleas the best half dozen contributed by amateurs came from Mr. James Child, all large in size but not of equal merit, the best being of Criterion, Iveryana, arborea purpurea, and Duc de Nassau. Mr. G. Wheeler was 2d. In the open class for twelve and the trade class for six Mr. Turner came to the front with a nice lot, the six especially being of good size, well flowered, and very bright. The sorts were Madame de Cannart d'Hamale, Reine des Fleurs, Duc de Nassau, Comtesse de Flandres, Etendard de Flandre, and Duchesse A. de Nassau. Messrs. James Ivery & Son, Dorking, had the second best dozen. Show Pelargoniums were sadly behind the high standard of former years, and we need therefore only say that Mr. Turner and Mr. Wiggins, gr. to W. H. Little, Esq., were the only exhibitors, and that 1st prizes were awarded to both.

To the miscellaneous class large collections of new, rare, ornamental, or botanically interesting plants were contributed by Messrs. E. G. Henderson & Son, Mr. William Bull, Mr. B. S. Williams; and smaller groups from Messrs. John Laing & Co., Mr. J. W. Wimsett, Messrs. Osborn & Son, Messrs. Hooper & Co., Messrs. James Carter & Co., and others contributed largely to the general effect.

New Plants Certificated.

The judges in the new plants department had, as usual, a considerable number of claimants for honours brought under their notice, and the following awards were made:—Botanical Certificate of Merit to Messrs. James Veitch & Sons for Odontoglossum vexillarium splendens, which bore three spikes of lovely rose-coloured flowers; Yucca filamentosa aurea elegantissima, with golden longitudinal bands instead of white as in Y. filamentosa variegata; Adiantum monochlamys, a Japanese species of small size, remarkable for the solitary sorus on each pinnule; Trichomanes parvulum, a minute species, with fronds half an inch in diameter, growing on the stem of a dead Tree Fern; Lastrea Maximowiczii, a fine Japanese evergreen species with hard glossy fronds finely cut; Lastrea Richardsii multifida, with the apices of the pinnæ finely tasselled; Burbidgea nitida, Pothos celatocaulis, already described; Anthurium Scherzerianum Rothschildianum, the new spotted form figured last

week; Oncidium concolor majus, the largest flowered form of this fine yellow Orchid that we have yet seen; and Crinodendron Hookeri, a rare Chilian plant of an Azalea-like habit of growth, with large crimson pitcher-shaped flowers. To Mr. William Bull for Masdevallia bella, Sarracenia purpurea sanguinea, with pitchers of a dark blood-red colour; Sarracenia flava ornata, Croton Chelsoni, a species introduced from the New Hebrides, with narrow, elegantly arching leaves, of green and gold nicely blended; Microstylis calophylla, a pretty thing to grow with Bertolonias and plants of a like character, having leaves of a brownish bronzy body colour, broadly margined with pale silvery-green, and spotted with a deeper shade of the same colour. To Mr. B. S. Williams for Lycopodium ulicifolium, with drooping dichotomous stems; Croton Warrenii, a singularly distinct form with long spirally twisted and otherwise contorted leaves, variegated with bronze-green, golden-yellow, and crimson; Ixora Pilgrimi, a seedling raised by Mr. Pilgrim, of Cheltenham, with remarkably bold foliage, and large trusses of orange-buff flowers, a fine exhibition plant; and for Maranta Gouletti, a species with erect-growing leaves about 6 inches long, 3 inches wide, silvery-grey in colour, with a margin of green about half an inch wide. To Messrs. E. G. Henderson & Son for Asparagus consanguineus, a remarkably handsome climbing species, with dense plumose, leafy branchlets, pale green at first, and finally assuming a much darker shade of the same colour; for Lycopodium ulicifolium, and Sarracenia flava ornata.

Floricultural Certificates were awarded to Messrs. E. G. Henderson & Son for a very pretty double white Fairy Rose named Little White Pet; to Mr. Turner for Pelargonium Mrs. H. Cox, a very pretty tricolor; to Messrs. F. & A. Smith, Dulwich, for an Epiphyllum raised between E. crenatum and E. Ackermanni, with large brilliant scarlet flowers shaded with violet-purple; to Mr. J. Wiggins for decorative Pelargonium Reamie, scarlet with maroon blotch; Criterion, in the way of Reamie, but with a bold white centre; and Miss Mary Gill, pink ground with maroon blotch and crimson shade; to Messrs. John Laing & Co. for Calceolaria Stanstead Rival, a white ground flower heavily spotted with crimson; to Messrs. James Veitch & Sons for Gloxinia Coronet, a pretty reticulated flower with a very dark band round the throat, and extending half-way down the tube; to Messrs. John Laing & Co., for Begonia Mrs. Laing, a very finely formed white flower, of the tuberous-rooted section; and to Mr. B. S. Williams, for Begonia Vandermeulen, a variety of the Rex type, with leaves of a metallic bronze colour in the centre, broadly margined with silvery-grey, and edged with dark green.

Scottish Horticultural Association.—The ordinary monthly meeting of this Association was held in 5, St. Andrew Square, Edinburgh, on Tuesday, May 4; the President, Mr. M. Dunn, Dalkeith Park Gardens, in the chair. Mr. F. W. Burbidge, Curator, Botanic Gardens, Dublin, sent a paper to the meeting, which was read by the Secretary, the subject of it being "Nepenthes at Home and Abroad:"—Few plants are of more interest in gardens than well grown Nepenthes; so distinct are the thirty or forty species of them that there is not the slightest difficulty in at once recognising any of them, the genus being one of the best marked in the whole vegetable kingdom. In tropical jungles, where they mostly abound, the pitchers of Nepenthes are noted to be insect traps of the most deadly description, and it has been thought and stated that the insect *débris* contained in the pitchers abroad in some way affords the plant manurial stimulants which from some reason or other they are unable to obtain in the usual way, that is to say, by root-action. One of the great features connected with Nepenthes is that their roots are peculiarly fine and delicate in structure, although in some instances their top-growth of leaf and stem is very robust, and it has occurred to me to ask how it comes to be that when struggling for life in their native habitats, surrounded by rampant vegetation of all kinds, they are able to compete successfully in a battle wherein, from their weak rooting character, they very naturally may be expected to fail. But if it is the case, as it has been alleged by many, that they are able to take advantage of the insect food as dissolved by the peculiar digestion-ferment naturally secreted in their urns, we see a way out of the difficulty, the power of absorption and assimilation possessed by the leaf compensates for weak root-action. One of the latest discoveries of modern physiological science is that plants have the power of absorption by their leaves. Mr. Burbidge then referred to the natural conditions under which they are found abroad, Borneo being said to be the "head centre" or focus of the genus, since by far the greater number of known species are natives of that island. He then described all the different kinds as seen by himself in Borneo.

Mr. Geo. Robertson, Mordington Gardens, Berwick-on-Tweed, communicated a paper on the culture of herbaceous plants, and explained his method of keeping up a continuation of bloom with these plants which in gardening establishments were far too much neglected. The Winter Aconite, he said, may be called the first flower of the season; it was easily cultivated, and would grow almost in any soil, and being tuberous-rooted can be propagated by division of the roots early in autumn. Helleborus, known as the Christmas Rose—no collection of herbaceous plants should be without this class of plants; some of the species flower in December, and continue to bloom up to April, providing they have a favourable winter. The kinds that flower in this way are olympicus, abchasicus, and fœtidus, the latter being the evergreen flowering species. Helleborus foliage is very useful for winter decoration. They are increased by division of the roots, which is best performed early in autumn. The soil selected for their cultivation should be of a moderately moist nature. Snowdrops, Crocus, Leucojum vernum, Hepatica, Dog's-tooth Violets and Primulas, were severally described, and a good many useful hints were given as to their cultivation.

Communications were read to the meeting on the effects of the past winter on vegetation in Berwickshire, and on the use of dynamite; they were contributed by Mr. Alexander McMillan, Broadmeadows, and Mr. John Downie, West Coates Nursery, respectively.

Mr. Geo. McClure, Trinity Grove Gardens, received two Certificates for Auriculas Rosebery and W. Gladstone. Messrs. Dicksons & Co., Edinburgh, received a Certificate for a fancy Pansy named Modesty: it had a dark velvet ground with a white belting. Messrs. Ireland & Thompson received a Certificate for Croton interruptus aureus. Four large new crimson East Lothian Stock in full plants of the flower, which were Highly Commended, came from Mr. John Cowe, Metropolitan Cemetery.

Reference was made to the great loss horticulture had sustained in the death of the late Miss Hope, of Wardie Lodge. Her great love for flowers has already been fittingly referred to in the *Gardeners' Chronicle*.

The great benefits conferred upon horticulture by the labours of the late Robert Fortune, was referred to by the President, who said no man had done more in his day for horticulture abroad.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, MAY 19, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr	Barometer: Departure from Average of 18 years	Temperature of the Air: Highest	Temperature of the Air: Lowest	Temperature of the Air: Range	Temperature of the Air: Mean for Day	Temperature of the Air: Departure of Mean from Average of 60 years	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100	Wind: Average Direction	Rainfall
May	In.	In.	°	°	°	°	°	°	°		In.
13	29.98	+0.24	70.4	38.2	32.2	52.6	+ 1.5	45.0	76	E.	0.00
14	29.93	+0.20	76.0	42.0	34.0	56.4	+ 5.1	50.0	79	ENE: E.S.E.	0.00
15	29.92	+0.19	76.3	46.4	29.9	58.2	+ 6.5	53.3	84	E.: E.N.E.	0.00
16	29.97	+0.24	68.4	43.0	25.4	54.0	+ 1.7	43.7	68	NNE: N.E.	0.00
17	30.03	+0.29	6; 2	42.0	21.2	50.0	— 2.8	42.2	75	N.E.: E.N.E.	0.00
18	30.09	+0.35	61.7	37.1	24.6	48.0	— 5.2	39.6	73	E.N.E.: N.E.	0.00
19	30.00	+0.26	58.5	33.9	24.6	45.7	— 7.9	39.9	81	WNW: WSW W	0.00
Mean	29.99	+0.25	67.8	40.4	27.4	52.1	— 0.2	44.8	77	E.N.E. N.E.	sum 0.00

May 13.—A very fine, bright, warm day. Cloudless at night.
— 14.—A very fine, bright, clear day. Warm.
— 15.—A beautifully fine warm day. Strong wind.
— 16.—A very fine clear day. Not quite so warm. Strong wind. Cold at night.
— 17.—Overcast to 10.30 A.M.; very fine and clear afterwards. Much cooler. Strong wind.
— 18.—A fine day, partially cloudy. Cool. Strong wind. Cold at night.
— 19.—A fine day, but dull and very cloudy. Cold, especially in early morning. Temperature increased towards midnight.

LONDON: *Barometer.*—During the week ending Saturday, May 15, in the vicinity of London the reading of the barometer at the level of the sea increased from 30.22 inches at the beginning of the week to 30.30 inches by the morning of the 9th, decreased to 29.93 inches by the afternoon of the 11th, increased to 30.19 inches by the night of the 13th, decreased to 30.09 inches by the afternoon of the 15th, and increased to 30.15 inches by the end of the week. The mean reading for the week at sea level was 30.10 inches, being 0.11 inch above that of the preceding week, and 0.18 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 76¼° on the 15th, and 76° on the 14th, to 50° on the 10th; the mean value for the week was 64½°. The lowest temperatures of the air observed by night varied from 35¾° on the 10th, to 46½° on the 15th; the mean value for the week was 40°. The mean daily range of temperature in the week was 24½°, the greatest range in the day being 34° on the 14th, and the least 14¼° on the 10th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—May 9, 44°.8, — 6°.7; 10th, 42°.2, — 9°.1; 11th, 49°, — 2°.2; 12th, 51°, — 0°.1; 13th, 52°.6, + 1°.5; 14th, 56°.4, + 5°.1; 15th, 58°.2, + 6°.5. The mean temperature of the air for the week was 50°.6, being 1° below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 155¾° on the 14th, 148° both on the 13th and 15th, and 144° on the 11th; on the 10th the reading did not rise above 65°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 31° on the 10th, and 34° both on the 9th and 13th; the mean of the seven lowest readings was 35°.

Wind.—The direction of the wind was E. and N.E., and its strength strong.

The weather was somewhat dull and cold on the first three days of the week, but fine and warm afterwards.

Rain.—No rain fell.

ENGLAND: *Temperature.*—During the week ending Saturday, May 15, the highest temperatures of the air observed by day were above 75° at Truro, Blackheath (London), and Cambridge, and below 59½° at Sheffield, Hull, and Sunderland; the mean value from all stations was 66¼°. The lowest temperatures of the air observed by night were below 35° at Truro, Cambridge, Wolverhampton, and Hull, and above 39° at Plymouth and Liverpool; the mean value from all places was 36¼°. The extreme range of temperature in the week was above 40° at Truro, Blackheath, and Cambridge, and below 21½° at Sheffield and Sunderland; the mean range of temperature in the week from all stations was 30°.

The mean of the seven high day temperatures was above 64° at Truro, Blackheath and Cambridge, and below 55° at Sheffield, Hull and Bradford; the mean value from all places was 41¾°. The mean of the seven low night temperatures was below 40° at Bristol, Cambridge, Wolverhampton and Hull, and above 44° at Truro, Plymouth and Norwich; the average value from all stations was 41¾°. The mean daily range of temperature in the week was above 24° at Blackheath and Cambridge, and below 13½° at Norwich, Sheffield, Leeds and Bradford; the mean daily range from all places was 17¼°.

The mean temperature of the air for the week from all stations was 48½°, being 1¼° higher than the value for the corresponding week in 1879. The mean temperature was above 51° at Truro and Plymouth, and below 47° at Wolverhampton, Sheffield, Hull, Leeds, and Bradford.

Rain.—The amounts of rain measured during the week varied from 0.73 inch at Leicester, and 0.58 inch at Wolverhampton, to 0.01 inch at Brighton. At Blackheath no rain fell. The average fall over the country was 0.23 inch.

The weather during the week was generally fine and bright, with cold winds.

SCOTLAND: *Temperature.*—During the week ending Saturday, May 15, the highest temperatures of the air observed by day varied from 61¼° at Glasgow to 55½° at Aberdeen; the mean value from all stations was 58¾°. The lowest temperatures of the air observed by night varied from 30° at Perth to 37° at Greenock; the general mean from all places was 34½°. The mean range of temperature in the week from all places was 24¼°.

The mean temperature of the air for the week from all stations was 47¾°, being ¼° lower than the value for the corresponding week in 1879. The mean temperature was the highest at Glasgow, 49¼°, and the lowest at Edinburgh and Leith, 46¼°.

Rain.—The heaviest fall of rain was 0.29 inch, at Edinburgh; and the least fall 0.02 inch, at Perth. At Dundee no rain fell. The average fall over the country was 0.13 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

A BRAZILIAN GARDENING PAPER.—"*Barnes*" asks for particulars of any widely circulating gardening paper published in Brazil.

BEES IN THE HOUSES.—Is there any arrangement of the lower panes of glass in greenhouses and hothouses which will allow them to open so as to allow bees to escape? My hothouses get full of bees in the summer; and they, flying against the glass, gradually work their way down to the corner, where the lowest pane touches the sole-plate, and die there by dozens. Should those panes be made to lift up, or what is the best way of letting them out, for I neither wish the gardeners to be stung or the bees to be killed? *J. R. Haig, Blairhill.*

A SUBSTITUTE FOR BOX.—What am I to plant instead of Box edging? It won't grow in my garden, though various gardeners have tried their hands at it. It dies

out, do what you will. *J. R. H.* [Try seedling Oaks kept cut in, or Spruce Firs similarly treated or dwarf Euonymus, or common Thrift. EDS.]

WATERTIGHT RESERVOIR.—Will any reader of the *Gardeners' Chronicle* who has practical experience on the subject kindly give their opinion as to the most effectual way of making a small reservoir perfectly water-tight. The reservoir in question is 24 yards square by 7 feet 6 inches in depth. It has sloping sides both inwardly and outwardly, the top of the bank being 5 feet in width. About 6 feet of the bank is above the level of the surrounding ground. It was made some twelve years ago, and was puddled with clay and lined with brick, laid flatways in cement, but I believe it never held water from the first, and has been out of use for the past nine or ten years. Strong Thistles grow through the puddle on the inner banks now. Will puddle well put on keep these back, in case the reservoir is not always full? *H. J. C.*

Answers to Correspondents.

ASPARAGUS: *J. A.* By all means set young plants if you make a new bed.

ASPHALTE.—If "G. G." will mix to the consistency of mortar gas-tar and coal-ashes (sifted through a half-inch riddle), and lay on his walks evenly to the depth of an inch, and after three or four days roll it well with a heavy garden roller, and afterwards give it a coat of gas-tar alone, evenly spread over with an old bast-broom, then dust some dry sand over it, he will have walks that will not become soft under the sun's influence; and by giving them a coat of tar every spring they will always be in good order. *W. Comfort.*

BOOKS: *Barnes.* M. Oswald de Kerchove's recently published book on Palms (in French) is the only one likely to be of any service to you.

CHERRIES: *Geo. Waller and D. J. LeGrew.* The terms "White Heart" and "Bigarreau" may be taken as synonymous, although the old English White Heart Cherry is quite distinct from any of the Bigarreaus, so called, of the present day. The Bigarreaus have usurped the place and the name of White Heart.

CRYSANTHEMUM CORONARIUM: *H. Cannell.* C. coronarium luteum seems to be a good decorative plant, so far as can be judged without seeing the habit or foliage; the C. coronarium album, sent with it, is merely a form of C. frutescens.

DISEASED VINES: *Messrs. Methven.* The specimens you send throw no light on the cause of the disaster. We should imagine there is something wrong in the border which has killed the young roots.

DOUBLE-FLOWERED RIBES: *D. D.* A very pretty plant, which is not nearly so common as it deserves to be.

FUNGOID GROWTH: *T. S.* A root-like Fungus, not uncommon in similar situations.

FUNGUS: *Forester, Rosehaugh.* The name of the fungus on the Fir is Peridermium pini. It is briefly adverted to this week in our article on the Sempervivum Disease.

FUNGUS ON ROSE LEAF: *A. Z.* The fungus is the "Rose Brand," Phragmidium mucronatum. We do not know that you can do anything better than cut off the affected leaves to prevent it spreading.

HEDGE BLIGHTED: *D. H.* Judging from the scrap you send, the shoot appears to be covered with some fungus. Clip the hedge, and burn the trimmings.

HOT-WATER PIPES: *Alpha.* We do not see how wrought iron pipes can "give out" more heat than cast ones—all depends on the heat you put into the water. We should prefer the cast ones. For the span Cucumber-house you should put in no less than four pipes along each side, exclusive of what may be necessary for bottom-heat.

INSECTS: *C. & R.* Your Currant trees are attacked by the young caterpillars of the common Currant or Magpie Moth. Hand-picking is the best remedy, the insects being so conspicuous. *I. O. W.—J. J. M.* The branch of your pyramid Apple tree has been bored into by the young caterpillar of the Wood Leopard Moth (Zeuzera æsculi). *I. O. W.*

INTERNATIONAL FLOWER SHOW: *Quill Pen.* No.

JUDGE'S BOOKS: *T. Pickworth.* At the *Field* Office, Strand, W.C.

MANURES: *F. S.* What you suppose to be a sample of guano is certainly not that article, but probably a prepared mixture, the composition of which we cannot determine without chemical analysis. The other sample seems to be a mixture of sand and some crystalline substance, perhaps sulphate of ammonia or nitrate of soda. As the composition of both are so uncertain, try them first on some pot plants.

MICE: *G. F. W.* We have no experience in the matter, but we doubt whether the plan in question would be any more cruel than the use of strychnine, arsenic, phosphorus, and the like.

MIMULUS: *Subscriber.* Hose-in-hose flowers of Mimulus are by no means common, though similar specimens to yours have come under our notice before. It is worth perpetuating if you can do it.

NAMES OF PLANTS: *W. Farr.* Brassia verrucosa.—*W. J.* Odontoglossum; specimen insufficient.—*J. R. Haig.* Saxifraga granulata flore-pleno.—*E. G.* Neither an Acacia nor a Lilac, but the Bird Cherry (Cerasus Padus). Surely a gardener should be able to tell an Acacia from a Lilac, and either from a Cherry.—*Wm. Foster.* A variety of Bifrenaria Harrisoniæ.—*C. W. D.* The true Veronica spicata.—*F. Rawdon Smith.* Dendrobium moschatum.—*Robert Andrews.* Rhododendron calophyllum.—*Pat.* Oxylobium ellipticum.—*J. A. Battram.* Not a Lily, but Dracunculus vulgaris. It is a half-hardy plant, and should therefore be kept in the greenhouse during winter.—*Enquirer.* 1, Saxifraga granulata flore-pleno; 2, Cupressus sempervirens; 3, Prunus Padus.—*W. Davidson.* Prunus Padus.—*W. G.* 1, Vaccinium ovatum; 2, Gaultheria Shallon. *H.* Send better specimens. We cannot waste time over such scraps.—*Rufus.* Meyenia erecta.—*M. J.* 1, Clematis montana; 2, Prunus myrobalana; 3, Selaginella cuspidata; 4, Trichomanes speciosum; 5, Athyrium Filix fœmina, a form of; 6, Callipteris esculenta.—*F. B.* Limnanthes Douglasii. *S. Ford.* Begonia cuculata.

PRIMROSES: *G. R.* Many thanks. All Primroses, though very variable in colour, &c.; not a true Oxlip nor a Cowslip among them. It is interesting to learn that they all originated from an ordinary Primrose root some three or four years ago.—*J. W. C.* A well-known variety, in which the calyx assumes more or less of the guise of the corolla. It has been asserted that the condition might be produced by pinching out the corolla at an early stage, but we are sceptical on that point.

RANUNCULUS: *Dublin.* A very old-fashioned variety, the name of which has slipped from our memory.

ROSES: *D.* We think the Rose shoots have died through exhaustion, the plants having been injured by the winter's frost, and the effort to grow having used up the little remaining vitality. The first evil may have been the immature condition of the wood.

TROPÆOLUM MAJUS AURANTIACA PLENISSIMUM: *H. Cannell.* This looks to be distinct in colour from the other double-flowered Nasturtiums, being of a more coppery-orange colour than any we have before seen. Probably, like the other doubles, it will be useful.

*** Correspondents are specially requested to address, post-paid, all communications intended for publication to the "*Editors*," and not to any member of the staff personally. The Editors would also be obliged by such communications being sent as early in the week as possible. Correspondents sending newspapers should be careful to mark the paragraphs they wish the Editors to see. *Letters relating to* ADVERTISEMENTS, *or to the supply of the Paper, should be addressed to the Publisher, and* not *to the Editors.*

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

CATALOGUES RECEIVED:—B. S. Williams (Upper Holloway, N.), Catalogue of New Plants.—J. Linden (Ghent), General Catalogue of Plants.—James Dickson & Sons (Newton Nurseries, Chester), Catalogue of Bedding and Border Plants.—James Carter & Co. (High Holborn, W.C.), Catalogue of New, Rare, and Choice Plants.—George Gummow (114, Loughborough Road, Brixton, S.W.), Catalogue of Bedding and other Plants.—Ewing & Co. (Norwich), Pot Rose List for Spring and Summer, 1880.

COMMUNICATIONS RECEIVED.—G. F. W.—J. G.—Miss Methven.—Martin & Ford.—H. G. Rchb. f.—W. S.—J. H.—H. A.—W. H. D.—T. H.—T. D. M.—W. R.—R. P.—H. K.—J. Shaw.—E. A.—D. P. L.—J. V. & Sons.—A. D.—W. M.—H. A. B.—W. R.

Markets.

COVENT GARDEN, May 20.

The improvement experienced last week has not been maintained, and generally prices have had to give way. *James Webber, Wholesale Apple Market.*

FRUIT.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Lemons, per 100	6 0–10 0
— American, barrl.	18 0–30 0	Melons, each	3 6– 7 0
Cob Nuts, per lb.	1 0– 1 6	Oranges, per 100	6 0–12 0
Gooseberries, green, per quart	0 6– 0 9	Pears, per dozen	4 0– 8 0
Grapes, per lb.	3 0– 6 0	Pine-apples, per lb.	1 0– 3 0
		Strawberries, per oz.	0 4– 0 9

VEGETABLES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, per bundle	1 0– ..	Lettuces, Cabbage, per doz.	1 0– 2 0
— English, p. 100	5 0– 6 0	Mint, green, bunch	0 4– ..
— French, per bun.	3 0– 6 0	Mushrooms, p. baskt.	1 6– 2 0
Beans, French, p. lb.	1 6– ..	Onions, per bushel	10 0–12 0
Beet, per doz.	2 0– 4 0	— Spring, per bun.	0 6– ..
Cabbages, per doz.	1 0– 2 0	Parsley, per lb.	0 9– ..
Carrots, per bunch	0 8– ..	Peas, per lb.	1 0– ..
— French, per lb.	0 6– ..	— French, per qt.	4 0– ..
— New, per bunch	1 6– ..	Potatos (new), per lb.	0 2– 0 6
Cauliflowers, per doz.	2 0– 5 0	Radishes, per bun.	0 2– ..
Celery, per bundle	1 6– 2 0	Rhubarb (Leeds), per bundle	0 4– 0 9
Chilis, per 100	3 0– ..	Seakale, per punnet	3 0– ..
Cucumbers, per doz.	8 0–12 0	Small salading, pun.	0 4– ..
Endive, per 2 doz.	1 6– 3 0	Spinach, per bushel	2 6– ..
Garlic, per lb.	1 0– ..	Tomatos, per dozen	4 0– 6 0
Herbs, per bunch	0 2– 0 4	Turnips, new, bunch	1 0– 1 6
Horse Radish, p. bun.	4 0– ..		

Potatos:—Regents, 80*s.* to 120*s.*; Flukes, 120*s.* to 160*s.*; and Champions, 170*s.* to 190*s.* per ton. German, 1*s.* 6*d.* to 5*s.* per bag; Channel Islands, 2*d.* to 3*d.* per pound.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Fuchsias, per dozen	9 0–15 0
Bedding Plants, various, per doz.	1 6– 2 6	Genista, per dozen	9 0–18 0
Begonias, per doz.	6 0–18 0	Lilium eximium, doz.	30 0–60 0
Bouvardias, per doz.	12 0–24 0	Lobelia, per dozen	6 0– 9 0
Calceolaria, per doz.	8 0–12 0	Mignonette, per doz.	5 0– 9 0
— Herbaceous, doz.	6 0– 9 0	Myrtles, per doz.	0 0–12 0
Cinerarias, per doz.	6 0–12 0	Nasturtiums, dozen	4 0– 6 0
Cyperus, per dozen	4 0– 9 0	Palms in variety, each	2 6–21 0
Dracæna terminalis	30 0–60 0	Pelargoniums, dozen	9 0–24 0
— viridis, per doz.	12 0–24 0	— Ivy-leaved, doz.	4 0– 8 0
Erica various, per dozen	12 0–30 0	— Tricolor	4 0–12 0
Euonymus, various, per dozen	6 0–18 0	— scarlet, per doz.	4 0– 9 0
Ferns, in var., doz.	4 0–18 0	Roses, Hybrid Perpetual, per doz.	18 0–36 0
Ficus elasticus, each	1 6– 7 6	— Fairy, per dozen	6 0–10 0
Foliage Plants, various, each	2 0–10 6	Spiræa, per dozen	6 0–18 0
		— palmata, doz.	18 0–30 0
		Stocks, per dozen	4 0– 8 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Pansies, 12 bunches	2 0– 6 0
Anemone, 12 bun.	3 0– 6 0	Pinks, white, 12 bun.	3 0– 9 0
Arum Lilies, per dozen	3 0– 6 0	Polyanthus, 12 bun.	1 6– 4 0
Azalea, 12 sprays	0 6– 1 0	Pelargoniums, 12 spr.	0 6– 1 0
Bouvardias, per bun.	1 0– 4 0	— zonal, 12 sprays	0 3– 0 9
Camellias, per doz.	2 0– 6 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	Ranunculus, p. doz.	6 0– 9 0
Cornflower, per doz.	6 0– 9 0	Roses (indoor), doz.	1 0– 9 0
Cowslips, 12 bunches	1 0– 1 6	— Roses, Fr., doz.	2 0– 6 0
Eucharis, per doz.	4 0– 6 0	Spiræa, 12 sprays	0 6– 1 0
Euphorbia, 12 sprays	3 0– 6 0	Stephanotis, 12 spr.	2 6– 4 0
Forget-me-not, 12 bunches	3 0– 9 0	Tropæolum, 12 bun.	1 0– 3 0
Gardenias, 12 blms.	2 0– 8 0	Tuberoses, per dozen	2 0– 4 0
Heliotropes, 12 sp.	0 6– 1 0	Tulips, 12 bunches	4 0– 8 0
Lily of the Valley, 12 bunches	6 0–18 0	Violets, French, per bunch	1 6– 2 6
Mignonette, 12 bun.	6 0– 9 0	— English, p. bun.	1 0– 2 0
Narcissus, various, 12 bunches	4 0– 9 0	Wallflowers	4 0– 9 0
		White Lilac, Fr., per bundle	4 0– 8 0

SEEDS.

LONDON: *May* 19.—The attendance of buyers to-day was very small, and the market presented quite a holiday appearance. As regards values there is consequently no change to report; but owing to the unfavourable accounts received of the new crops, Clover and Trefoil are both held with increasing firmness. There is now more inquiry for Mustard and Rape seed for sowing purposes; both varieties are in short supply, and quotations are hardening. The remarkably low rates current for fine Canary seed are attracting the attention of speculators; Hemp seed also keeps exceedingly moderate. Spring Tares being exceedingly scarce are dearer. There is an improved sale for blue Peas; fine samples are now rarely met with. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

Monday being a statute holiday there was no business done on Mark Lane. Trade on Wednesday was on the whole rather firm. There was very little English Wheat on offer, and with next to nothing doing prices were nominally without change. Foreign Wheat, too, was very quiet, and there was no material change observable. The tone was hardly so good. Barley met with a small inquiry, and remained about the same in price. Malt was neglected. Oats were in pretty good demand. Prices were about 3*d.* per quarter higher than last week. Maize was firm and the turn dearer. Beans and Peas supported late values, but the market for flour was dull and a trifle easier.—Average prices of corn for the week ending May 15:—Wheat, 44*s.* 9*d.*; Barley, 32*s.* 2*d.*; Oats, 24*s.* 11*d.* For the corresponding period last year:—Wheat, 40*s.* 8*d.*; Barley, 30*s.* 1*d.*; Oats, 21*s.* 11*d.*

CATTLE.

At the Metropolitan Market on Monday trade in beasts was slow, and prices on the average scarcely as good as on the Monday previous. Trade in sheep also was very slow, and a clearance was not effected. Lambs gave way in price, and calves were rather lower than last week. Quotations:—Beasts, 4*s.* 4*d.* to 5*s.*, and 5*s.* 3*d.* to 5*s.* 8*d.*; calves, 5*s.* 4*d.* to 6*s.* 8*d.*; sheep, 5*s.* 4*d.* to 5*s.* 8*d.*, and 6*s.* 4*d.* to 6*s.* 10*d.*; lambs, 7*s.* 8*d.* to 8*s.* 2*d.*; pigs, 4*s.* 6*d.* to 5*s.* 4*d.*—On Thursday beasts were in moderate supply, and there was a slow trade at barely Monday's rates. Sheep also were in slow request, and drooping in value, but lambs were rather dearer. Calves sold at about late rates.

HAY.

At the Whitechapel Market on Tuesday the supply of fodder was short, but there was not much doing at the following quotations:—Prime Clover, 100*s.* to 132*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 102*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 38*s.* per load.—On Thursday a moderate supply of hay and straw was on offer. There was a quiet trade at about Thursday's quotations.—Cumberland Market quotations.—Superior meadow hay, 96*s.* to 105*s.*; inferior, 45*s.* to 75*s.*; superior Clover, 120*s.* to 130*s.*; inferior, 84*s.* to 110*s.*; and straw, 34*s.* to 40*s.* per load.

POTATOS.

The occurrence of the Whitsuntide holidays has, as a matter of course, affected the amount of business done on the market, and prices are quoted somewhat lower than last week.—During last week 20,358 bags were received at London from Hamburg, 2515 Stettin, 7180 Danzig, 5525 Malta, 21,942 bags from Lisbon.

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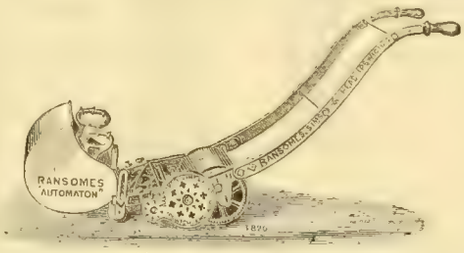

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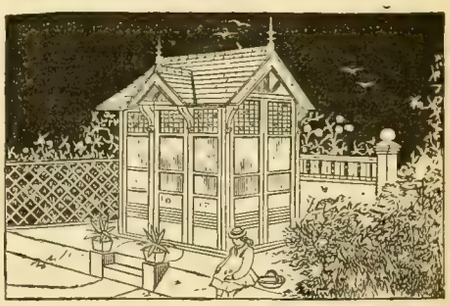

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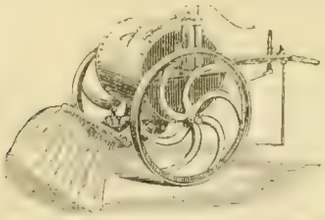

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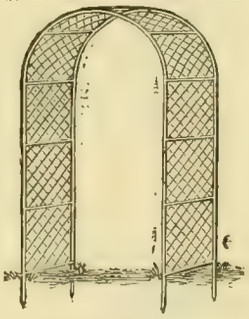

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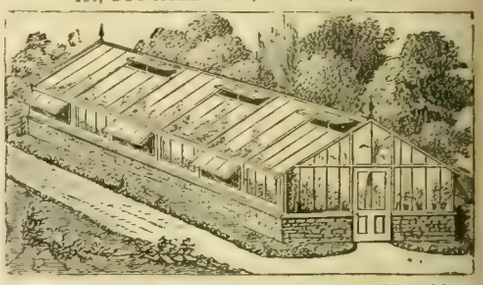

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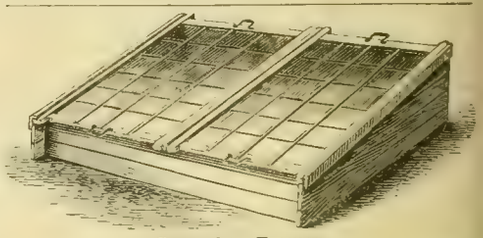

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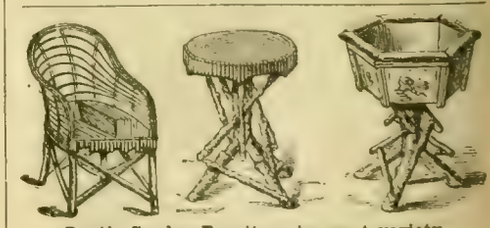

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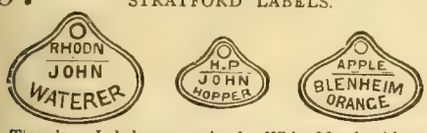

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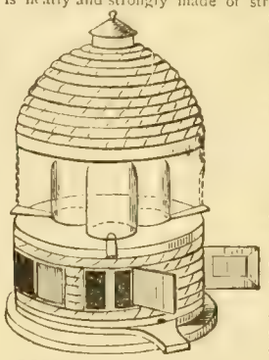

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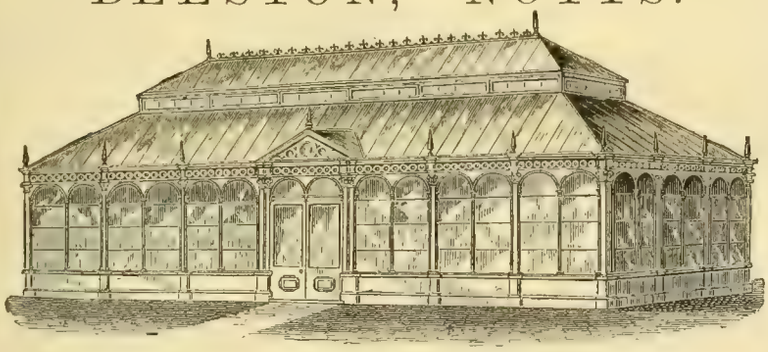

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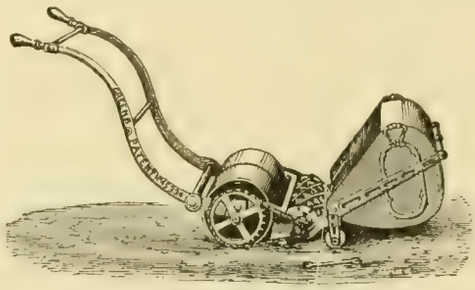

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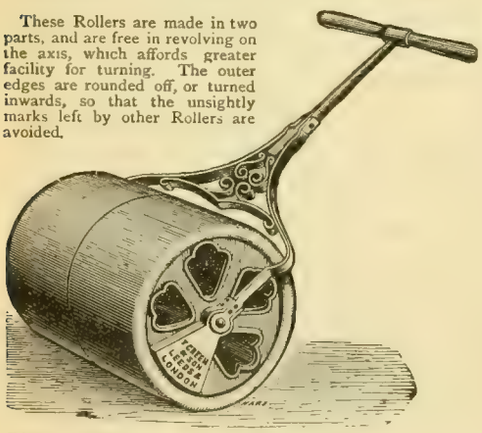


Diam. Length	£ s. d.	Diam. Length	£ s. d.
16 in. by 17 in.	.. 2 15 0	24 in. by 26 in.	.. 5 0 0
20 in. by 22 in.	.. 4 0 0	30 in. by 32 in.	.. 9 0 0

PRICE OF ROLLERS IN TWO PARTS,
Fitted with Shafts for Pony or Horse.

Diam Length	£ s. d.	Diam. Length	£ s. d.
30 in. by 32 in.	.. 13 10 3	30 in. by 48 in.	.. 17 0 0
30 in. by 36 in.	.. 14 0 0	30 in. by 60 in.	.. 19 10 0
30 in. by 42 in.	.. 15 10 0	30 in. by 72 in.	.. 22 0 0

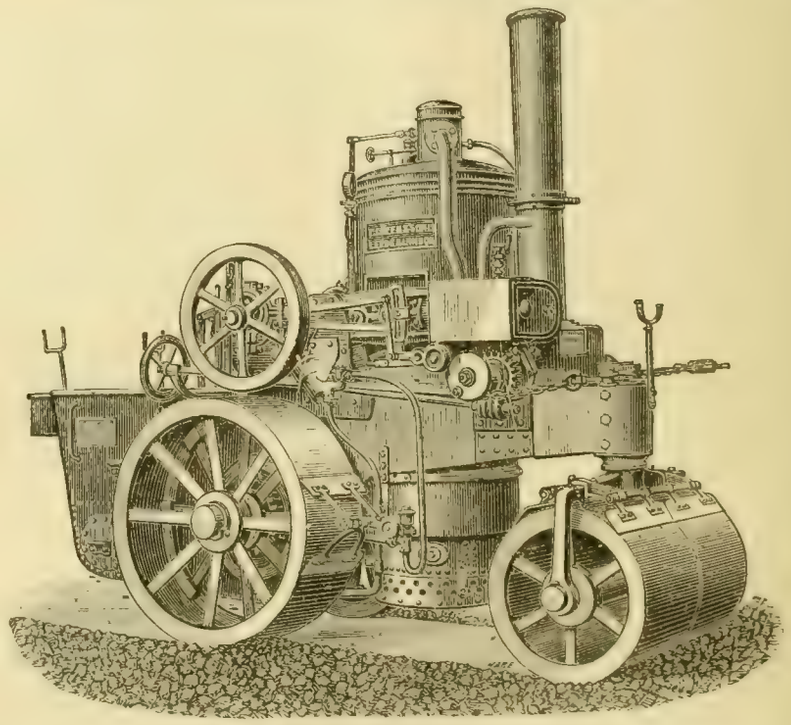
Weight Boxes extra, and Special Quotations made for Rollers 3, 3½, and 4 feet diameter, fitted with Shafts for One or Two Horses.

Delivered, Carriage Free, at the principal Railway Stations and Shipping Ports in England and Scotland.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the Manufacturers,

GREEN'S PATENT STEAM ROAD ROLLER and TRACTION ENGINE COMBINED

Suitable for Rolling Carriage Drives, Park Roads, Walks ; Rolling Lawns, Cricket Flats, Parks, &c. They can also be used as Stationary Engines for Stone Breaking, Wood Sawing, Pumping, Farm Purposes, and other various work.



PARTICULARS AND ESTIMATES ON APPLICATION TO

THOMAS GREEN & SON (Limited), Smithfield Ironworks, Leeds ; and 54 and 55, Blackfriars Road, London.

ILLUSTRATED PRICE LIST FREE, AND

Specifications of Steam Road Rollers of from 5 to 20 tons weight, with Prices and Testimonials, furnished on application.

Editorial Communications should be addressed to "The Editors ;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, May 22, 1880.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 335.—Vol. XIII. { New Series. } SATURDAY, MAY 29, 1880. { Registered at the General Post-office as a Newspaper. } Price 5d. Post Free, 5½d.

With this Number is presented a Coloured Plate of "HERBACEOUS CALCEOLARIAS."

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
GREAT FLOWER SHOW, under the Large Tent, JUNE 8, 9, 10 and 11. ONE THOUSAND POUNDS in PRIZES. Competition for Silver Cups offered by Mr. William Bull, F.L.S., for New Plants; and for Prizes by Messrs. Sutton & Sons for Vegetables; and Messrs. Joseph Davis & Co. for Plants. Horticultural Buildings and Appliances of all kinds will be exhibited in the Garden. Band of the Royal Horse Guards (Blue) each day.
Admission—Tuesday, June 8, from 1 o'Clock, 5s. Wednesday and Thursday, June 9 and 10, from 10 o'Clock, 1s. Friday, June 11, from 10 o'Clock, 6d.; or by Tickets purchased before June 8 by Fellows, for the first day, 3s. 6d. Tickets at the usual Agents and the Entrances to the Gardens.
N.B.—Applications for Space and Schedules to be made to the Superintendent, Royal Horticultural Society, South Kensington.
ENTRIES CLOSE—FRIDAY, June 4.

ALEXANDRA PALACE, Muswell Hill, N.
The GREAT ROSE SHOW will be held in the Central Hall, SATURDAY, July 10. ENTRIES CLOSE—SATURDAY, July 3. Schedule of Prizes, Rules, &c., may be had on application to Mr. J. S. COOKE, Sec.
Alexandra Palace, London, N.

TIVERTON (Devon) HORTICULTURAL SOCIETY.
TENTH EXHIBITION, JULY 1. Cut Roses (open to all England), 48 Perpetuals, £7, £4, £2; 12 Teas and Noisettes, £4, £2, £1. Liberal Prizes for Stove and Greenhouse Plants, Fruit and Vegetables. Schedules on application to
Messrs. PAINE AND MILLS, Hon. Secs.
At the same time and place the DEVON and EXETER BEE-KEEPERS' ASSOCIATION will hold an EXHIBITION of BEES and their produce. Schedules of
Alphington, Exeter. Mr. W. N. GRIFFIN, Hon. Sec.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.
The TWENTY-FOURTH ANNUAL GRAND FLOWER SHOW will take place on FRIDAY, July 2. Schedules and Prizes may be obtained on application to
26, Parade, Tunbridge Wells. Mr. E. F. LOOF, Sec.

THE DISS HORTICULTURAL SOCIETY'S SHOW will be held JULY 13. Special Rose Prizes will be given.
Rev. F. PAGE ROBERTS, Hon. Sec.
The Rectory, Scole.

HERTFORDSHIRE BEE-KEEPERS' ASSOCIATION.
A COUNTY FLOWER, FRUIT and VEGETABLE SHOW, open to all persons residing in the county of Herts, will be held in connection with the Annual Show of the Association, at St. Michael's Lodge, Gorhambury, St. Albans, under the Presidency of the Earl of Verulam, on FRIDAY and SATURDAY, August 20 and 21. Application for Schedules to be made to the Flower Show Secretary,
King's Langley, Watford. Mr. JOHN HUCKLE.

NEWPORT and COUNTY HORTICULTURAL SOCIETY.—ANNUAL SHOW, JULY 22. Eight Stove and Greenhouse Plants in Flower, £24.
HON. SECS., Town Hall, Newport, Monmouth.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Vines for Present Planting.
JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.
CATALOGUES free. The Trade supplied.

DOWNIE AND LAIRD, Edinburgh, are now EXHIBITING a Grand Strain of CALCEOLARIAS in their Winter Garden, West Coates. They have also, in FULL FLOWER, over 40,000 PANSIES and VIOLAS, at their Pinkhill Nursery. Inspection invited.

HARDY PERENNIALS and FLORIST FLOWERS.—The above Two New CATALOGUES are now in circulation, and may be had Post-free by applying to
THOMAS S. WARE, Hale Farm Nurseries, Tottenham, London, N.

Verbenas—Verbenas.
VERBENAS.—Strong, healthy, well-rooted Cuttings, free from disease, guaranteed to give satisfaction, at 6s. per 100, 50s. per 1000, of Purple, White, Crimson, and Pink, or Rose. Package free. Cash with orders. Sample dozens, post-free, 1s. 2d. per dozen.
T. FLETCHER AND SON, Florists, &c., Chesterfield.

VIOLA MRS. HENRY PEASE.—The finest White Bedding Viola, very free and continuous blooming; quite unequalled as a white-flowering bedding plant. Good plants 4s. per dozen.
THOMAS SIBBALD, Nurseryman, Bishop Auckland.

Centaurea candidissima or ragusina.
Wholesale price. Package free.
WOOD AND INGRAM offer fine Plants, thoroughly established in single pots, at 18s. per 100.
The Nurseries, Huntingdon.

Seeds—Seeds—Seeds.
WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

Gardenias.
MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

Special Offer.
GERANIUMS, 1000 Zonal, in 100 beautiful varieties, from single pots, for £5. Tricolors, &c., as advertised last week.
WILLIAM POTTEN, Camden Nursery, Sissinghurst, Staplehurst.

ALPINES, HERBACEOUS and ROCK PLANTS, 24s. per 100, own selection. EUONYMUS JAPONICUS, Gold and Silver Variegated, suitable for bedding, 6 inches, 24s. per 100.
STANSFIELD BROTHERS, Nurserymen, Southport.

ECHEVERIAS.—For Sale a few thousands of the Hardy Echeveria, 3s. per 100, or 25s. per 1000; all fit for planting.—H. KENTISH, 4, Queen Street, Troy Town, Rochester.

PETUNIAS (strong seedling plants), violet, white and rose; ASTERS, same colours, all at 9d. per dozen or 5s. per 100. Packing free.
T. L. MAYOS, Nurseryman, Hereford.

Scarlet Runner Beans.
ALFRED LEGERTON, SEED MERCHANT, 5, Aldgate, London, E., has still some few Bushels of the above to offer, price 40s. per Bushel, so long as stock lasts.
SWEDE and TURNIP SEEDS having considerably declined in value, special prices will be made on application.

CABBAGE PLANTS.—Drumhead Savoy, Enfield Market, Clarke's Nonpareil, Brussels Sprouts, Thousand-headed Kale. Apply, stating quantities required, to
T. DAVIES, Tangley, near Guildford.

W. CALE, FLORAL and FRUIT COMMISSION AGENT, begs to give notice that NO GOODS WILL BE RECEIVED UNLESS PREVIOUSLY ADVISED.
4, Tavistock Row, Covent Garden, W.C.

WANTED, good GARDENIAS and Maréchal Niel ROSES Letters and Consignments to W. CALE, Floral and Fruit Commission Agent, 4, Tavistock Row, Covent Garden, W.C.

WANTED, Standard Maréchal Niel ROSES in pots. Apply, stating price, to
HEATH AND SON, Nurserymen, Cheltenham.

SUTTON'S HOME-GROWN SEEDS, &c.
PARIS, 1878.
In addition to FIVE PRIZE MEDALS awarded by the Juries, the LEGION OF HONOUR (*a superior distinction accorded to no other English Exhibitor of Seeds*) was conferred on our Managing Partner by the French Government.
SUTTON AND SONS, Reading, London and Paris.

Bath and West of England Show.
W. B. ROWE AND CO. solicit the inspection by Nurserymen and others visiting the above Show of their extensive GENERAL NURSERY STOCK, and would call particular attention to their very large collection of FRUIT TREES and ROSES, not to be excelled; also POT ROSES, CLEMATIS, &c.
Barbourne Nurseries, Worcester.

Hyacinths, Tulips, &c.
BUDDENBORG BROS., Bulb Growers, House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

To the Trade.
CALCEOLARIA and PANSY SEED, our own saving, from the finest strains. Price on application to
DOWNIE AND LAIRD, 17, Frederick Street, Edinburgh.

BEDDING CLEMATIS, in assorted colours.—A great bargain is offered in very fine plants—25 for 20s., 50 for 30s., 100 for 50s., package included. Cash with order. A magnificent stock of CLEMATIS LANUGINOSA on offer. CHARLES NOBLE, Bagshot.

To the Trade and Amateur Rosarians.
NEW ROSES in POTS. TEA and NOISETTE ROSES in Pots.—One of the most extensive, most select, and perhaps the most thriving stock of young plants in the country.
Special LIST will be sent gratis and post-free to applicants.
EWING AND CO., Eaton, near Norwich.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HEREFORD. (Established 1785.)
Descriptive CATALOGUES on application. Address
CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

Bennett's Pedigree Roses should be worked on the SEEDLING BRIER.
EDWIN HILLIER can offer the Set, in fine Plants; also TEA ROSES, best varieties, and splendid Plants, all on Brier. Price LISTS free.
The Nurseries, Winchester.

Now is the Best Time to Transplant Hollies.
HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d. to 31s. 6d. each. Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

New Dwarf Silver Variegated Geranium "VISCOUNTESS CRANBROOK."
WM. POTTEN will send out the above on and after May 17, as advertised in the *Gardeners Chronicle*, April 24, 1880.
Camden Nursery, Sissinghurst, Staplehurst.

GLOXINIAS (Carriage Paid).—Strong healthy, young plants (will bloom in August and September), of the best crassifolia varieties. 3s. per dozen, 20s. per 100. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

Sixty Thousand
HARDY and other BEDDING PLANTS, from 1s. to 6s. per dozen. Special Prices per 100 or 1000 on application. Hardy and Exotic FERNS cheap. Apply for LIST to T. L. MAYOS, Nurseryman, Hereford.

To the Trade.
DAHLIAS—40,000, in 400 varieties, now ready. CATALOGUE and Price on application to
KELWAY AND SON, Langport, Somerset.

Orchids.
THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.
Lion Walk, Colchester.

Verbenas—Verbenas—Verbenas.
STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6s. per 100; 50s. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8s. Terms cash.
H. BLANDFORD, The Dorset Nurseries, Blandford.

FUCHSIAS, 100 nice young plants, in 12 splendid varieties, 8s.
HELIOTROPES, of sorts, 6s. per 100.
AGERATUM, Imperial Dwarf, strong young plants, 5s. per 100.
H. BLANDFORD, The Dorset Nurseries, Blandford.

Greentop Yellow Tankard Turnip.
JOHN ETHERINGTON DIXON, having grown a fine lot of this Turnip, can offer a few Bushels at a low figure. Price on application.
Seed Grower and Merchant, Gainsborough,

SALES BY AUCTION.

Masdevallia rosea.

MR. J. C. STEVENS has received instructions from Mr. F. Sander to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 31, at half-past 12 o'Clock precisely, a fine lot of this splendid MASDEVALLIA, described in *Gardeners' Chronicle*, May 1. Professor Dr. Reichenbach says:—"What is Masdevallia rosea? some of our readers may ask. Well, it is a peculiar type of Masdevallia, quite distinct from any species we have, bearing flowers of a length of 11 centimetres, the even sepals are 3 centimetres broad, of a most lovely rich rose-purple, the long tube of an exquisite purple-scarlet. Dr. Lindley sketches it:—'Flowers pink, 2 inches long, very showy.' This glorious thing, so long desired, was saved from the wrecked ship, *Para*, at St. Michael's, Azores, by our friend, F. C. Lehmann. The very few plants will appear at Mr. Stevens' Rooms to make their European *début*. We hope to give soon further details and a woodcut of the queen of Masdevallias. This Masdevallia is most difficult to import, and to Mr. Lehmann's energy and skill we owe that now it is alive in Europe."

The Sale will also contain a fine lot of ODONTOGLOSSUM ALEXANDRÆ LEHMANNI, O. VEXILLARIUM LEHMANNI, O. LUTEO-PURPUREUM, various DENDROBIUMS, CŒLOGYNES, ODONTOGLOTS, ONCIDIUMS, and other ORCHIDS.

May be viewed the morning of Sale, and Catalogues had.

Highly Important Sale of Established Orchids.

MR. J. C. STEVENS has received instructions from W. Turner, Esq., Over Hall, Winsford, Cheshire, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 2, and following days (instead of the days previously announced), at half-past 12 o'Clock precisely each day, without the least reserve, the entire COLLECTION of ESTABLISHED ORCHIDS. Amongst other grand things will be found Lælia Warneri, Saccolabium Turneri (spikes nearly 2 feet long), Cattleya Skinneri alba, C. Morgani, C. Wagneri, Lælia Williamsi, and many other rare and valuable plants.

May be viewed the morning of Sale, and Catalogues had.

Dendrobium Jamesianum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Govent Garden, W.C., on FRIDAY, June 4, at half-past 12 o'Clock precisely, an importation of the beautiful and rare DENDROBIUM JAMESIANUM, just received from Burmah, where it grows at an altitude of 4000 feet in a cool temperature; added to the beauty of its flowers, the length of time they last makes it a desirable species in every collection. Also good plants of DENDROBIUM HETEROCARPUM, D. NODATUM, D. PRIMULINUM GIGANTEUM, and D. CREPIDATUM.

May be viewed the morning of Sale, and Catalogues had.

Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on FRIDAY, June 4, at half-past 12 o'Clock precisely, an importation, received direct, of PHALÆNOPSIS GRANDIFLORA, on blocks, in excellent condition; CYPRIPEDIUM NIVEUM, VANDA HOOKERI; also several other importations of ORCHIDS, including Vanda Lowii, Cypripedium Stonei, C. Lowii, C. Hookeræ, Bolbophyllum Beccari, Arundina species, and an importation of Vanda cœrulea, in splendid condition.

On view the morning of Sale, and Catalogues had.

A Magnificent Importation of Vanda Lowii, splendid pieces, in excellent condition; CYPRIPEDIUM LOWII and STONEI, in strong masses; CYPRIPEDIUM HOOKERÆ, very fine; CALANTHE, new species, with variegated leaves; BOLBOPHYLLUM BECCARI, the finest plants ever imported; CŒLOGYNE PANDURATA, very strong; and many other fine kinds.

MR. J. C. STEVENS has received instructions from Messrs. James Veitch & Sons to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, June 7, at half-past 12 o'Clock precisely, by far the finest importation of the above and other splendid kinds which has ever reached this country from Borneo. All the plants are in splendid condition.

On view the morning of Sale, and Catalogues had. Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

Choice Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 8, at half-past 12 o'Clock precisely, by order of Messrs. Hugh Low & Co., IMPORTED ORCHIDS, just received from Burmah in large quantities, and in the best possible condition, comprising Cypripedium Parishi, Dendrobium Bensoniæ, a grand lot, amongst them a splendid mass, 2 feet across, with upwards of 100 bulbs; D. thyrsiflorum, D. luteolum, D. Parishi, D. capillipes, D. senile, D. primulinum, D. eburneum, Aerides virens Dayanum, Saccolabium Blumei majus, &c.

At the same time will be offered fine plants of Cypripedium Argus, C. Haynaldianum, C. Boxalli, Aerides quinquevulnerum, A. crassifolium, Cattleya Dowiana, Vanda lamellata Boxalli, V. Denisoniana, Cymbidium Lowianum, Dendrobium superbum giganteum, in flower or bud; 200 Cattleya labiata speciosissima varieties, and other choice ORCHIDS.

On view the morning of Sale, and Catalogues had.

Valuable Collection of Established Orchids.

MR. J. C. STEVENS has received instructions from Henry Wilson, Esq., Sheffield, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, June 16 and 17, at half-past 12 o'Clock precisely each day, a valuable collection of ESTABLISHED ORCHIDS, comprising choice specimens of most of the leading and well-known varieties.

May be viewed the morning of Sale, and Catalogues had.

The Floral Hall, Kingsland, N.

To FRUITERERS, FLORISTS, and OTHERS.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, June 7, at 1 o'Clock, the two valuable LEASES, GOODWILL, STOCK, and UTENSILS in trade of the Floral Hall, 374, Kingsland Road, N., occupying a commanding corner position, offering an eligible opportunity for securing a remunerative and old-established Fruiterer's and Florist's business.

Particulars and conditions of Sale may be had on the Premises; of R. H. HARRIS, Esq., 46, Finsbury Circus, E.C.; and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Established and Imported Orchids.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, June 7, 400 lots of ESTABLISHED ORCHIDS, mostly from Private Collections—for Sale without reserve; also valuable Importations of ORCHIDS, consigned direct from Trinidad and Jamaica, just arrived in fine condition. Further particulars next week.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

Acton.

IMPORTANT SALE of FREEHOLD PROPERTY.

Dissolution of Partnership.

MR. J. P. HOPE is favoured with instructions to SELL by AUCTION, at the Mart, Tokenhouse Yard, near the Bank of England, E.C., on TUESDAY, June 1, at 2 o'Clock, the very valuable FREEHOLD PROPERTY, known as the Lecture Hall, well situate in Church Road, Acton, which, being the only public hall in a parish with 15,000 inhabitants, presents an unusual opportunity of securing a first-class investment. Also the double-fronted detached Freehold Villa, with large Garden, Coach-house, and Two-stall Stable, known as St. Mary's Villa, situate in the Park Road North, Acton; and the Freehold Land, nearly an acre in extent, with valuable frontage to Park Road, known as Temperance Nursery, together with the Greenhouses, Furnaces, and Hot-water Apparatus as fixed: the whole forming excellent home and business premises for a Nurseryman, or suitable for the erection of small Houses, which are much in demand. The Nursery Stock, Vans, Horses, &c., can be taken at a fair valuation, or will be Sold by Auction the week after this sale.

Particulars will shortly be ready, and may be obtained of Messrs. RUSSELL, DAVIES AND RUSSELL, Solicitors, 59, Coleman Street, E.C.; Messrs. RUSSELL, SON AND SCOTT, Solicitors, 14, Old Jewry Chambers, E.C.; at the "Station" and "Prince of Wales" Hotels, Acton; at the Mart; and of the Auctioneer, Mr. J. P. HOPE, (opposite) North London Station, Acton, W.

City of Ely, Cambridgeshire.

MESSRS. BIDWELL will SELL by AUCTION, at the Reading Room, Ely, on WEDNESDAY, June 23, at 2 o'Clock punctually, in 22 or more lots, by direction of the Executors of the late Mrs. Sherard, VALUABLE FREEHOLD and COPYHOLD ESTATES, situate in the parishes of Ely Trinity and Ely St. Mary, containing in all 151 a. 0 r. 23 p. of Accommodation, Pasture and Arable Land, close to the City, and the exceedingly valuable property known as "The Vineyards," in the occupation of Mr. T. Pashler, comprising 14 a. 1 r. 21 p. of most fertile and productive Garden Ground, in a high state of cultivation, planted with a choice selection of Apple, Pear, Plum and other Trees in full profit and bearing; a large portion of the ground is also well planted with Gooseberry and Currant Bushes, also about 3 acres of Asparagus Beds. Along the West and North boundaries are high Garden Walls for a distance of about 950 feet, facing East and South, well covered with Wall Fruit Trees, and a substantially built Residence, with Lawn and Pleasure Garden, which stands very pleasantly and commands "The Vineyards," with necessary Offices, Fruit House and Stable.

Particulars, with Plans and Conditions of Sale, may be had at the "Lion" Hotel, Cambridge; the "George" Hotel, Huntingdon; "Great Northern" Hotel, Peterborough; the "Estate Exchange," Tokenhouse Yard, London, E.C.; of E. C. SHERARD, Esq., Solicitor, Oundle, Northamptonshire; and of Messrs. BIDWELL, Land Agents and Surveyors, Ely, and 12, Mill Lane, Cambridge.

WANTED to PURCHASE, the FREEHOLD of a MARKET GARDEN or Small NURSERY, or LAND suitable for the above purpose, in a populous district, within easy distance of a large town of not less than 20,000 inhabitants.

B., 7, Davy Street, Wakefield Road, Bradford, Yorkshire.

Second-Hand Conservatory.

TO BE SOLD, IMMEDIATELY, all the Woodwork, Shelving, Glass and Ventilating Gear of a strong Span-roof Conservatory—size, about 25 feet long by 18 feet wide—at present attached to the mansion belonging to Duncan Graham, Esq., Lydiate House, Willaston, near Hooton, Cheshire, which must be removed at once to enable the contractors (Bennett Bros, Liverpool) to erect a larger conservatory on its site.

For further particulars apply to BENNETT BROS., Horticultural Engineers, Sir Thomas's Buildings, Liverpool.

Ireland.

TO BE SOLD, by Tender, in consequence of death of Proprietor, the Old Established PARK NURSERY, 1 mile from Wexford Railway Station. Contains 7 Acres, 2 Greenhouses, Propagating and Fern Houses, Foreman's Dwelling, also Seed Warehouse in Wexford. In full work: good connection. Farm of 15 acres, convenient, if required. Long leases. Tenders will be received and fuller particulars given by JOHN HINTON, Auctioneer, Wexford.

To Nurserymen and Florists.

TO BE LET, or SOLD, a NURSERY, facing Peckham Rye.

For particulars, apply at Friern Nursery, Peckham Rye, S.E.

Brentford, close to Station.

To FLORISTS and MARKET GARDENERS.

TO BE LET, well planted GARDEN GROUND, of about 2½ acres, with Stabling, Packing Sheds, Greenhouses, Pits, Water Tanks, &c. Immediate possession can be had. For further particulars, terms, and cards to view, apply to

Mr. SAMUEL GODDARD, Auctioneer, 217, High Street, Brentford, Middlesex.

Now Ready—Good Spring-sown Cabbage and Other PLANTS, &c.

GEE'S superior Bedfordshire-grown Plants, &c., grown from his far-famed selected stocks, can again be supplied in any quantities, as follows, for cash with orders:—

CABBAGE PLANTS.—Early Enfield, Nonpareil, Large Drumhead, Thousand-head, and Red Dutch.

SAVOY.—Large Drumhead, and Dwarf Green Curled.

SCOTCH KALE, BRUSSELS SPROUTS, finest.

KOHL RABI.—Large Green.

All the foregoing at 4s. per 1000.

BROCCOLI.—Purple Sprouting, Adams' Early White, Knight's Protecting, and Wilcox's Large Late White, 5s. per 1000.

CAULIFLOWER.—Veitch's Giant, true, 7s. 6d. per 1000; Early London and Walcheren, 6s.

LETTUCE.—Old Brown Cos, Victoria, Drumhead, and Paris Green Cos, all at 5s. per 1000.

Packages 6d. per 1000 extra.

F. GEE, Seed and Plant Grower, Biggleswade, Beds.

BATH and WEST of ENGLAND SOCIETY

(Established 1777) and

SOUTHERN COUNTIES ASSOCIATION.

Patron—His Royal Highness the PRINCE of WALES, K.G.

President—The Right Hon. the EARL of COVENTRY.

WORCESTER MEETING,

June 2, 3, 4, 5 and 7.

GREAT EXHIBITION of STOCK and HORSES, POULTRY, MACHINERY, IMPLEMENTS, WORKS of ART, and HORTICULTURAL SPECIMENS.

COMPETITION of SHOEING SMITHS, &c.

JOSIAH GOODWIN, Sec.,

4, Terrace Walk, Bath, May, 1880.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION, for the Relief of Decayed Farmers, their Widows and Orphans.

Patron—HER MAJESTY THE QUEEN.

President—HIS GRACE THE DUKE OF RICHMOND AND GORDON.

ALLOWANCES to PENSIONERS.

Married	£40 per annum.
Male	£26 "
Widows and unmarried Orphan Daughters	£20 "

Every information to be had of the Secretary, by whom Subscriptions and Donations will be thankfully received.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The TWENTIETH ANNIVERSARY FESTIVAL, in aid of the Funds of the Institution, will take place at Willis's Rooms, on THURSDAY, June 3, at a quarter to 7 o'Clock.

The Right Hon. LORD CARINGTON in the Chair.

Dinner Tickets 21s., application for which must be made to the Secretary.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The ANNUAL GENERAL MEETING will be held at Willis's Rooms, St. James's, on WEDNESDAY, June 16, at 11 o'Clock precisely; and the ELECTION of PENSIONERS will take place on the same day, at half-past 11 o'Clock.

All Subscriptions shall be deemed payable on January 1 in each year; and no Contributor shall vote in respect of an Annual Subscription while the same is in arrear.

Offices of the Institution, 26, Charles Street, Haymarket, S.W.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

J. GRANT AND CO., COMMISSION AGENTS, 33, Catherine Street, Covent Garden, W.C., receive all kinds of FRUIT, FLOWERS, VEGETABLES, PLANTS, BULBS, SEEDS, &c., for immediate SALE. Cash remitted same day as sold.

Exhibition of Rhododendrons.

Royal Botanic Gardens, Regent's Park, N.W.

ANTHONY WATERER'S Exhibition of Rhododendrons in these Gardens will be on view on and after June 1. Admission may be obtained by Orders of Fellows or from the Exhibitor.

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

☞ The fine Standard and other Rhododendrons and Azaleas in Rotten Row, Hyde Park, are from Anthony Waterer.

STRONG SPRING SOWN PLANTS.—Varieties for succession: Cauliflowers, Broccoli, Brussels Sprouts, Savoy, Kale, Cabbage, Red Pickling Cabbage, Lettuce, &c. Best kinds at very low prices, in any quantities.

Mr. EDWARD LEIGH, Norcote Farm, near Guildford.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit.

CARTERS, the Queen's Seedsmen, High Holborn, London.

Stocks and Asters.

MESSRS. BIDDLES AND CO. are offering fine plants of the above, best varieties, at 6d. per score, carriage paid.

The PENNY PACKET SEED COMPANY, Loughborough.

BEDDING PANSIES and VIOLAS, for continuous blooming—Blue Bell, Clevedon Blue, Clevedon Yellow, Tory, Victoria, Waverley; strong plants, from open ground, with abundance of roots, all at 2s. per dozen, or 12s. per 100.

Golden Perpetual (best yellow), Purity (best white), at 3s. per dozen. Carriage paid on all orders above £1.

T. L. MAYOS, Nurseryman, Hereford.

New Hardy Fern.

MICROLEPIA ANTHRISCIFOLIA, a South African Fern, which for delicacy and beauty may be almost compared with the Lace Fern, Cheilanthes elegans; proves perfectly hardy, scores of plants having survived the past two winters with us in the open ground without the slightest artificial protection! It grows freely in any light rich soil, either in shade or full sunshine, and runs underground like the common Bracken, forming very pleasing tufts or edgings of light green, with very highly divided fronds, 6 to 9 inches high. As such it will be found very useful as an Edging for Bedding Plants, as well as for Greenhouse Decoration. That such a Fern should have borne the severe and protracted frost of the winter of 1878–9, and again a temperature of 6½° below zero last winter, with only a few inches of snow, is surprising indeed. We imported this pretty species three or four years ago, and can now offer well-established plants at 1s. 6d. each, or 15s. per dozen.

JAS. BACKHOUSE AND SON, York Nurseries, York.

TEA SCENTED ROSES,

For Planting Out or Greenhouse Culture.

Upwards of 20,000 strong, well established plants, in pots.

List and Prices on application to

CRANSTON'S NURSERY & SEED COMPANY, Limited,

KING'S ACRE, near HEREFORD.

Cheap **Orchids.**

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.
Victoria and Paradise Nurseries, Upper Holloway, London, N.

New Crotons.

IRELAND AND THOMSON have much pleasure in introducing the following superb additions to this splendid tribe of decorative plants :—

CROTON INTERRUPTUM AUREUM.—This is a most distinct and elegant variety. It is a seedling raised at their Craigleith Nursery, originating in a cross between C. interruptum and C. Johannis. It resembles the former most in the form of its foliage, which is interrupted, but being more slender is even more elegant, arching gracefully outwards without the spiral form which characterises that parent. The colour is the deep golden tint of Johannis on a dark olive-green ground colour, the gold predominating. It branches most freely naturally without stopping. For table decoration it is without exception the most elegant and beautiful Croton in cultivation, and is certain to become a favourite exhibition variety. It was awarded a First-class Certificate at the Liverpool Horticultural Association's Show in August, 1879, and was also awarded the same distinction by the Scottish Horticultural Association at the last meeting of its Committee on New Flowers. Price 10*s.* 6*d.* each. Terms to the Trade on application.

CROTON DUKE OF BUCCLEUCH.—Among all the trilobate forms this splendid variety stands pre-eminent for the size and the depth of colouring of its foliage. The origin of the variety is a cross between Disraeli and Johannis, the former being the seed-bearing parent. It has the form of the foliage of Disraeli, with greater size and boldness, thus adapting it admirably for bold specimen plants. The colour is that of Johannis with a deeper tint of gold in the mature leaves, the younger leaves being marbled and suffused with gold and deep olive-green. It was awarded a First-class Certificate at the Royal Horticultural Society's Show at Preston in 1878, also at Edinburgh in 1879. Price 10*s.* 6*d.* each.

Terms to the Trade on application.

Nurseries, Craigleith, Comely Bank, and Royal Exotic, Lynedoch Place; Seed Warehouse, 20, Waterloo Place, Edinburgh.

Cheap Plants.—Special Offer.

WILLIAM BADMAN offers the following Plants :—

PELARGONIUMS—Waltham Seedling, fine crimson; Lucius, salmon, 1*s.* 6*d.* per doz., 10*s.* per 100; Madame Vaucher and Virgo Marie, two best whites, 1*s.* 6*d.* per doz., 12*s.* per 100; Dr. Denny, nearest to blue, fine, 5*s.* per doz. Pelargoniums, in 12 choice varieties, 4*s.* per doz., 25*s.* per 100.
,, SILVER VARIEGATED — May Queen (Turner's), Flower of Spring, 1*s.* 6*d.* per doz., 12*s.* per 100; Princess Alexandra, very fine, silver edge, 2*s.* per doz., 15*s.* per 100; Bijou, 10*s.* per 100.
,, BRONZE—McMahon and Black Douglas, both first-class, 2*s.* 6*d.* per doz., 18*s.* per 100.
LOBELIA—Bluestone (true), strong plants, 1*s.* 6*d.* per doz., 10*s.* per 100; smaller, 2*s.* 6*d.* per 100, 20*s.* per 1000.
AGERATUM—Imperial Dwarf, blue, makes a fine bed, 1*s.* 6*d.* p. doz., 10*s.* p. 100; or from stores, 5*s.* p. 100, 40*s.* p. 1000.
COLEUS Verschaffeltii and IRESINE Lindeni, crimson leaf, very effective, 1*s.* per doz., 6*s.* per 100.
HELIOTROPE—Finest dark, strong, from stores, 1*s.* per doz., 6*s.* per 100.
DAHLIAS—Best sorts, white, yellow, scarlet, dark rose, &c., 2*s.* 6*d.* per doz., 15*s.* per 100, good plants.
TROPÆOLUM—Vesuvius, scarlet, dwarf and free, 10*s.* per 100.
NIPHETOS—Pure white Tea Rose, strong stuff from stores, on own roots, 30*s.* per 100, 5*s.* per doz.

Packing included. Terms cash.
Cemetery Nursery, Gravesend.

MESSRS. THOMAS CRIPPS AND SON are now sending out the undermentioned three new CLEMATISES, all of the viticella or Jackmanni section :—

EARL BEACONSFIELD (T. Cripps & Son).—A splendid hybrid, described in the *Gardeners' Chronicle*, June 22, 1878, as "a beautiful flower of a rich royal purple colour, and splendid form. This variety belongs to the viticella type, and is remarkably richly coloured." First-class Certificate Royal Horticultural Society. Price 15*s.* each.

LILACINA FLORIBUNDA (T. Cripps & Son).—Pale grey-lilac, deeply veined: flowers the size of C. Jackmanni, but having six petals and of perfect shape. This is the lightest variety and most abundant bloomer in this section. An admirable contrast to C. Jackmanni for bedding purposes. Price 10*s.* 6*d.* each.

OTHELLO (T. Cripps & Son).—Flowers medium, a good shaped six-petalled variety. Late and very free flowering: colour dark velvety purple. Price 10*s.* 6*d.*

Discount to the Trade.

Plates of "Earl Beaconsfield" and "lilacina grandiflora," 2*s.* 6*d.* each.

The Tunbridge Wells Nurseries, Kent.

Vines—Vines—Vines.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, has still on hand a fine Stock of Fruiting and Planting CANES of Muscat of Alexandria, Bowood Muscat, Mrs. Pince, Gros Guillaume, Burchardt's Prince, and Madresfield Court. Also Planting Canes of several other varieties. CATALOGUE free. The Trade supplied.

Primulas — Primulas — Primulas.

Eleventh Year of Distribution.

WILLIAMS' superb strain, 1*s.* 6*d.* per dozen, 10*s.* per 100; package and carriage free.
CINERARIAS, choicest assortment, same size and price.
The above are quite equal to those I have sent out in previous years. Cash with order.
JOHN STEVENS, The Nurseries, Coventry.

Verbenas—50,000 Now Ready for Sale.

S. BIDE can now supply, as he has done on previous occasions, really good strong spring-struck Plants of Purple, Scarlet, White, and Pink VERBENAS, at 6*s.* per 100. Good Exhibition Varieties, 8*s.* per 100. IRESINE LINDENI, 6*s.* per 100. HELIOTROPE, 6*s.* per 100. COLEUS VERSCHAFFELTII, 8*s.* per 100. MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATA, 8*s.* per 100. Package free for cash with order.
Also strong healthy CUTTINGS of the above at half-price, free by post.
S. BIDE, Alma Nursery, Farnham, Surrey.

By Permission of the Hon. Board of Customs.

(Free of Duty.)

CORRY & SOPER'S NICOTINE SOAP

(PATENT).

An effectual and speedy Eradicator of

Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight,

and all

Parasites affecting Plants, without Injury to Foliage.

It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.

Especially adapted for the Destruction of Blight on the Coffee Plant.

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general INSECTICIDE.

It has now undergone a thorough test by some of the most Practical Men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with PERFECT SAFETY TO FOLIAGE.

It may be used as a Dip or Wash for any description of Out or Indoor Plants, and as a Dressing for the Bark of Fruit Trees, Vines, &c., it has no equal.

Some hundreds of Testimonials lately received from men of considerable experience throughout the Kingdom.

Sold in Jars, 8 oz., price 1s. 6d.; 20 oz., price 3s.; and in Tins, 14 lb., price 15s. 6d.; and Drums, 28 lb., price 25s.; 56 lb., price 50s.; 112 lb., 95s. Full directions for use on each package.

And 2 ounce Sample Jars, 6d. each.

Full directions for use on each package.

Manufacturers of TOBACCO POWDER, TOBACCO JUICE (duty free), TOBACCO PAPER and CLOTH, and HORTICULTURAL SUNDRIESMEN.

May be obtained from all Seedsmen and Florists.

Wholesale from the Manufacturers,

CORRY & SOPER,

BONDED TOBACCO STORES,

SHAD THAMES LONDON, S.E.

Bedding Plants, &c.—Notice.

WOOD AND INGRAM beg to offer their very fine stock of Variegated, Zonal, and other Geraniums, Verbenas, Centaureas, Hollyhocks, Alternantheras, Calceolarias, Iresines, Lobelias, and all varieties of the most useful BEDDING PLANTS. Also the following, in 5-inch pots:—Pelargoniums, 8*s.* per dozen, 60*s.* per 100; Herbaceous Calceolarias, 8*s.* per dozen, 60*s.* per 100; Fuchsias, 4*s.* per dozen, 30*s.* per 100; Tree Carnations, in bud, 12*s.* to 18*s.* per dozen, 80*s.* per 100. For prices of Bedding Plants see Special Trade Offer, which will be sent, free by post, on application.
The Nurseries, Huntingdon, and St. Neots.

New Japanese Azalea.

AZALEA ROSÆFLORA.—This beautiful species, which is now offered for the first time, differs from every other Azalea in cultivation. The flowers in the bud resemble those of a miniature Tea Rose, whilst as they expand they regularly imbricate like those of a Camellia. These qualities, combined with the fact that it does not fall off, render it invaluable for cut flowers, bouquets, as well as for exhibition and general decorative purposes. It is compact and free in growth, and much branched; colour deep rosy-red.
First size, 6 inches high, some in flower, 10*s.* 6*d.*
Second size, 6 to 9 inches high, some in flower, 21*s.*
Third size, 1 foot high, many in flower, 31*s.* 6*d.*
WM. HUGH GOWER (Manager to the late Wm. Rollisson & Son), The Nurseries, Tooting, S.W.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

To the Trade,

HOME-GROWN TURNIP SEEDS.

H. AND F. SHARPE invite the attention of the Trade to their fine selected Stocks of TURNIP SEEDS, which comprise, amongst others, the following excellent varieties, viz.:—

Sharpe's Improved Large Swede	Sutton's Mammoth Purple-top
Sharpe's West Norfolk Swede	Devonshire Grey Stone
Sutton's Champion Swede	Pomeranian White Globe
East Lothian Swede	Lincolnshire Red Round
Green-top Yellow Aberdeen	Stratton Green Round
Golden Yellow Aberdeen	White Stone or Stubble

The quality is very fine, and the prices will be found very advantageous to purchasers. For further particulars apply to
Seed Growing Establishment, Wisbech.

VIOLAS, 20,000 fine strong plants :—
,, cornuta, white } 5*s.* per 100, 45*s.* per 1000.
,, ,, Queen of Blues, }
LOBELIA, Emperor William, strong autumn-struck, from stores, 2*s.* 6*d.* per 100, 20*s.* per 1000; from single pots, 5*s.* per 100, 45*s.* per 1000.
Cash only. Carriage and package free.
H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

Myosotis elegantissima.

The new Silver-edged, Blue-flowered Forget-me-not.

RODGER, McCLELLAND AND CO. are now sending out this superb Novelty for the Spring Garden. Good plants 3*s.* 6*d.* each, 36*s.* per dozen. Can be sent by post. 64, Hill Street, Newry.

MATRICARIA INODORA PLENA
(NEW DOUBLE MAY-WEED).

Figured in *Gardeners' Chronicle* of December 13, 1879.
Will bear the severest winter without protection. If grown in a rich border it will flower in the greatest profusion from June till October, and the flowers, which are pure white, are equal to those of a Pompon Chrysanthemum. It is invaluable for cutting. 1*s.* 6*d.* each, 12*s.* per dozen, 75*s.* per 100. Engraving sent with three plants. The usual discount to the Trade.—Messrs. DICKSONS AND CO., 1, Waterloo Place, Edinburgh.

BEDDING PLANTS, &c.

GERANIUMS, Bedding, Zonal and Nosegay, in choice sorts, our selection, 2*s.* 6*d.* and 3*s.* per dozen, 16*s.* and 20*s.* per 100.
GERANIUMS, Bedding, Bicolor varieties, 3*s.*, 3*s.* 6*d.*, and 4*s.* per dozen.
,, choice, for pot culture in summer or winter, twelve fine varieties, 4*s.* and 6*s.*
Our collection is second to none, including the best sorts from all raisers, home or foreign.
AGERATUMS and LOBELIAS, strong, and well hardened off from stores, 1*s.* per dozen, 5*s.* per 100.
,, ,, in pots, 2*s.* per dozen, 12*s.* per 100.
CALCEOLARIA, Golden Gem, 2*s.* per dozen.
DACTYLIS ELEGANTISSIMA, GOLDEN PYRETHRUM, SEDUMS of sorts, for Carpet Bedding, 1*s.* per dozen, 6*s.* per 100.
HELIOTROPES, COLEUS, TROPÆOLUMS, and SALVIAS, fine named sorts, 2*s.* per dozen, 12*s.* per 100.
ANTIRRHINUMS, PHLOXES, PANSIES, and PINKS, fine named sorts, 3*s.* per dozen; 12 of each, 48 in all, 11*s.*
ALTERNANTHERAS and IRESINES, of sorts, 2*s.* 6*d.* per dozen, 15*s.* per 100.
BEGONIAS, Tuberous, in great variety, 4*s.*, 6*s.*, 9*s.*, and 12*s.* per dozen.
CENTAUREA RAGUSINA, 3*s.* 6*d.* per dozen.
CHRYSANTHEMUMS and FUCHSIAS in variety, 2*s.* 6*d.* per dozen, 15*s.* per 100.
HERBACEOUS and ALPINE PLANTS, 12 in 12 sorts, 4*s.*; 50 in 50 sorts, 12*s.*
DELPHINIUM, fine sorts, to name, 6*s.* per dozen.
PANSIES and VIOLAS, for bedding, in great variety, 2*s.* per dozen, 12*s.* per 100.
PLANTS, Stove, in great variety, 6*s.*, 9*s.*, and 12*s.* per dozen, our selection.
,, Greenhouse, 6*s.*, 9*s.*, and 12*s.* per dozen, our selection.
FERNS, Stove or Greenhouse, 9*s.* and 12*s.* per dozen, our selection.
CATALOGUES post-free.
WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

HELLEBORUS NIGER, the Christmas Rose. This beautiful white flower, coming to perfection at Christmas time, is already much too little grown, being hitherto too scarce and dear. Millions of its fine blossoms should be ready for the markets in mid-winter, where only hundreds are now to be found, and would always prove the most profitable thing it is possible to grow. It requires no heat nor care. We are prepared to supply for immediate orders any quantity of fine roots at one-sixth the usual prices, and we believe that investment in them will prove the finest speculation possible. For terms apply to
HOOPER AND CO., Covent Garden, London, W.C.

MESSRS. BECKWITH AND SON are now sending out their GENERAL COLLECTION of DECORATIVE PELARGONIUMS, in upwards of 100 varieties; most of which may be had either fully in, or just coming into bloom. Price, £5 per 100, delivered to any Termini in London. No charge for packing.
Tottenham Nursery, London.

EVERY ONE LIKES A VERBENA.

ALL who have not seen my magnificent stands of Phlox-like VERBENAS at the London Shows and wish to possess the finest varieties, deliciously fragrant (no comparison with those formerly seen), should order now. Fine plants, 4s. per dozen; 50 sent for 14s., 100 for 24s.

H. CANNELL begs to announce that his COCKSCOMBS, BALSAMS, and PETUNIAS are now in small pots, and just ready for a shift into their blooming pots. All who wish to excel in these should order at once before they become pot-bound. 3s. per doz., 50 for 1s. All of H. Cannell's best strains, and will be sure to give satisfaction.

Paris Daisies (Marguerites).

CHRYSANTHEMUM FRUTESCENS (White), best bedder.
CHRYSANTHEMUM CORONARIUM ALBUM (White), best for cut flowers.
" " LUTEUM (Yellow), best for cut flowers.
" ETOILE D'OR (largest Yellow).
Post-free, 1s. each, price per dozen or 100 on application.

Phloxes, Violas, and Cannas.

H. CANNELL has a large stock of the above, and of all the best varieties, and can supply them in large or small quantities.
The *Journal of Horticulture* says, "Violas at Swanley are magnificent, no other term doing justice to the rich masses of colour."

Zonal Pelargoniums.

IT must be admitted that a Bedding and Winter-blooming Zonal superior to Master Christine is a gift to floriculture, and it is, therefore, with great pleasure I now offer NEWLANDS MARY, which is certainly by far the best bedding Pink in cultivation.
Price 1s. each, 10s. per dozen.

THE HOME FOR FLOWERS,
SWANLEY, KENT.

DANIELS' Unrivalled Strains of Choice FLORISTS' FLOWER SEEDS, post-free.

☞ *In the rearing of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few plants from seed of the choicest quality, than from a large quantity raised from seed of an inferior description.*

FOR PRESENT SOWING. *Per pkt.—s. d.*

AURICULA, Daniels' Prize Alpine		1 0
CARNATION and PICOTEE, from stage flowers, very choice	2s. 6d. and	5 0
" " yellow varieties		2 6
CALCEOLARIA, Daniels' Superb Prize	1s. 6d., 2s. 6d. and	5 0
CINERARIA	1s. 6d., 2s. 6d. and	5 0
GLOXINIA HYBRIDA, magnificent	1s. 6d. and	2 6
PRIMULA, Daniels' choicest red	1s. 6d and	2 6
" " " white	1s. 6d. and	2 6
" " " mixed	1s. 6d., 2s. 6d. and	5 0
" " Fern-leaved	1s. 6d. and	2 6
" " Superb double	2s. 6d. and	5 0
PANSY, Daniels' Show and Fancy	1s. 6d. and	2 6
" " superb blotched, magnificent	2s. 6d. and	5 0
" " improved striped		2 6
POLYANTHUS, fine gold-laced		1 0
PRIMROSE, hardy, beautiful varieties, mixed		1 0
SWEET WILLIAM, Daniels' Prize		1 0

DANIELS BROS.,
ROYAL NORFOLK SEED ESTABLISHMENT,
NORWICH.

CABBAGE PLANTS, &c.

CABBAGE, SAVOY, CAULIFLOWER, BRUSSELS SPROUTS, BROCCOLI, CELERY.

List of sorts and prices on application. to
CRANSTON'S NURSERY and SEED COMPANY
(Limited), King's Acre, Hereford.

NEW YELLOW FRENCH MARGUERITE,

CHRYSANTHEMUM ETOILE D'OR.

Awarded a First-class Certificate by the Floral Committee of the Royal Horticultural Society, Botanic, and other places.

A splendid Conservatory Plant, blooming profusely all the year; flowers excellent for cutting.

Equally adapted for Bedding in the Flower Garden in Summer.

Now being sent out, 24s. and 36s. per dozen, strong plants, in flower and bud.

W. HOWARD,
FLORIST, SOUTHGATE, LONDON, N.

Orders to be accompanied by a Cheque or Post-office Order.

NOTICE.

TO INTENDING PLANTERS OF AMERICAN SHRUBS NEXT AUTUMN.

On account of the approaching expiration of the Lease of a portion of "The Fulham Nurseries," the famous old

AMERICAN and GHENT AZALEAS,

so often referred to in the Horticultural Journals (*vide* the *Garden*, April 19, 1879), will be sold. They are now in full beauty, and vary in size from 4 to 7 feet high, and as much through.

ALSO SEVERAL HANDSOME SPECIMEN RHODODENDRONS.

An Inspection is invited.

OSBORN & SONS,
THE FULHAM NURSERIES, LONDON, S.W.

SELECT INDEX OF PLANTS

The Publisher of the *Gardeners' Chronicle* recommends Subscribers who wish to have extra Copies of the Numbers containing the

SELECT INDEX of PLANTS from 1841 to THE END of 1878,

TO SECURE THEM AT ONCE.

The following is a List of those already published:—

1879.—October 11	1879.—November 29	1880.—February 7, 21
" 25	December 13	March 20, 27
November 8	1880.—January 10	April 3
" 15	" 24	May .. 8, 29

Price 5d. each, post-free 5½d.

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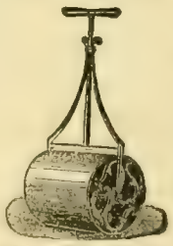

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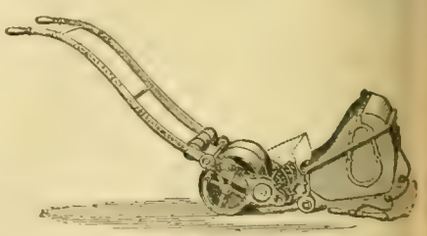

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MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, May 31, at half-past 12 o'Clock precisely, a fine lot of this splendid MASDEVALLIA, described in *Gardeners' Chronicle*, May 1. Professor Dr. Reichenbach says :—" What is Masdevallia rosea ? some of our readers may ask. Well, it is a peculiar type of Masdevallia, quite distinct from any species we have, bearing flowers of a length of 11 centimetres. The even sepals are 3 centimetres broad, of a most lovely rich rose-purple, the long tube of an exquisite purple-scarlet. Dr. Lindley sketches it : 'Flowers pink, 2 inches long, very showy.' This glorious thing, so long desired, was saved from the wrecked ship, *Para*, at St. Michael's, Azores, by our friend F. C. Lehmann. The very few plants will appear at Mr. Stevens' Rooms, to make their European *début*. We hope to give soon further details and a woodcut of the Queen of Masdevallias. This Masdevallia is most difficult to import, and to Mr. Lehmann's energy and skill we owe that now it is alive in Europe."

The Sale will also contain a fine lot of ODONTOGLOSSUM ALEXANDRÆ LEHMANNI, O. VEXILLARIUM LEHMANNI, O. LUTEO-PURPUREUM, various DENDROBIUMS, CŒLOGYNES, ODONTOGLOTS, ONCIDIUMS, and other ORCHIDS.

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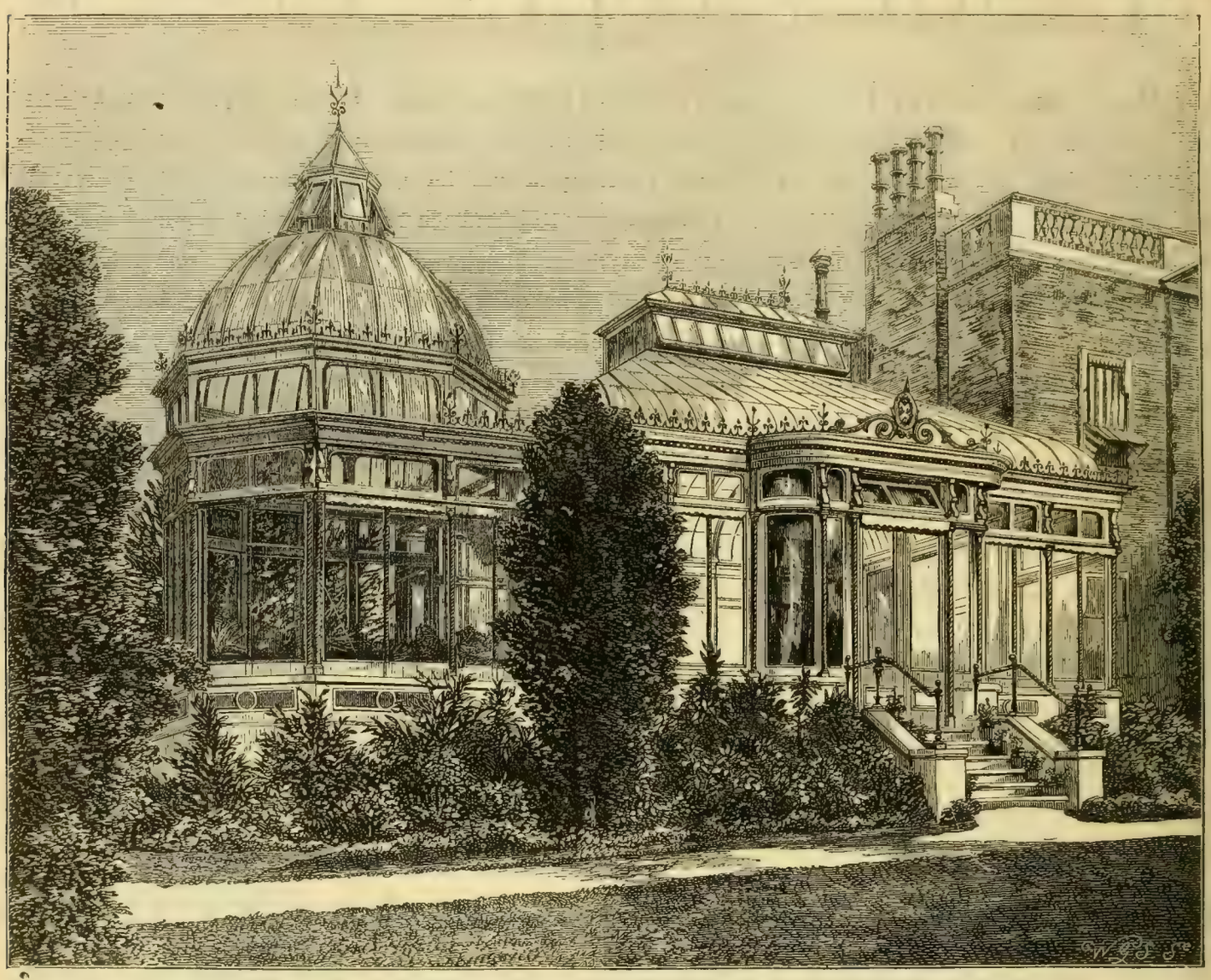

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This handsome structure, which, by the aid of Photographs, we are able to illustrate, has been erected for S. PAGE, Esq., by J. WEEKS AND CO., of Chelsea, who have long occupied a prominent position amongst Horticultural Builders and Engineers. We are indebted to this firm for the opportunity of showing how greatly taste in designing such structures has improved. We look upon this as a model structure of its particular type. It is a structure which might be copied in a complete or modified form as an appendage to any good villa or small mansion, which it would most tastefully embellish, and, if somewhat amplified, might be made to adorn a more stately home. The interior, instead of having the centre occupied by stages for pot plants, or beds for planting out, is kept open for promenading. The angles are filled with tastefully selected groups of plants, and the roof furnished and festooned with choice creepers, while the front part is provided with a low stage, next the upright sashes, for choice flowering plants. Basket plants are suspended here and there from the roof, and specimen Palms, Tree Ferns, and other effective subjects set in appropriate positions, so that one might walk in and out amongst or beneath them; while there is still maintained that luxurious breadth and freedom, which under such circumstances is so enjoyable.

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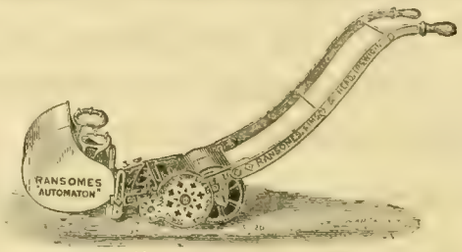

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THE

Gardeners' Chronicle.

SATURDAY, MAY 29, 1880.

LOUGHTON.

LAST year, when autumn was lighting with a bronzy hue the foliage of the Beech trees in Epping Forest, and lengthening shadows announced the close of an all too short day, the hope was framed that, sooner or later, the time would come when a second visit might be paid to the Forest and to the nurseries therein contained. And now the time has come. The tender young green of the feathery Hornbeams, the translucent shade of the Beech trees, are scarcely if any less lovely than were the autumn tints. Can anything be more beautiful than the varied hues of green?—grass-green and emerald-green in the pastures, greenish-yellow in the young Oaks and Hornbeams, black-green in the Hollies, and all backed up, when we saw them, with rich purple clouds threatening the rain which did not come. The near view comprised innumerable pollards—Oak, Beech, Hornbeam—no two alike, but all grotesque and fantastic, and now capped with a head-gear of loveliness, contrasting strongly with the dark Hollies. The undergrowth is carpeted with yellow prickly Genista (G. anglica), with pink Pedicularis, with white Milkwort (Polygala vulgaris) (why all white?), with the Butcher's Broom (Ruscus), with the tiny Montia fontana, with Polytrichum and Sphagnum, and with a Scotch Cryptogam, pointed out last autumn by sympathising eyes, and mentioned now again; because, far from being limited to the one spot where friendly eyes pointed it out, it may be found spreading amid the grass in many places. But we are not going to tell its name and address to the profane. We will whisper them to the free and accepted botanist, the man who can look and respect, but to the ruthless destroyer—never. Suffice it to say that it is a real joy to find it scattered, not sparingly, in many places, albeit it finds no place in any recent local flora. Threading our way carefully through and between the endless rows of dwarfed trees that reminded us of so many grotesque gnomes, treading warily where Sphagnum and Drosera revealed the unsubstantial bog, we came across occasional traces of civilisation in the form of orange-peel, and the hard shell of the Cocoa-nut—even broken bottles were not absent. Ah! what a change from the time when Boadicea marshalled her plucky body-guard within the compass of this old encampment within whose still visible encircling bank we stood. Orange-peel, cocoa-nut-shell, and specially broken glass, are not quite what we like to see in the Forest, but think of that queen, brave as she was, a mere savage, and remember what a change for the better the orange-peel and the other etceteras represent. Think of the Roman legions who found her so tough an antagonist. They knew and could know no Oranges out of Italy, no Cocoa-nut ever tempted their appetites or induced a trial of hand and eye—glass had they, but the foam of Bass, the sparkle of Alsopp, were to them un-

known. Still threading our way, arms outstretched and head bent down, to escape, if haply we might, the Briers, we emerged into a green glade, and there on the grass found a family party—some East-end artisan—his helpmeet and their children around him all dressed in Sunday best. There was the secret of the orange-peel and the Cocoa-nut. We had traced them to their source. The mind is almost incapable of filling in the vast changeful interval between Boadicea and an East-end artisan. Stay! the one connecting touch of Nature is not absent—it never is. The boy of the party, so soon as his mouth was sufficiently freed from the pleasing exercise of satiating hunger, whooped at intervals a loud "'ooray," for no conceivable reason that we could find, save the mere joyousness of his heart and the pleasure of being among the trees, and the birds, and the flowers, so different from the sights and scenes to which he was accustomed. The mother affected to restrain him, but it was clear to see that her sympathies were in full accord with those of her boy, and it was only matronly dignity which impelled her to remain silent. It was a sight to do the heart of a Lord Mayor good; it was a sight to touch even the sensibilities of the irrepressible "Monckton." However, so far as we are concerned, it was only an incident in the day's work, and had as much to do with horticulture as Boadicea herself.

Should any one want to find the camp aforesaid it will not do to trust to local guides; an old peasant searching for a wandering calf, not yet provided, Swiss fashion, with a bell like its dam, and who had lived all his life close to the camp, as it turned out, had never "heerd talk of it;" another suggested the rifle butts near High Beech as the desired spot. Suffice it to say it is on the Epping side, and within half a mile of the "Robin Hood" inn, in the heart of the wood, and is, after all, not so difficult to find to those who know how to look.

Here and there are other traces of man's hands, in the form of ugly gashes, which ultimately will develope into roads, drives, and avenues, but which now are hideous scars. Along these roads we may hope anon to have fine avenues of noble trees, and on bluffs and in clearances we may look for clusters of trees and shrubs, which shall yield colour to diversify what must in full summer-tide be monotonously green. There is plenty of room for judicious planting and wild gardening of this sort without interfering in the least with the natural wildness of the Forest. The pollards are fantastic and grotesque, but a forest all pollards needs a large admixture of healthy uncrippled trees. You have only to experience the pleasure that is felt when the eye rests on the Beech trees at High Beech, or the Oaks near Chingford, to see how great is the charm of looking at well-grown trees after inspecting a whole army of cripples.

This is a rather long introduction to the main object of our visit—the nursery of Messrs. W. Paul & Son at Loughton—but there is ample excuse for it — the beauty of the forest, the friendly cuckoo, the sweet, full-toned nightingale: in and among these is the nursery situate, and did not its proprietor descant not long since, learnedly and judiciously, as he might be expected to do, on the proper treatment of the Forest in the future? and was it not a duty to verify his conclusions on the spot? Of course, as might be expected, we retained our own opinion that Mr. Paul, as it seemed to us when we read his paper and seems to us now, in his laudably careful reticence rather undervalued the aid which the planter—the judicious planter—and no other should be allowed to set foot in the Forest—may render in enhancing its many beauties. A judicious planter, and one with a love of his art, and of the materials with which he has to deal, and with a knowledge of the conditions he has to fulfil, will never make the fatal mistake of turning a forest into a pleasure garden.

The nursery is an annexe to the better known one at Waltham, the home of Roses and Conifers, of Camellias and ornamental trees. It is the store-room, the nursery in fact, where one does not expect the symmetry and neatness of the drawing-room, but which for that very reason is more attractive to the initiated. One does not always want to see plants on parade; it is more instructive to see them as it were behind the scenes. It will be judged from what has been said that the contents of this nursery are what might be expected from a firm with a well-earned reputation for ornamental trees and shrubs. Roses, another speciality of Mr. W. Paul, are not grown here—the visitor must betake himself to Waltham for these; but if he wants to see well-grown Hollies and golden Yews, he might do much worse than go to Loughton. Among the Hollies, specially good here, we noted the varieties Hodginsii, Shepherdii, maderensis, Golden Queen, Waterer's Dwarf worked on the common Holly as a standard, and making fine compact heads; donningtonensis, the very distinct I. opaca, and many others. The Cheshunt Yew may be noted for its close pyramidal habit, and grown as it is here, in association with the golden Yew, is very striking and effective.

Rhododendrons and American plants generally are grown in considerable quantities. An avenue now in course of construction, and lined with specimen plants of the best named varieties, already shows the kind of effect that the growth of another season or two will produce. Some people fancy that Rhododendrons will not grow kindly on stiff clay, but a visit to this nursery will undeceive them. It is fair to say, however, that cocoa-nut fibre refuse is used in considerable quantities to lighten the soil. A fine piece of Andromeda floribunda may be mentioned in this connection. Conifers, or some of them, do well here; the Deodar Cedar in great beauty and quite unhurt by frost; the sturdy Abies Nordmanniana, the stately Libocedrus decurrens, Juniperus virginiana glauca, Abies nobilis, Cupressus Lawsoniana, Thuyopsis dolabrata, exceptionally fine; Cryptomeria elegans, rich in colour and wholly unhurt by the winter: Cupressus macrocarpa, on the other hand, has suffered severely, as have Laurustinus, Arbutus, Japan Euonymus, and common Laurels. On the other hand, the varieties caucasica and ovata are not in the least affected, a circumstance which the intending planter will take note of. Ligustrum coriaceum, Berberis Darwinii and stenophylla, the Skimmias japonica and oblata—the latter one of the best dwarf evergreens, and the Osmanthus have passed the ordeal safely, while the Raphiolepis is badly hit.

The Handsworth Box may be mentioned for its hardiness, its fine habit, and the rich red colour often assumed by its foliage.

We have not space to mention more of the contents of this nursery, but enough has been said to justify the decision of the arbitrator in retaining this enclosure on the condition that the public have free access to this as to the other parts of the Forest. The interest of such a nursery and its special value as an experimental ground are too obvious to need further comment. *The Rambler.*

New Garden Plants.

Brassia (Glumaceæ) euodes.*

This belongs to the small but difficult group of Brassia glumacea, and looks very like it. The flowers have the ends of the sepals and petals of a neat yellow, or yellowish colour; the column is marbled with purple, and the upper part of it in front is purple; lip yellowish. All the sepals and petals, except the tips, brownish-red. This colour may be the last state, as is observable in various Brassias. I am unable to say whether the flowers were distinctly coloured earlier. They have a beautiful smell, whence the name is given. Mr. Backhouse, Holgate House, York, imported from New Granada this species—which is quite distinct in the keels of the lip—and was so very kind as to send a whole plant (with four other well-grown species), most successfully packed against frost, to assist me in understanding its features. Many thanks for such unusual kindness. *H. G. Rchb. f.*

Fig. 117.—Flower of Masdevallia rosea ¯ nat. size. (see p. 681.)

Cypripedium Petri, *Rchb. f., n.sp.*†

This is very near Mr. Day's Cypripedium, yet fresh materials just at hand confirm the first impression, which I wrote in February last to Mr. Harry Veitch, that it must be regarded as distinct. Its leaves have a darker ground colour and just those far darker, square green paintings, which are so characteristic in the affinity. The whole flower is smaller, shorter. Sepals white with green veins, very distinct in outline, much shorter than in the species I first dedicated to my most assiduous correspondent. Petals light brownish, green at the base, ligulate acute, straight or cuneate, acuminate, covered on the whole border with long hairs, just as in Cypripedium Dayanum. Lip greenish-brown, with dark sepia-brown on the front part of

* *Brassia* (*Glumaceæ*) *euodes*—Folius oblongo-ligulatis acutis pseudobulbis parvos prope triangulos ancipites anthesi omnino involventibus; pedunculo folia suprema subæquante racemoso pauciflora; bracteis spathaceis ovaria pedicellata non omnino æquantibus; sepalis linearibus acuminatis, tepalis subæqualibus minoribus; labello oblongo apice abrupte aristato; carinis baseos semioblongis supra medium abrupte angulatis, puberulis; lineis incrassatis antepositis, totis carinis cum basi labelli genuflexi in basin columnæ impressis.—*Oncidium euodes.* Neo Granada. Imp. cl. Backhouse. *H. G. Rchb. f.*

† *Cypripedium Petri*, n. sp.—Aff. Cypripedio Dayano: labelli sacco magis conico, sepalis brevioribus, sepalo impari triangulo acuto, sepalo inferiori ligulato acuto triangulo; labello subduplo breviori; tepalis brevioribus rectis seu acuminatis; staminodio subrhombeo. *H. G. Rchb. f.*

the disc, or totally of that colour, yet always, it would appear, with green angles. Warts on the border of involved base nearly purple. Staminode light green with some dark green veins. If there were not several other marks of distinction (in addition to the totally distinct colour of the flowers) it would be well distinguishable by the relative length of the sepals and petals.

This is a discovery of Messrs. Peter Veitch and F. W. Burbidge, made in the Malayan Archipelago. It only bears the name of one of those gentlemen. *H. G. Rchb. f.*

MASDEVALLIA XANTHINA, *n. sp.**

This is a rather pretty Masdevallia, with bright yellow flowers and some dark violet at the very base of even sepals, which are a little narrower than the odd one. Small petals whitish. Lip yellowish, with a dark knob at the apex. It has been believed in England to be Masdevallia Wageneriana, Lindl. No doubt there is a certain similarity between the two, but this suggestion is founded on a mistake. That species is really well represented in *Bot. Mag.*, 4921, which shows the best feature, the triangular nicely toothletted blade of the lip, while our plant has a nearly square, entire blade. The figure in Paxton's *Flower Garden*, iii., p. 74, is a very indifferent one, almost good for nothing, giving the impression of the flower being shut. I have to thank for this the Messrs. Veitch, of Chelsea. *H. G. Rchb. f.*

MANCHESTER WHIT-WEEK SHOW.—During the seven days on which this show was open to the public, we learn that it was visited by nearly 60,000 persons. It has consequently been a very successful enterprise.

* *Masdevallia xanthina.*—Aff. M. Wagenerianæ: folio a petiolari basi cuneato-oblongo obtusissime acutiusculo; floris sepalis omnino expansis; sepalo impari ligulato oblongo galeato in caudam longiorem extenso, sepalis paribus paulo angustioribus, omnibus sub-caudis retusiusculis, antico carinatis, basi angulatis; labelli ungue ante laminam utrinque constricto; lamina cuneato-oblonga retusa medio apiculata trinervi; columna apice tridentata. Subduplo major quam Masdevallia Wageneriana. *H. G. Rchb. f.*

MASDEVALLIA ROSEA.

OUR illustrations, figs. 117, 118, taken from a sketch by M. Lehmann, represent this lovely Masdevallia, which, though old in one sense, may yet be described as new. The history of the plant has more than once been given in our columns by Professor Reichenbach (see p. 648). Suffice it now to say that it resembles a rose-coloured M. Harryana.

FIG. 118.—MASDEVALLIA ROSEA: MUCH REDUCED. FLOWERS ROSE-PINK.

A HAMPSHIRE GARDEN.

ABOUT 4 miles from Romsey and 8 from Southampton, on the borders of the New Forest, pleasantly situated in a park of some 400 acres, lies Paultons House, the seat of H. Sloane-Stanley, Esq. The gardens are commodiously and conveniently situated at the western side of the park. An occasional visit to our neighbour's or friend's garden not only extend our personal acquaintances or unites them more closely, it does more. It often extends our knowlege and brings us into contact with features which may shadow forth ideas which, if not useful at the present time, may be of the utmost importance hereafter if properly turned to account. I was struck with many features at Paultons during a recent visit, not the least of which was the beautiful undulating surfaces which gradually ascend and descend into hill and dale by slow gradients so as not to render the landscape abrupt at any given point. The park is moderately wooded with groups of trees, and single specimens are tastefully dotted about. There is a lake which is fed from two sources in the forest a short distance from the house, and here I must begin with my few practical notes.

I observe the lake takes a gentle sweep past the house, and this seems to have been the key to all the planting operations in the pleasure grounds, as, indeed, in every other part of the garden. Everything is arranged in the free-and-easy style, an irregular belt of shubbery border here, a group of trees there. There are no abrupt twists and turns, and yet the visitor meets with an occasional unexpected treat in rounding a curve where are a medley group of hardy plants in a secluded nook or mayhap a narrow border of spring flowering plants, the ingress to which is by a narrow footpath dividing two shrubbery plantations and having communication with two sides of the grounds.

Paultons cannot be said to be noteworthy for specialities, but the visitor may note many things pregnant with instruction, both in regard to varied tone and character, that may be enjoyed in a moderate sized garden, as well as many practical hints upon the treatment of plants that are too frequently seen in very indifferent condition through over-coddling. On a lawn near the house is a huge Cedar of Lebanon, the branches of which are said to cover an area of over 80 yards in circumference. The chain of shrubbery borders and beds which margin the lake side are good practical examples of taste and skill in formation and planting. Fine plants of Arundo Donax and A. conspicua find an appropriate home here, and Magnolias just opening their flowers are accorded suitable situations, where their beauty can be enjoyed to the full. Not the least interesting feature in this part of the grounds is a small alpine rockery and several beds of hardy Heaths, of which Erica codonodes is one of the most useful for purposes of cutting.

The flower garden (a small one) is of simple design, and its close proximity to the simple rockery and single beds of hardy plants proves that "where there's a will there's a way," and that no branch of gardening need be sacrificed for the sake of another, while there is room for all.

Proceeding from this point to the fruit garden, I jotted down the names of several varieties of Pears and Apples out of a fine collection of standard trained trees, which were in full blossom at the time of my visit, and which promised (weather permitting) to bear a fair crop of fruit. The Pears are Beurré Diel, Fondante d'Automne, Duchesse d'Angoulême, Beurré Clairgeau, and Beurré Superfin. Apples: Stirling Castle, Lord Suffield, Packhorse Pippin, Mannington's Pearmain, New Hawthornden, Gravenstein, Fearn's Pippin, Beauty of Kent, Dutch Mignonne, Ecklinville Pippin, and Tower of Glamis. The trees are planted upon mounds of earth slightly raised above the natural ground-level, in consequence of the situation being damp in wet seasons, and are heavily mulched, in order to encourage root extension near to the surface. I am bound, however, to admit that here, as elsewhere, the old-fashioned trees that have been taking care of themselves up among the skylarks and swallows are best clad with blossoms, and promise to yield by far the largest supply of fruit.

There are two fruit and kitchen gardens at Paultons, each 2½ acres in extent. One garden is entirely walled in, and the second partly so, and both are in perfect order and skilfully and abundantly cropped. The glass structures are well stocked with fruit trees and plants in their respective departments. Early crops of Strawberries have been very good, and Peaches promise to be of the same excellence. A house of young Muscat Vines planted in the spring of 1878, which produced a crop last year, are really good examples of Vine culture, but it is of a house of Vines planted in an outside border in the month of June, 1878, and lifted in November last year (1879) that Mr. Todd, the head gardener, has most reason to be proud. The Vines in question were lifted through an alteration being made in the garden, and replanted in an inside border "without shortening back the canes;" and the Vines have not only broken regularly this year from the top to the bottom of the house, but are also carrying a nice crop of fruit—a fact which proves the skill with which the operation of lifting and replanting the Vines was carried out, as also the subsequent treatment. In one of the vineries I noticed several grand pots of the old Amaryllis aulica, and in some of the plant-houses are certain plants which are not to be met with in every garden.

Those that appeared to me to be most useful were Grevillea rosmarinifolia, the flowers of which resemble a Clianthus; Eriostemons in two or more varieties; Diosma capitata, an old-fashioned sweet-scented plant that was more in vogue a dozen years ago than it is now; Andromeda pulverulenta, bearing white cup-shaped flowers after the form of those of Kalmia latifolia;

and several useful Acacias, and other New Holland plants.

Perhaps the most striking example of the hardiness of many greenhouse plants is that of a fine specimen of Trachelospermum (Rhynchospermum) jasminoides and an Erica Cavendishiana being wintered in an unheated pit, and only covered with mats or litter all through the past winter, and the former especially was in vigorous health. Mr. Todd seems to grow many plants in cold frames better than they are often seen under more expensive treatment. *Visitor.*

ELECTRO-HORTICULTURAL DIALOGUE.

I HAVE read with much interest the accounts, which have recently appeared in the Press, of the experiments in electro-horticulture, conducted by Dr. Siemens and others. On several occasions I have conversed with gardeners on the subject, and have been much surprised by their apparent indifference and almost hostility to the introduction of what seems to me to be a new and valuable aid to production. My own gardener, who is a fair and intelligent specimen of his class, seems to be particularly opposed to its introduction into my hothouses. The cause of this opposition I was, for some time, at a loss to determine; but a few days since I quite accidentally became acquainted with his reasons. One morning, in the course of my usual walk around the grounds, I entered my plant-house and sat down to read the morning paper, as is my custom. I had not long been there when my gardener, accompanied by a gentleman (whom I afterwards learnt was an engineer desirous of viewing the hothouses), entered the adjoining compartment, and the door of communication being open, I could not avoid hearing the following conversation, which I give as nearly as I can remember its details.

Engineer. Why do not you persuade your employer to take up the matter of electro-horticulture, and have this range fitted up with apparatus for electric lighting?

Gardener. Why, you see sir, the view I take of the matter is this: At present I am a very successful grower. I understand what I am about, and I give my employer satisfaction; but if he were to adopt this new-fangled plan of growing by the electric light, he would expect much larger results, which perhaps I should fail in producing.

Engineer. But surely, my dear sir, the fear of failure is a very weak reason why one should abstain from trying to obtain desirable results. If all the world were to be actuated by such a principle, progress and invention would be at an end, and art, science, agriculture, and horticulture would remain stationary. Again, the results in this case are not doubtful; for the fact that great advantages accrue from the use of the electric light has been incontestably demonstrated. It has been clearly shown that the leaves are greener, the fruit finer, more quickly ripened, and that instead of only one crop (often a poor one), two, or even a succession of crops, may probably be obtained in a year. Again, the electric light will enable the gardener to have production more under his control, and to remedy the want of sufficient sunlight in winter weather.

Gardener. Well, you see, sir, I should be meddling with what I don't understand, and—

Engineer. But the whole thing is extremely simple, readily learnt, and easily managed by a person of ordinary capacity. Gardening has, as yet, been too much conducted on rule of thumb principles on old-fashioned lines; but now a grand opening is presented for improvement—a great opportunity for the gardener to elevate himself into a scientific horticulturist.

Gardener. But why should I put myself to all this trouble and bother? The introduction of this system here would entail a large amount of extra trouble and anxiety upon me, for which, as far as I can see, I should obtain no corresponding personal advantage.

Engineer. That I think is hardly the way to look at it. Do you take no pride in your business? Are you indifferent as to whether you excel in it or not? Are you content to stand still while the age progresses—to be behind the age in which you live—to remain stationary while more enterprising spirits pass you and leave you behind? This new discovery is, in all probability, destined to revolutionise horticulture. Its general adoption is only a question of time. Do you then intend to let prejudice or indifference prevent you from adopting it until force of circumstances compels you to regret your inactivity, or will you become a pioneer in the good work?

Gardener. But consider the expense.

Engineer. That is trifling after the first outlay; besides, an outlay should always be considered with reference to the results obtained. In this instance the results would constitute first-rate interest on the amount expended; for, instead of only one crop in a year, you would be able to produce two. Then the first cost is not so large as you might imagine, especially when, as in your case, there is already steam-power on the estate. Many gentlemen have steam-engines at their farms, and these are often within available distance from the gardens, so that wires could readily be laid down. This new use for steam-power will doubtless cause many gentlemen who do not already possess it to consider whether it will not be worth their while to purchase an engine. Again, who knows but that some of our horticultural engineers may not shortly hit upon a scheme for obtaining both light and heat from the same source?

Gardener. But, sir, plants require rest; they cannot go on growing night and day without rest.

Engineer. True; but it is quite easy to give them rest when they want it, or to have a supply of recruits to take the place of exhausted plants.

From the above conversation it seems to me that the principal reason of opposition to electro-horticulture is the fear that it may entail a little extra trouble, and a certain sluggishness in adopting new inventions, which is perhaps a characteristic of the English race. However, in spite of opposition, I think of adopting it, and may perhaps on some future occasion trouble you with an account of the result. *Electro-Fidelis.* [We think the average gardener is at present justified in waiting the result of experiments carried out on commercial principles. At present it is only a scientific experiment, but decidedly a most promising one. EDS.]

SPONDIAS OF JAMAICA.

THERE are found in Jamaica only four species of this genus, three of which are said to be native, and one introduced. The former are S. lutea, purpurea, and graveolens, the latter Spondias dulcis, introduced from the Society Islands to the old Botanic Garden at Bath, from whence it has spread to many parts of the island, notably on the north side, where it has obtained the name of Jew Plum, and is also spoken of (erroneously) as the Mangosteen by many to whom the fruit correctly bearing that name is unknown. It being an introduced plant, has undoubtedly led to its exclusion from the latest *Flora of the West Indies*, and it is mentioned by Macfadyen in his earlier publication in a short note only. The best of the genus here represented, it grows to a height of 15 to 20 feet, and fruits abundantly, producing its flowers in axillary and terminal panicled racemes 1 foot in length, just before the young foliage commences to make its appearance in March or April, ripening its fruit in October and November. It is much more esteemed as a fruit than any of the other species, and produces drupes of obovoid form, of a light yellowish-green colour, and about 2 inches in diameter, having a delicious sub-acid flavour and a fine aroma. It is a tree deserving of more extended cultivation, and needs only to become better known to be eagerly sought after.

Spondias lutea and purpurea are trees very similar in habit and appearance to each other, and although separated by Macfadyen, are made synonyms by Grisebach. Lutea, however, has flowers which, although bearing many characters in common with purpurea, are of a different colour, being of a rosy tint, and much larger, while those of purpurea are of a bright red, the petals of lutea being 3‴ long, those of purpurea 2‴ only. The fruit of lutea differs also in being of a yellow colour, that of purpurea red, the first flowers three or four months later than the other, and is found at higher altitudes. They are both cultivated and sold in large quantities in the native markets, but require the palate to be "educated" to have their peculiar flavour appreciated by Europeans. Without knowing the tree producing each, the fruit of Spondias graveolens is much more likely to be mistaken for lutea than purpurea, but differs from both in the tree reaching the height of 30 or 40 feet, the stem being covered with large corky excrescences and large spines or prickles. It has panicled racemes a foot or more in length, and bears fruit which, as the common name (Hog-plum) denotes, are sought after by hogs, but are of no value for any other purpose. The tree affords a fine shade, and as it grows easily from cuttings of the limbs (as do all the species) is much planted for making permanent fence posts, as well as affording shade in dry pastures—two qualities which make it of peculiar value to the grazier, or more locally "pen-keeper," of Jamaica. *J. Hart, King's House, Kingston, Jamaica, April*, 1880.

COLONIAL BOTANIC GARDENS.

(*Extracts from Mr. Dyer's lecture, continued from p.* 650.)

WEST INDIES.—With regard to the West Indies, I find with regret that the space at my command is wholly insufficient to more than touch on a few of the matters connected with their botanical interests, on which I had had it in my mind to speak. If these afford any fair ground for prediction, I should certainly draw the conclusion from the facts within my knowledge, that we are now at a new point of departure in the commercial development of these productive possessions of the Crown, which have long seemed lulled in a somewhat depressing lethargy. Of Jamaica, especially, we have high expectations. The present Governor, Sir Anthony Musgrave, has reorganised the botanical department, to which Sir John Grant gave so great an impulse. We have selected a gentleman to be placed at the head of it, to whom I have more than once alluded, and who has in many ways given proof of his capacity; and we further succeeded in obtaining for it the services of one of the ablest members of the English gardening class. Cinchona planting is now something more than an assured success. Tobacco, the cultivation of which was started by Sir John Grant, with the assistance of Kew, but languished under Sir William Grey, to be again vigorously supported by the present Governor, is now at least a successful experiment. "In the Hamburgh market, the most considerable in the world for Tobacco," Jamaica "produce stood next in rank to Havana Tobacco, to which it was pronounced inferior, but superior to all other kinds, even not excepting those other parts of Cuba, such as St. Jago, Manzanillo, Yara, &c., which furnish such a very considerable quantity to the consumption at home." In 1869, 800 Tea plants were sent to Jamaica from Kew, and these have succeeded admirably; there can be no obstacle, except that of obtaining labour, why this cultivation should not be vigorously developed. The trade with the United States in fruit (including the Mangosteen, sent from Kew), whether fresh or dried, and the extension of the growth of Coffee, Cacao, and minor products, such as nutmegs (also introduced from Kew), are obvious sources of prosperity, merely waiting for development. Besides these, there is plenty of room for experimental cultivation. Ground nuts, which produce much of the oil consumed in Europe as that of the Olive, need but the simplest cultivation, and as yet have scarcely been tried. And I am assured that "gram," one of the most useful pulses of India, and largely used even in Southern Europe, is absolutely unknown in Jamaica. There is, it will be seen, plenty of scope for botanical enterprise in the island, and it is not the fault of natural endowments if it does not eventually become the Ceylon of the New World. At any rate, I hope that the Jamaica botanical department will take the lead among all similar institutions in the West Indies.

Nor can it be well doubted that there is a great future in store for British Honduras. At present the botanical service has no representative in the colony. The greater part of the interior has scarcely been explored, and it is doubtful whether it is even inhabited. "There seems to be no tropical product to which the climate and soil are not adapted."

In Dominica there is no botanic garden, but Dr. Imray, a resident physician, and a very old correspondent of Kew, has voluntarily carried on the work. Through his instrumentality we have introduced Liberian Coffee into the island, and a variety of other tropical plants, and have received many choice and interesting things in exhange.

In the Bahamas all the support of Kew has been given to the energetic attempts of the present Governor, Mr. Robinson, to start and encourage fresh industries. The cultivation of Cocoa-nuts, Tomatos, Tobacco, and Lemons are all new. The development of the trade in Tomatos is something extraordinary, having increased from two crates in 1875 to upwards of 8000 in 1879. We have done

our best to help Governor Robinson, and, as we generally find to be the case, he has not neglected to help us. The natural vegetation of the West Indian Islands is still most imperfectly known, and suggests some considerations at this moment of much scientific interest. Mr. Robinson has enlisted an excellent collector in our cause, and has even been able from a very restricted exchequer to find him some remuneration. This is a very different spirit to that of one of our consuls in Haiti, who, on my applying to him for information about one of the ordeal poisons of that island—these being matters of great physiological importance at this moment—assured me that he had it on good authority that "all the flora of South America, the islands included, are now cultivated in England."

In Trinidad there is an excellent botanic garden, most efficiently managed by Mr. Prestoe. I must content myself with saying that from no one do we get more valuable cases of plants more admirably packed. To Mr. Prestoe belongs the distinction of having, in 1877, first ripened the Mangosteen in the West Indies.

GUIANA.

I must conclude my rapid review of this part of the world by mentioning British Guiana, where what bids fair to be a fine botanic garden is now being laid out under the management of Mr. Jenman, who has been transferred to its charge from that in Jamaica. But Demerara at present has little interest except for sugar. The timber of its interior forests has been somewhat heedlessly felled in accessible districts, and yet, as I have stated before in this paper, we are to this day destitute of any botanical knowledge about the best kinds. The trade in Gum Balata, the trees producing which are abundant on the Berbice River, has dwindled away (the export in 1876 only amounted to nine casks), though it is more valuable even than gutta-percha, since it has not the disadvantage of that substance of becoming resinoid and brittle with age.

"Coffee was for a length of time almost the sole staple of Berbice and Demerara;" now not sufficient is produced to supply the demand of the colony. Demerara has, in fact, absorbed all its energies in a single industry, and at present practically stands to sink or fall by that. The example of Ceylon might be taken to show that such a course is not without its risks, and it is much to be hoped that when the new botanic garden gets fairly into working order, other vegetable products will obtain attention.

(*To be continued.*)

A SYNOPSIS OF THE SPECIES AND FORMS OF EPIMEDIUM.

(*Continued from p. 625.*)

4. *E. concinnum*, Vatke, in Regel, Gartenflora, vol. xxi. (1872), p. 165, tab. 726.—Fully-developed leaf ½ foot long, consisting of two pairs of three leaflets each (six leaflets in all), which are cordate-ovate, 1½—2 inches long, the end ones with a short open basal sinus, the side ones of the triads very oblique. Peduncle few-flowered, springing from the petiole about an inch above its top, the inflorescence a short simple raceme; bracts minute, lanceolate; pedicels about ½ inch long. Expanded flower ½ inch in diameter; outer sepals oblong, grey, ⅛ inch long; inner sepals oblong-lanceolate, purple, ¼ inch long, ascending in the fully-expanded flower; petals with an orbicular erect claret-purple lamina ¼ inch long and broad, and a short incurved concolorous claret-purple spur. Stamens and style falling short of the central cup formed by the petals.

A native of Japan. Rare in cultivation, and as a species scarcely worth separating from E. Musschianum, with which it quite agrees in the structure of the flower. Our single plant of it at Kew was received under the name of E. Musschianum violaceum.

5. *E. Musschianum*, Morren and Decaisne in Ann. Sc. Nat., ser. 2, vol. ii., p. 353; Graham, in Bot. Mag., tab. 3745.—Fully developed leaf about ½ foot long, biternate, the (nine) leaflets cordate-ovate, 2—3 inches long, thin in texture, not lasting through the winter, the end ones with a shallow basal sinus, the side ones very oblique. Peduncle few-flowered, springing from the petiole about 1 inch below its apex, the inflorescence a simple close short raceme, the bracts minute, lanceolate, brownish, deciduous, the erecto-patent, cernuous, nearly naked pedicels ⅓—½ inch long. Fully-expanded flower about ½ inch in diameter; outer sepals oblong, very convex on the back, very deciduous, reddish-brown, with a pale border; inner sepals white, ovate-acute, ¼—⅓ inch long, ascending; petals with a white orbicular entire lamina ¼—⅓ inch long and broad, and a short spreading spur. Stamens and style falling short of the lamina of the petals.

A native of Japan, introduced into English gardens in 1838, at which date it was figured and fully described by Dr. Graham in the *Botanical Magazine*. It occurs in most collections, but is one of the least showy forms in the genus. E. niveum and diphyllum majus are garden names of this species. It sometimes bears a smaller second raceme out of the axis of the peduncle of the main one, where the latter joins the petiole.

6. *E. macranthum*, Morren and Dcne. in Ann. Sc. Nat., ser. 2, vol. ii., p. 352. tab. 13; Lindl. Bot. Reg., t. 1906; Paxton, Mag., vol. v., p. 151, with a figure.—Fully-developed leaf reaching 1 foot in length, biternate; the nine leaflets cordate-ovate, 2—3 inches long, closely ciliato-dentate, not firm enough in texture to last through the winter, the end ones of the triads with rounded basal lobes ¼—⅓ inch long, the side ones very oblique. Peduncle arising from the petiole 1—2 inches below its apex. Raceme short, close, 6—10 flowered; the ascending pedicels densely pilose, the lower usually compound; bracts minute, oblong or lanceolate, scariose. Fully-expanded flower 1¼—1½ inch in diameter; outer sepals oblong, deciduous, ⅙ inch long; inner sepals ovate-lanceolate, ⅓—½ inch long, white with a slight violet tinge, reflexed when the flower is fully expanded; petals also white with a violet tinge, with an orbicular entire lamina ¼—⅓ inch long and broad, and a cylindrical concolorous, spreading or rather deflexed, spur, which is often half as long again as its subtending inner sepal. Stamens and style not protruding out of the petal-cup.

This is the finest of the Japanese species. It was introduced into European gardens about 1830, and is well known to every one who takes any interest in the genus. In the *So Mokou Zoussetz*, a Japanese work, which contains a series of many hundred woodcuts of the indigenous plants of that country, of great completeness and accuracy, there is a characteristic figure of it (vol. ii., tab. 45) with the vernacular name Ikariso, which being translated means Anchor-plant, in allusion to the shape of the leaves. Several varieties are known, of which the principal is *E. violaceum*, of Morren and Decaisne (figured *Bot. Mag.*, tab. 3751, and *Bot. Reg.*, vol. xxvi., tab. 43), which differs from the type by its dwarfer habit and smaller violet-coloured flowers, in which the spur of the petal is often not longer than the subtending sepal. *E. pumilum* is a garden name for a dwarf variety of this species. Mr. Ware has furnished me with a very curious form, which I have named *E. citrinum*, and which there can be very little doubt is a hybrid between *macranthum* and *pinnatum*. It has a leaf just like that of *macranthum*, peduncles originating in some cases from the petiole, but in others direct from the rootstock, as in our second group, lax simple racemes of 10—12 flowers, ascending pedicels ½—1 inch long; a second raceme sometimes produced from the axil of the primary one when the peduncle originates from the petiole, ovate acute lemon-yellow sepals, ⅜—½ inch long, and petals of the same colour, with an orbicular lamina ¼ inch broad and long, and a cylindrical spur as long as the subtending sepal. It is most like a yellow-flowered variety of *macranthum*, but differs by its short spur and the racemes being simple and sometimes produced direct from the rootstock.

7. *E. Perralderianum*, Cosson, in Bull. Bot. Soc. France, vol. ix. (1867), p. 167.—Fully-developed leaf about half a foot long, never consisting of more than three leaflets, which are cordate-ovate, 2—3 inches long, bright green or tinted with red-brown, firm enough in texture to last through the winter, the end one equal-sided, with rounded basal lobes ½ inch long, nearly or quite touching each other by their inner edges, the two side ones oblique and unequal at the base. Peduncle produced directly from the rootstock, about ½ foot long. Raceme simple, lax, about as long as the peduncle, 12—20 flowered, with a densely glandulose-pilose axis, and spreading pedicels ⅓—½ inch long. Expanded flower bright yellow, ⅝—¾ inch in diameter; outer sepals minute, oblong, deciduous; inner sepals orbicular, ¼ inch long and broad, much imbricated, and spreading horizontally when fully expanded; petals with a toothed, bright yellow, erect lamina, about 1/12 inch long, and an incurved ligulate brown spur nearly as long as the lamina. Stamens and pistil three times as long as the petal-lamina, the former bright yellow.

A native of mountain woods in the province of Eastern Kabylia in Algeria, at an elevation above sea-level of from 4000 to 5000 feet. Introduced into cultivation by Dr. Cosson in 1867. Our living plant at Kew was given to us by Dr. Reichenbach. It has never been figured, but a drawing has been made this spring for the *Botanical Magazine*. It is closely allied to *E. pinnatum*.

8. *E. pteroceras*, Morren, in Journ. Soc. Roy. Bot. et Agric., Gand, 1845, fasc. iv., 145, t. 14; Walp. Rep. v. 18.—Habit dwarfer than in E. pinnatum, and old leaves not lasting through the winter. Fully developed leaf 6—9 inches long, biternate, the nine leaflets similar to those of pinnatum and Perralderianum in shape and toothing, much tinted with red-brown when young, the end three symmetrically cordate-ovate, the other six oblique at the base. Peduncle half a foot long, produced directly from the rootstock. Raceme lax, simple, 3—4 inches long, 12—20-flowered; pedicels spreading, or ascending, ⅜—½ inch long, slightly glanduloso-pilose, cernuous at the tip. Expanded flower bright yellow, ½ inch diameter: outer sepals oblong, yellowish, deciduous, ⅛ inch long; inner sepals suborbicular ¼—⅓ inch long and broad, patent when fully expanded petals bright yellow, with a broad erect toothed very short, emarginate limb, and a red-brown deltoid spur shorter than that of pinnatum and dilated at the base into a couple of small blotches of the same colour on the petal-lamina. Stamens as long as the inner sepals, erect, bright yellow.

A little known species, closely allied to E. pinnatum, but marked by its dwarfer habit and biternate leaves. It is probably a native of the Caucasian provinces, but the precise locality has not been clearly ascertained, and we have no wild specimen in the Kew herbarium.

9. *E. pinnatum*, Fisch. in DC. Syst. i. 29; DC. Prod. i. 110; Hook. in Bot. Mag., t. 4456; Morren, in Belg. Hort. 1854, t. 6; Boiss. Fl. Orient. i. 102.—Fully developed leaves 1—1½ foot long, consisting of three or five leaflets, of which only the end one is equal at the base, the texture firm enough for them to last through the winter, the teeth small and distant, the rounded basal lobes about ½ inch long, the petiole and petiolules densely pilose. Peduncle about ½ foot long, produced directly from the rootstock. Raceme lax, simple, ½ foot long, bearing 12—20 flowers on short pilose spreading or ascending pedicels ¼—½ inch long, all of them simple and solitary, and each subtended at the base by a brown membranous lanceolate bract. Expanded flowers bright yellow, ⅝—¾ inch in diameter; outer sepals oblong, greyish, ⅙ inch long, soon falling; inner sepals orbicular, ¼—⅓ inch long and broad, bright lemon-yellow, much imbricated when fully expanded; petal with an erect, toothed, broad yellow lamina 1/12 inch long, and a spreading reddish-brown deltoid-cylindrical spur as long as the lamina. Stamens and pistil much exserted from the petal-cup, but rather shorter than the inner sepals, both anther and filament bright yellow.

A native of the Caucasus and northern provinces of Persia. It was introduced into cultivation about 1840, and is well-known to every one who takes an interest in the genus. A well-marked variety for garden purposes is *E. colchicum*, Fischer, MSS., a native of the Caucasus, in which the inner sepals are oblong, not more than ⅙ inch broad, and consequently not imbricated when the flower is fully expanded.

10. *E. diphyllum*, Lodd. Bot. Cab., t. 1858; Graham, Bot. Mag., t. 3448; Aceranthus diphyllus, Morren and Dcne. in Ann. Sc. Nat., ser. 2, ii. 349, t. 14; Epimedium japonicum, Siebold MSS.—Petiole not more than 2—3 inches long, bearing never more than a couple of cordate-ovate leaves with an oblique base, on erecto-patent petiolules 1 inch long, the teeth usually obsolete except one or two on the basal lobes, the texture of the lamina not firm enough for it to last through the winter. Peduncle springing from the petiole a short distance below its apex, bearing 4—6 drooping flowers in a simple very lax raceme, on erecto-patent, slightly hairy pedicels ¼—½ inch long, and sometimes also a single flower from its axis on a long erect pedicel; bracts greenish, very minute. Outer sepals oblong, greenish, deciduous, ⅛ inch long; inner sepals white, oblong, or lanceolate, ⅓ inch long, nearly flat; petals obovate, obtuse, white, not spurred, a little longer than the inner sepals. Stamens and pistil about half as long as the petals; anther yellow, linear.

A native of Japan, introduced into European gardens about 1830. Much dwarfer than any of the other species, and never with more than a couple of leaflets to a leaf. It is figured in the *So Mokou Zoussetz*, with the vernacular name Baikuwa Ikariso. This was made into a distinct genus by Morren and Decaisne on account of the spur of its petals being quite obsolete, but the general habit is completely that of the other Japanse species.

11. *E. sagittatum*, Baker; Aceranthus sagittatus,

Sieb. and Zucc., Fam. Nat. Jap., No. 296; Franch. and Savat. Enum. Plant. Jap. i. 24; A. triphyllus and macrophyllus, K. Koch, in Ann. Mus. Lug. Bot. i. 253; Epimedium sinense, Siebold, MSS.—Leaves biternate, 1½—2 feet, the firm glabrous common petiole 1 foot long, the nine leaflets cordate-ovate or hastate, very firm in texture, 3-6 inches long, sometimes densely pilose on the under surface, the edge closely fringed with the conspicuous ascending horny teeth, the large basal lobes rounded or pointed, those of the three end leaflets equal, of the other six more or less unequal. Panicle ½ foot long, its short peduncle springing from the top of the common petiole, the flowers numerous, the lower pedicels 3—5-flowered, only the upper ones simple. Expanded flowers ¼ inch in diameter; outer sepals soon deciduous; inner sepals white, oblong; petals yellow, as long as the sepals, not spurred. Stamens and pistil as long as the petals.

I have never seen this alive, and know the inflorescence and flower only from the figure in the *So Mokou Zoussetz*, vol. ii., t. 44, where it bears the vernacular name of Hozaki-no-ikariso. It occurs in Japanese gardens, but is considered by Franchet and Savatier not to be really wild in Japan. We have a Chinese specimen, in leaf only, at Kew, sent by Dr. Shearer from the province of Kiu Kiang, gathered in 1873. *J. G. Baker.*

(To be continued.)

IN THE RUSSIAN STEPPES.

(*Concluded from p. 652*)

And now to return to the garden. I may say that it is in the vicinity of this church that the greatest attraction of plants and flowers is to be seen. The mausoleum, or cenotaph, itself about 10 feet wide, may be shortly described as a greenhouse filled with choice flowers. Immediately in front of it is a real gem of a flower garden, well enclosed on all sides with shrubs and trees. It is of moderate size, rectangular in form, and chiefly laid out in very tastefully designed carpet beds, containing Alternanthera versicolor, Iresine Lindeni, Lobelia Erinus, Pyrethrum Golden Feather, Begonia hybrida, variegated Thyme, and other low-growing species usually employed in such designs. There are also one or two circular groups of larger sorts occupying central positions, and containing some fine Roses, Geraniums, and the large-leaved Ricinus, a plant which seems to be in great favour in the Steppes. The border on both sides is filled with standard Roses, Geraniums, Asters, Celosia cristata, Amaranthus, and the like. Strange enough, there are no Cinerarias or Pelargoniums to be seen.

During summer the plant-houses are usually quite empty. Here, with the exception of a fine example of Alsophila australis, Pandanus utilis, and a great mass of Hoya carnosa trained up between all the lights in the stove, the numerous collections are all outside, chiefly arranged in neat groups round the church, more or less under the shade and shelter of majestic trees. I counted some thirty handsome Orange trees, mostly in fruit; two or three of them might be about 10 feet high. Several well-grown examples of Phœnix dactylifera were equally large; there were also some good specimens of Latania borbonica, Chamærops humilis, Cycas revoluta, and similar tropical plants. New Holland plants generally, and a numerous collection of choice Coniferæ, including some handsome Cryptomeria japonica, were arranged at each side (right and left) of the mausoleum. On another side of the church were some twenty groups of large miscellaneous plants, such as Myrtles, Euonymus, Pittosporum, Eucalyptus, Metrosideros, Xylophylla, Laurus, and especially several fine examples of Punica granatum, which, when they happen to be studded with their scarlet flowers, must be very beautiful. The old Agapanthus umbellatus keeps up its reputation here: there were some five or six boxes of it well furnished with flowers.

A little way from the church is a large circular enclosure filled with Camellias, Rhododendrons, Azaleas, Ficus elastica, Nerium splendens, Viburnum Tinus, Aucuba japonica, Grevillea robusta, and, what is very unusual, a fine healthy collection of young Hollies. In another part of the ground a great number of large Arums occupy a shady place along the side of the walk.

In this country Orchideæ and other splendid tropical flowering plants are almost unknown. In such a garden as this we might expect to see an aquarium at least for the commoner sorts of aquatic plants, such as Nymphæas, besides a number of others which require a warm, moist atmosphere; but there is nothing of the kind.

The glasshouses being for the most part empty in summer are not made for show. They are therefore far enough removed from the mansion and pleasure grounds, and occupy a position at one side of a large space, quite enclosed with brick walls, having gates to open or lock as required. The ground within this space is laid out as a nursery for ornamental shrubs and flowering plants to be removed as wanted elsewhere, and the walls are covered with fruit trees, chiefly Vines, Peaches, Apricots. The orchard and frame ground occupy other enclosures further off, and beyond this is a nursery well stocked with young trees and shrubs of every kind, all well enclosed and protected with hedges of Laburnum and lines of trees. Communicating with the stove is a pinery, which at the time was full of large and well grown fruit.

The conservatory in which the greenhouse plants are kept during winter is a large structure in the way of an Orange-house, having an ordinary ceiling and perpendicular lights at one side. In this climate, where we have the extremes of heat and cold, a greenhouse with the greatest part of the glass above is not to be recommended. At the same time I consider that the total absence of top-light is also a mistake, especially where an immense number of plants, including many of large size, are kept. It seems to me that a certain compromise in the way of two or three smaller lights above would be preferable—in particular during the spring, when the growing season begins long before the plants can be placed outside. But the fine cultivation, such as is the aim of plant growers in England, is not so much required here, and a great many plants are sometimes stowed away anywhere only to live till the spring. Here a long wide underground passage or tunnel, communicating between two houses, and having only small top-lights at certain distances, does good service in this way during winter.

The fruit garden is extensive, but it is chiefly an orchard, and in this part of the country at least fruit last year was a general failure. Of Apples and Pears especially there were none, owing to late frost and cold cutting east wind. Cherries and Plums were equally scarce, but Vines grown on espaliers were abundant, and, particularly in sheltered situations, ripenened nicely by the middle of August. I cannot say that the fruit department here was in such order as might be expected.

It has been long a settled question among fruit growers in England, France, and other countries that the espalier system of training the trees offers the greatest advantages when the object is to obtain choice and well-developed fruit; but here in Sekirensy this system is not adopted. The wall-trees, too, do not seem to receive much attention; at least they were not in the best order, and with the exception of a few Peaches protected for the time with lights, there was nothing worthy of note. Nectarines are but little known in this country.

In England generally Peaches on walls ripen well enough in the open air by the middle of August, in Russia twelve days later. Here, with a much warmer climate, they are still green and but little swelled; whereas Vines on espaliers thrive nicely, and are ready for cutting. There seems to be something in this which requires careful study and investigation. It is a subject which is well worthy of experiment, and I am strongly inclined to think that the difference is chiefly owing to atmospheric causes, which in this dry climate might be easily regulated by the simple process of frequent syringing. At the same time I should at least try the result of growing Peaches on low espaliers in a warm sheltered situation.

The mansion is a large two-floored building of very ordinary architectural pretensions in its general form. At the second floor there is a spacious balcony in the middle, having six Grecian pillars surmounted in the usual manner, and from the roof rises a dome or cupola decked with a flag. This style of architecture is common enough in the Steppes. The walls are plastered and whitewashed as a matter of course, and the roof is almost always green. The entrance from the garden side is somewhat original, and may be described as an easy slide from the balcony down to the broad walk, some 15 or 20 yards in front. At each side is a balustrade of short columns and vases, terminating at the walk with two large statues. Underneath are several archways communicating with the two flower-gardens in front of the house. These gardens are well supplied with plants and flowers of every kind, and are quite enclosed. From the pillars at the balcony down to the walk the balustrades are literally covered with wild Vines and other climbers.

The view from the balcony comprises a splendid circular lawn, about 150 paces in extent, and further on beyond the boundary walk another lawn of the same extent, terminating at the lake, a little only of which is seen from the house. The principal charm of this view is the beautiful well-kept lawn, and the numerous majestic trees in limited groups at each side. Beyond the circular lawn the open space is not so extensive; indeed it is to be regretted that so little of the lake is seen. One or two openings or vistas at the right or left would greatly enhance the perspective. But who would resign himself to the vandalism of cutting down so many trees as might require to be removed? Another subject of regret, and even surprise, is the total absence of Pine trees. Oaks, Elms, Limes, Poplars, and others abound; there are even two beautiful examples of Elæagnus angustifolia near the house, but nowhere, neither in the garden nor in the forest, is there a single Pine-tree to be seen. During so long a time it is strange that the cultivation of Coniferæ should have received so little attention, for here all the common hardier sorts would thrive admirably, and a few groups at least here and there would greatly enhance the beauty of the pleasure-ground. Fagus sylvatica and Sorbus Aucuparia (*rabina* in Russian) have been equally neglected. Another tree, Acer tataricum (called here *tchorno klon*), of moderate size, but of singular beauty in autumn, is well worthy of a place in every ornamental group. Sorbus especially is of easy culture, and remarkable for its tenacity and vigour in high or exposed situations. Apart from its decided beauty both in summer and autumn, it has the unquestionable merit of not growing very large; it is, therefore, well suited for situations where moderate-sized trees are required: but it is rarely seen anywhere. There are also several species of Willows and Poplars which have a certain effect in a park, on account of their colour as well as form, but here they have been quite discarded, and others of much less value, as wild Pear trees and brushwood (*Melky læss*) have been allowed to grow.

The branches of some of the oldest and largest of the trees, especially Oaks, are carefully bound and sustained with strong iron bars. Some of these may be about 200 years old. The trunk of one near the house is nearly 6 feet in diameter. Another, called the "Holy Oak," is an object of great veneration, owing to its having an image—a small picture—set in the trunk, and, as I was informed, the legend is that no human hand has put it there. Such legends are not unfrequent in this part of the world.

A drive of two hours or more with Herr Hæger round the lake and through the extensive forest—here called the park—enabled me to see another side of this very beautiful place. The lake itself, about half a mile in length and wide in proportion, presents several views of a highly picturesque character, which, however, must be seen to be fully appreciated. This is unquestionably one of the most attractive parts of the place, and shows the importance of water in all successful landscape gardening. I had subsequently an occasion of making use of my pencils and palette to good account.

If there were nothing more than the trees, the lawns, and the lake, Sekirensy would still be a splendid residence; what it is with the help of intelligent gardeners, a great number of regular workmen, and everything else that can be required, I have shortly endeavoured to describe. *P. F. Keir, Kieff.*

Wasps.—Whether or no the elements last summer were generally destructive to insect life, it is at least certain that our old enemies, the wasps, did not materially suffer; and, indeed, it would now seem that they rather benefited by the unusual nature of the season. There are few gardeners, perhaps, who have not noticed the abundance of wasps that thus early have been seen specially favouring our glasshouses when the doors are open, as the temperature inside is to them evidently much more enjoyable than the cold biting winds outside. Dozens have already been killed, and no doubt dozens have escaped. If this is the rule everywhere, and not confined to one locality, then wasps will be abundant next summer. If this promise of plenty of plunderers means also plenty to plunder, we shall not largely complain; none the less it will be wise to keep a sharp look-out for the progenitors of what, if not now scotched, may by-and-bye prove to be unwelcome visitants.

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Notices of Books.

Strawberries All the Year Round. By William Hinds.

This is quite an unpretending little volume in appearance, but describing in very decided language the author's successful practice in the cultivation—especially the forcing and pot culture—of this most popular of fruits. It can lay no claim to be a treatise on the general cultivation of the Strawberry, notwithstanding that the author promises to give us "Strawberries all the year round;" for on the cultivation of this fruit in the open ground, which is surely the main and principal part of Strawberry culture, there is comparatively nothing said, some six pages being devoted to this portion of the subject and fifty-four pages to that of its cultivation in pots, &c. The cultivation of Strawberries in pots is evidently with Mr. Hinds a matter of great importance, and the successful practice which he has adopted is very fairly described. There is, however, nothing particularly novel in Mr. Hinds' practice apart from that which he has fully stated in our own columns from time to time. He lays claim to somewhat too much originality in describing the simplest operations in Strawberry culture, and clothes everything with a redundancy of words which is most embarrassing, and much detracts from the value of his treatise.

—— *Report on Temperatures During the Winter of* 1878-79 *at the Royal Botanic Gardens, Edinburgh.* By John Sadler.—What the winter of 1878-79 was like in Edinburgh may be gleaned from the fact that from the last week of November to the second week of February the ground was frozen so hard that no cultivation could be carried on. Mr. Sadler's report is supplemented by notes from various gardens in Scotland. It is to be hoped that Mr. Sadler will continue his observations on the winter of 1879-80.

Florists' Flowers.

Seasonable Notes.—Auriculas.—Many of the principal growers, including Rev. F. D. Horner and Mr. Benjamin Simonite, prefer to repot their plants in May, and certainly all the plants that are potted at that time succeed well. If the old plants cannot be repotted it will be quite necessary to make an effort to repot all the offsets that were put in about September last year; these were potted singly in small pots in February and now require repotting: ours have been done. The offsets taken off at the time of the surface-dressing have also been repotted in thumb-pots; those known as "long Toms" are the best, as they admit of a larger number of plants being stored in a small space. Those who exhibit Auriculas regularly are careful of their young plants, as many of these are more useful than old stagers. They throw more perfect pips sometimes, and in the eyes of a good judge quality is always preferred to quantity. Seedlings require very much attention at this time, the very small ones to be pricked out of the seed-pans as soon as the first rough leaf is formed, and those that have grown sufficiently so that the leaves about meet together must again be repotted; continue to do this as plants increase in growth. Our plan is to prick out a dozen in a 60-sized pot. When these require potting again, three or four may be potted into the same size, to be finally repotted, one in the centre of each pot, wherein they will flower next season. Do not allow the plants to get too much sun.

Carnations and Picotees.

There is now a good healthy growth throughout the whole collection, but it is not possible that it can be a strong growth, especially in the case of such varieties as Admiral Curzon, Dreadnought, and indeed all the Scarlet Bizarres with one or two exceptions. See that the flower stems are fastened to the sticks as they spindle for bloom. Destroy greenfly as it appears, and remove any weeds when they are of small size; if the weeds are allowed to become large it injures the plants getting them out. Where the plants have been put out into beds in the open ground, it will be necessary to water them now; after doing so, mulch the surface of the ground with rotten stable manure; and while the dry weather continues, give a good watering once or twice a week as the weather continues cold or the reverse.

Dahlias.

The plants must now be planted out if this has not been already done. The plan of putting the permanent sticks first at the place where the Dahlia is to be planted is the best one, and the plants must be fastened to the sticks as soon as possible after they are put out. In some districts there is danger of frost injuring them up to the middle of June, in that case I would advise the plants being repotted in 6 or 7-inch pots. Keep them in a cold frame, from which the lights are removed constantly except when there is danger of frost.

Gladiolus.

The varieties of G. gandavensis are now making a strong growth, for although the ground looks quite dry on the surface, it is not so underneath; the ground between the rows has been hoed over twice. I fancy they succeed best when the surface is frequently stirred. We do not usually water here in a dry season until after the middle of June, by that time each plant has formed a considerable proportion of roots to take it up; we also mulch with rotten manure immediately after this. G. Colvillii, variety The Bride, is a very free-growing variety, and it also increases rapidly; it ought to be planted in quantity. The varieties of G. ramosus should also be grown for early flowering; leave them in the ground until they form good clumps. G. byzantinus should be grown for its early-flowering qualities, and G. cardinalis with its bright scarlet flowers flaked with white is a great acquisition in the early flowering section.

Hollyhocks.

The attention required at present is of a very simple kind; water the plants, and mulch with manure as recommended for most other gross feeding plants. As the flower-stems continue to develope fasten them to the sticks. During hot and dry weather red-spider attacks the under-side of the leaves, but it can be destroyed by frequent syringing. Seeds should be sown now if not previously done: the plants obtained from this sowing will flower very strongly next year.

Pansies.

It is better not to trouble about the pot plants now. Take what cuttings may be wanted for autumn bloom, and throw the old plants away. They are in full bloom out-of-doors this month, and to keep up the stamina of the plants manure-water must be freely applied in hot, dry weather. Pick off the blooms as soon as they begin to fade; and when the flowers degenerate pick them off. If the shoots are well thinned out, some rich soil placed round the plants, and the growths pegged down close to the soil, the next blooms will be as good as they were at first.

Pinks.

Towards the end of June will be the time to prepare a bed and plant out the seedlings, which ought to be quite large enough by that time; plant 6 inches apart, and 9 inches between the rows. The grower for exhibition will be daily looking over his plants, as the beds are expected to be in full bloom by the third week in June, and previous to this all the pods must be examined, and those that are likely to split must be tied with a strip of matting. They require watching after being tied, in case the matting should be too tight. The beds will probably have been surface-dressed with rotten manure, as previously advised; if so, water freely while the weather is dry. About the end of the month put in pipings.

Polyanthuses.

These suffer severely in dry hot weather unless well supplied with water, and this is all that will be required at present. Prick out seedling plants into boxes or into a small bed of fine soil in a shady place. Towards the end of June the seeds will ripen and must be gathered every day.

Ranunculuses.

Shade from bright sun, which very speedily injures both foliage and flowers. The old-fashioned plan of bending hoops over the beds and laying a mat over them answers well enough to protect the flowers, as it is a good shade; but if a framework can be made of some light material raised about 4 feet above the plants, and some light scrim canvas stretched over it, this is neater and answers quite as well. See that the plants do not suffer for want of water; this should be applied with a small rose, so that the foliage does not get wetted every time. When the flowers fade and it is intended to save seed the stems must be tied to sticks else the weight of the pods will bend down the stem, and if it does not snap it the pods are not exposed to the sun enough as they lie on the ground.

Tulips.

As soon as the flowers fade, the coverings must be removed to allow the sun to act freely upon the leaves; these speedily become brown, and the bulbs may then be taken up, but do not dry them in the sun. The best plan is to have a number of pots ready, and place the bulbs in them at once, merely removing the loose earth. Carry the pots away immediately to an airy loft.

Roses.

Constant attention is now required amongst these. The Rose maggot is very active at present, and where there is a large collection it must be looked over every day. Destroy the maggots with as little injury as possible to the Roses. Suckers are now making vigorous growth, to the sad detriment of the parent trees; work underground and cut the sucker where it unites with the roots or underground stem. Destroy greenfly as soon as it appears. Pot Roses that were forced early and have now gone out of bloom should have the flower-stems cut off, and the plants should be placed behind a low wall or hedge on a hard bottom of ashes. Do not over-water, keep the leaves free from mildew and greenfly; the mildew is most insidious, but if the affected parts are dusted with flowers of sulphur in the earliest stage, it can be destroyed. *J. Douglas, Loxford, Ilford.*

Garden Operations.

FLOWER GARDEN, ETC.

Bedding-out.—After several weeks of unmitigated "north-easters," the wind on the 19th suddenly veered round to west, and so raised both our hopes and energies that we started forthwith to get out all plants except the most tender, and these it is not safe to plant out till the first or second week in June; but meanwhile the plants are being gradually inured to bear full exposure. Alternantheras, struck in dung-pits, have the lights drawn quite off during the daytime; Coleus and Iresine are in cold pits, and subtropicals in warm sheltered corners and in turf-pits. Work presses in every department of a garden now, and it is a matter of necessity to get over it quickly; but for all that there should be no "scamping" it, as is too often the case in this matter of bedding out; any so disposed would do well to bear in mind the truism that "work well done is twice done," and also that the essential conditions of the plants starting into growth at once are that the roots be in the same state as to moisture as the ground in which they are to be planted, and that the soil be well compressed about the roots.

Arrangement of Subtropical Plants.—At p. 622 allusion is made to, and hints given concerning various bedding arrangements: I now desire to supplement those hints by adding thereto a note regarding the arrangement of these. My knowledge and use of this class of plants for decorative purposes is somewhat limited, but the practical lessons learned regarding arranging them to the best advantage are none the less deeply rooted, and may be of service to the inexperienced. The position or situation for such a garden is of first importance. For obvious reasons it should be sheltered from high winds. A well-drained dell, a southern slope, or a secluded spot in shrubberies, are the best spots, and there should be no attempt at geometry by cutting out fantastic-shaped beds—round and oval forms are always the most pleasing and easy of arrangement, the size of bed being determined by the space of ground and surroundings, which if of a contracted nature, then the beds should also be proportionately small, and *vice versâ*. As to arrangements of plants in the beds, none are more effective than those that are confined to one variety, with a central plant as a standard of a different and opposite nature, and an undergrowth of plants to contrast both in colour and habit from the taller growers, which can then be given ample space for full development, and yet the beds will be furnished at once. To give an example:—Wigandias, in good soil, require at least 3 feet of space to display their full beauty; they should therefore be given this amount, and the intermediate spaces be planted with Cineraria maritima, Gnaphalium lanatum, variegated Periwinkle, or variegated Mesembryanthemum; these all grow under the shade of, and contrast well with, the foliage of the Wigandias. As a central plant for such an arrangement none excels Acacia lophantha. Similar arrangements, with as great a variety of plants as possible, should be followed out in all beds. Of course there

is no reason why two varieties of the same species should not be associated in the same bed; as, for instance, with Castor-oils, the tall growing kinds, for the inner, and the dwarfer for the outer lines, and the same with respect to Solanums—S. giganteum for the middle, and marginatum or robustum nearest the edge. By adherence to this rule of planting there is no danger of the incongruous commingling of plants unsuited for juxtaposition with each other; and pleasing variety is assured by each bed presenting a distinctive character to that of its neighbour.

Herbaceous and Mixed Flower Borders.—Place supports to Pyrethrums, Sweet Peas, Convolvulus, and all other plants requiring that aid. Keep weeds in check by surface hoeing in fine weather, and when showery fill up vacant spaces by planting out Dahlias, Hollyhocks, Asters, Stocks, Zinnias, Phlox Drummondi, Wallflowers and the like. Anything like formality of arrangement of plants in such borders should always be avoided, yet some thought, and especially knowledge as to height of plants, is necessary to give each their rightful position. The foliage of bulbous plants that are dying down should be tied together with bast matting till it finally dies off, and patches of surface-rooting Sedums or Saxifrages be planted to fill up the blanks thus caused. The ground beneath and between tall-growing plants may be similarly treated, and the same low-growing plants can be as effectively used to produce separate clumps of colour near the margin of the border.

General Work.—Water Roses, and keep them free of aphis by syringing with tobacco-liquor or strong soapsuds. To destroy mildew, dust with sulphur; and to prevent it keep them well mulched and moist at the root. Clip Box edgings, and water any that have been newly planted; knife in evergreen hedges, and remove seed-pods from the early Rhododendrons and Azaleas. Clip the grass edgings of shrubbery clumps and walks once a fortnight, and roll walks after heavy rains. The drought is telling against lately removed shrubs and trees; they should now have plenty of water, and mulchings of litter or lawn mowings to conserve the moisture as long as possible. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

After a lengthened period of anxiety one is able at last to state definitely the condition of fruit trees and the prospects generally of the forthcoming harvest of hardy fruits. The supply of stoned fruits, which only a short time ago promised to be abundant, has sorely diminished during the past fortnight, with us at any rate; and, with the exception of Coe's Golden Drop and a few trees of Green Gage, the Plum crop cannot be described as being more than a moderate one. Cherries have suffered a worse fate as far as regards dessert varieties, but Morellos look much better. It is more than probable, however, that those who enjoy the salubrious air of higher altitudes, where the wood has been better ripened, will fare better. It is worthy of particular notice that fruit trees upon north walls are decidedly cleaner, healthier, and altogether in much better condition than the same kinds of trees upon east or west walls. The explanation is simple, in the fact that the trees in north situations have not been exposed to the same violent variations of temperature that trees in other situations have been exposed to lately. I have never seen black and greenfly less troublesome upon wall trees, thanks to the hardy nature of the growth the trees are making under the influence of drying winds and plenty of sun. Wherever the pest is discovered, however, it should be dislodged immediately by means of the garden engine, which will be found a sufficient remedy to keep a mild attack of the insect in check. Caterpillars are still troublesome upon Apricots and Plums, and these are best kept under by looking over the trees every morning and afternoon, and destroying them with the hands. If not watched assiduously they perforate the leaves, and seriously damage the health of the tree. Vines upon walls will now require disbudding and regulating, so as to fill up any blanks that may occur through some of the unripened shoots being killed by the late severe winter. Figs are also coming away weakly, and if their shoots are thinned out in good time, and those that are left to bear fruit are pinched, the check they have received may induce fruitfulness in gross growing trees. This class of work should not be put off from day to day until the shoots ramble away into a semi-wild state with the advent of warm weather. Pinch at the fourth or fifth leaf, and lay in the shoots thinly in order that they may get consolidated and ripened. We have already soaked the roots of all our wall trees with water that was exposed to the action of the sun for several hours before it was used. Small fruits generally are promising crops. Black Currant trees affected with greenfly should have the infested portions pinched out, which will prevent the further spread of the insect, until we get the thunder shower which threatens daily to thoroughly clear the trees of those unwelcome visitors. Strawberries are suffering severely in light soils, and nothing but a thorough soaking of water at the root and heavy surface mulching will secure a crop. Continue to make successional plantations for fruiting next autumn from forced plants, and for supplying the general crop next year. *W. Hinds, Canford.*

FRUIT HOUSES.

Vines.—The Vines from which we obtain our latest Hamburgh Grapes through November and December are now in flower. The house, a span-roof with glass sides, is used for wintering large plants, and the temperature near the roof is often below the freezing point in severe weather. It is efficiently ventilated, and we endeavour to prevent the plants from making young growth before it is safe to remove them to the open air for the summer. When the Grapes are quite ripe they are cut with wood, bottled and placed in the Lady Downe's house to make room for the plants over which ripe Grapes of any kind, especially Hamburghs, would not keep through November. We then throw open all the ventilators and apply dry fire-heat until the leaves fall off from the Vines, and we are satisfied that the wood is quite ripe. The Vines are planted in a narrow inside border, and have about 9 feet of clean stem up which we train pot Tomatos, allowing them to root into the mulching. They present a very ornamental appearance, clothe the sides of the house, and produce a continuous supply of excellent fruit. My object in writing the above is to show that the starting and ripening of Grapes or other fruit may be retarded for a considerable time, and that large houses used for terrace plants in winter may be turned to profit and ornament in summer—the points to be observed in their successful management being complete ventilation, sound, elevated, but not over-rich borders, frequent lifting and relaying of roots, and liberal firing after the Grapes are cut. Some years ago I tried Lady Downe's, but notwithstanding the fact that they set well and made fine bunches, the season of growth was too short and they were removed.

In many houses this fine late kind, together with Mrs. Pince's Black Muscat, Black Morocco, and some of the white kinds, will now be in flower, and if it can be managed, a Hamburgh Vine should be in flower also for cross-fertilising the shy setters. Many of these kinds do well through the early stages with and under Muscat treatment; but the time arrives when the high temperature essential to the finish of Muscats does not favour the colouring of the black kinds, and although they eat well they often remain deficient in finish. Gros Colmar, on the other hand, will stand any amount of heat, but the foliage is not the best for withstanding bright sunshine; this defect, however, makes little difference, as the fruit seems to swell and often colours after the leaves are gone. To grow the finer kinds of black Grapes for winter and spring use they should be kept out of the Muscat-house altogether, and they should have the benefit of a long period for making and maturing their growth. By this time the thinning of the main crop of Muscats will have been brought to a close, and the borders will be in a fit state for mulching with good rotten manure, and the reception of copious supplies of water. It will be necessary to keep the external borders well covered with leaves or litter to prevent the escape of moisture, and on light soils the application of water or diluted liquid manure may be needful. Give more air to the early pot Vines intended for fruiting next spring, and syringe the foliage to keep it free from insects, as future success is made or marred by the preservation or premature destruction of the main leaves. *W. Coleman, Eastnor.*

Melons.

Continue the earthing-up of the hillocks in successional-houses, pits, and frames, as the roots protrude through the sides of the mound, and until the allotted space for that purpose is filled, and see that plants suffer not for want of, or from too much, water at the roots. Allow those plants which are swelling off their fruits to have liberal supplies of tepid liquid manure, not too strong, immediately after they have had clear water applied to their roots, which should always pioneer the thicker and more stimulating fluid. Let the atmospheric moisture of the various houses, pits, and frames, be in accordance with that stage of growth at which the occupant of each structure may have arrived. Plants coming into flower must have plenty of ventilation during the day, the syringe being withheld from them until they have set their fruit, after which it can be brought into use again. The shoots of young plants which are now covering the surface of the bed should be thinned out to three or four leading shoots, and these must be stopped as soon as they have partly covered the bed; as a matter of course, this will result in the production of fruit-bearing shoots which, when they expand their flowers, should be impregnated when the pollen is dry. Three or four fruit to each plant, according to its strength, will be sufficient for a crop. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

Fernery.—Now that the young fronds of Ferns are in an advanced condition, the whole of the old shabby foliage may be removed without any detriment to the plants, and in cases where the roots are at all confined and the drainage free and open, as it should be, water must be given copiously, and a thoroughly moist condition of the atmosphere maintained in order to encourage quick growth. With this view it will be necessary to syringe heavily both in the morning and evening, so as to wet every portion of the rock or interior of the house, which should be closed early that the plants may enjoy the genial warmth afforded by the sun, which is very conducive to health. Where fixed shades have to be used, they ought to be of the thinnest material, and if possible placed outside the glass, as there they will help to moderate the great solar heat we may expect to get by-and-bye, and keep the internal air more humid and uniform. Ferns grown for the sake of their fronds for cutting cannot well have too much light, as by full exposure to its influence the texture is greatly improved, and instead of shrivelling up when severed from the plants they last fresh and remain in good order for days.

Greenhouses.—Many of the hardier occupants of these structures will, after this, be quite safe outdoors, but in removing them to the open much caution is needed to prevent the foliage suffering from sudden exposure, as even Rhododendrons and hard-leaved plants of that class often get browned and injured unless they have plenty of shade for a time to gradually inure them to the change and enable the tissues to become thicker and firmer. This being the case, the best way is to place the plants immediately under the protection of a high wall, fence, or building, where they can stand out of reach of sharp draughts, the drying effect of which is even more trying than sun. To modify the change as much as possible, advantage should be taken of dull showery weather to get them out, and it will be a great help if they are syringed overhead, in the event of the atmosphere becoming at all arid. After a week or so the plants may be arranged in their summer quarters, in doing which it is very important that each be stood on a tile or slate to stop the ingress of worms and secure good drainage, and to prevent the roots on the outside of the ball from suffering through the rapid desiccation of the soil where it touches the pots: these latter should be protected by being surrounded with litter or leaves. Arranged in this way the soil remains more uniform altogether, and the plants are consequently in a better position to maintain themselves in health than they would be were they subject to sudden changes, as must of necessity be the case when the pots are exposed. Such things as Richardias, Spiræas, and Eupatoriums will do far best planted out in shallow trenches, where they will be handy for water, and if kept well supplied with this and liquid manure they will grow very strong, and be fine for taking up again in the autumn. Salvias, too, and Chrysanthemums do remarkably well treated in the same manner or planted on the flat, and not only may larger, healthier plants be obtained in that way, but it saves much time and labour during the summer months, when there is so much else to attend to. Azaleas that are now out of bloom will be greatly benefited by having a closer and moister atmosphere than that of an ordinary greenhouse, as in the latter the conditions are not favourable to free growth and a full development of flower-bud. With free syringing, Azaleas stand and enjoy great heat if afforded by early closing; and by assisting them in this way, and getting them well advanced at this end of the season, there will be no difficulty in ripening up the wood at the other. The great point with the plants now is, to see that they do not suffer from want of water, as when pot-bound, and subjected to a higher temperature, it is surprising the quantity they will take. It is not the dribblets, however, that are required, but a thorough soaking, so as to permeate the whole of the ball, for if the interior is allowed to become dry there is generally a difficulty in wetting it again. To make sure therefore that the watering is effectual it is always advisable to go over the plants a second time, as in potting it often happens that there is not sufficient space left to hold what they require.

To keep the conservatory roof climbers in anything like order they will need frequent attention or they soon get so thick as to become a tangled mass; but beyond judicious thinning and regulating, the less training they have the more natural and better will they look. As the borders in which these plants are grown are usually very circumscribed, they cannot well have too much water for the next few months, and especially is this so as regards those containing Tacsonias and Lapagerias, the former of which, if the soil becomes at all dry, soon get disfigured by red-spider, and the latter by scale and thrips. Besides these pests, greenfly are very fond of the young shoots of Lapagerias, which they soon disfigure and cripple, but if dusted with tobacco-powder they are so discomfited that they may readily be dislodged by a free use of the syringe. *J. Sheppard, Wolverstone.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	May 31	Sale of Imported Orchids, at Stevens' Rooms
Tuesday,	June 1	Sale of the Ealing Park Estate, at the Mart, by Debenham, Tewson & Farmer
Wednesday,	June 2	Bath and West of England Society's Show opens at Worcester. Sale of First Portion of Mr. Turner's Collection of Orchids, at Stevens' Rooms
Thursday,	June 3	Meeting of the Linnean Society, at 8 P.M. Second Day's Sale of Mr. Turner's Orchids
Friday,	June 4	— Third Day's Sale of Mr. Turner's Orchids

LIKE the Chinese Primrose and the Cineraria, THE CALCEOLARIA is a deservedly popular greenhouse plant. It is managed with comparative ease, it is a free and rapid grower it is marvellously free of bloom, and of great decorative value when the plants are at their best. It is of but few plants that such a warm commendation can be written.

We can remember the time when the herbaceous Calceolaria was a very different thing to what it is now. Then (and we are thinking of thirty years ago) the flowers were small, and somewhat limited in point of colour, the growth spare and tall; indeed, that was the time when it was beginning to pass through certain stages of development which have issued into the splendid forms—dwarf in growth, but of vigorous branching habit—we see in the present day. Then it was the custom to select and name the finest flowers in a batch of seedlings, as we do Pansies, Antirrhinums, Phloxes, &c., in the present day; now strains of the Calceolaria are so fine, and such superb forms can be produced from seed, that it is a work of supererogation to name them. Then particular varieties of the Calceolaria were propagated by cuttings; now we can depend on seed, provided it has been saved from a fine strain, to yield us the finest types—in fact, all we could well desire.

The Calceolaria can lay claim to be one of the gayest of greenhouse plants. The crimson, maroon, orange, mauve, violet, pink, and other striking hues are almost peculiar to this flower and the Salpiglossis among hardy annuals. The flowers are borne in dense masses, and if, as some say, the blossoms are short-lived, there is, to a great extent, a succession, and thus the gaiety of the colours illumines a house for some time. As an exhibition plant the Calceolaria has for a long series of years taken a foremost place, and in the month of May especially it is at its best, and we of the present day are accustomed to see plants 18 inches to 2 feet in height, with an abundance of healthy leaves down to the rims of the pots, a perfect mass of bloom—and such flowers, too—large in size, fine in form, and handsome in shape. We owe it to many growers that the character of the Calceolaria has been so much changed and improved during the past quarter of a century; for it is seldom that one man does all this needful work himself, though some excel and make more rapid and palpable strides than others. The Calceolaria growers of the present day have entered into the possession and enjoy much of which their forefathers scarcely dreamed.

Like the Cineraria, the Calceolaria incurs the charge of being a dirty plant—that is, it is one peculiarly subject to the attacks of greenfly, as also one that soon shows the effects of the attacks. Close watchfulness is necessary, and if fumigation be resorted to in time the plants are soon cleansed from the intruder. It is they who neglect timely precautions who have to mourn over dirty plants. We have seen houses filled with good specimens in a perfectly healthy and clean condition, thus showing it is but a matter of proper attention to the requisite time.

It is a very simple task to raise Calceolarias from seed, so much so, that if some seed were sprinkled on the ground in a cool moist place in a cold frame, it would be certain to grow. It is the custom of some to make two sowings of seed in a season—one in the middle of July and another early in August, but, unless a large number of plants be required, it will be found one sowing will give all that is necessary. It is one of the minutest of flower seeds, and needs to be sown as thinly as possible. The popular plan is to sow in ordinary seed-pans half filled with drainage, the compost consisting of a mixture of two-thirds soft fine loam, the rest peat and leaf-mould in equal proportions, with a good sprinkling of silver-sand, the whole being well mixed and tolerably fine. The fine roots of the tiny plants run freely among the light particles of the soil, after a quick time of germination, but this depends upon proper treatment and correct sowing. The pans, being filled with soil, should be well watered through a fine rose, so as to saturate every portion of it, and then left for a little while to dry on the surface; then scatter the seeds very thinly on the surface, and cover them with a delicate coating of fine soil. The pans

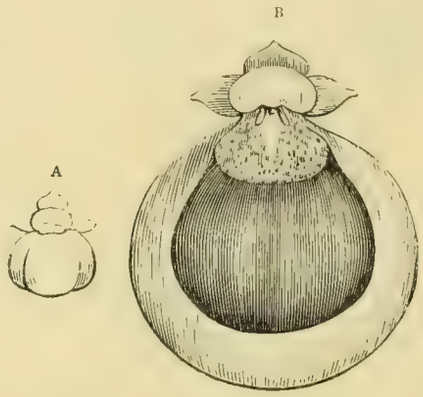


Fig. 119—A, CALCEOLARIA ARACHNOIDEA; B, THE CALCEOLARIA OF FORTY YEARS AGO.

can then be placed in a cool frame in the shade, and if kept moist plants will appear ere long. Some put a little moss on the surface, others a piece of glass over each pan. The great essentials are to keep the surface moist and cool, and when watering has to be done to perform it with great tenderness. As the seedling plants attain size air must be given, for it is in the young state that the foundations of flourishing, healthy plants are laid. When the seedlings are large enough to handle they should be pricked off into other pans of similar soil, and every encouragement given them to grow. Then follows potting singly into small pots, increasing the size of the pots as the plants develope. The plants make rapid progress at this stage, and he is a wise cultivator who gets them into as large a size as possible consistent with a dwarf hardy growth by the time the summer days darken into those of autumn. During this time frequent fumigations will be necessary to keep down greenfly, and giving air to encourage a hardy and robust growth. The Calceolaria is a hardier plant than many imagine, and can be wintered with safety in a cold frame, provided the frost be kept from them by means of suitable covering. The great requisites are to give the plants plenty of air on all favourable occasions, and to keep them fairly dry at the roots.

As the spring time comes on the plants will have well filled their pots with roots, more water must be given, and some weak manure-water be given twice a week. A little training is also necessary to secure good well grown specimens, and so the shoots should be brought down to the rims of the pots, pegging them if possible, as they in their turn send forth fresh roots, materially aiding vigorous development. According to the time at which it is desired to have the plants in flower should the shoots be stopped, and in this way successive batches can be had. The earliest plants in May, and later ones in June and July, will then gladden the heart of the grower with blossoms that will crown his exertions with success, and richly reward him for his labour. In a cool, airy greenhouse, where the plants can be shaded from the sun, and a subdued light maintained, they will last for a long time to come.

It is a matter for great regret that the fine shrubby kinds, grown fifteen and twenty years ago, are now scarcely to be met with. They were a most useful race of Calceolarias, but are nearly lost. The fact that they had to be propagated by cuttings told against them no doubt. But they were made to serve one good purpose—the blood of the race was used in giving strength and vigour to the annual types, and we have now in association to a considerable extent the robustness of the one and the size and beauty of the flowers of the other. In certain districts of the country, shrubby Calceolarias may be met with as window plants in cottage residences; some day these will be rescued from their comparative oblivion and once more take their place in our greenhouses.

In our volume for 1841 is given a history of the Calceolaria up to that time, which is very instructive reading now-a-days. From the statement there made it appears that C. corymbosa was raised from imported seed in 1823, and that C. arachnoidea was introduced about the same time. These were the parents of a hybrid race, which subsequently became further crossed with C. viscosissima. We are enabled to give illustrations of the flowers of one of these species (fig. 119 A), and of what was considered a good Calceolaria in 1841 (fig. 119 B); and the progress that has been made since may be judged by comparing them with the illustrations we give of the Calceolaria in 1880.

Looking over some illustrated floricultural works recently we were also afforded the opportunity of comparing the Calceolaria blooms of 1850 with those of 1880. That we have gained enormously in point of size, as well as in that of strongly marked and rich colours, cannot be denied. The progress has been wonderful; but in the race for size we have lost sight to some extent of that symmetry so dear to Messrs. KINGHORN, CONSTANTINE, and others, who made the Calceolaria famous before the present generation saw the light. But we progress notwithstanding, and the moving hand that year by year leaves on the pages of Nature tracings of the advance it is ordained shall be made, will presently write down the clear lines of new forms of beauty as a heritage for those who are working for and waiting patiently the time when fulfilment will give place to prophecy and prediction be lost in certainty and possession.

The coloured plate issued with the present number was drawn by Mr. FITCH, from specimens grown by Mr. RAPLEY, when gardener to ROBERT HUDSON, Esq., of Clapham Common. Mr. RAPLEY is now gardener to J. BRAND, Esq., Bedford Hill House, Balham, at which place he has now in flower a very fine collection.

—— THE SINGLE PINK THORN.—This is a singularly pretty and effective tree for spring blooming in forecourt gardens, and is not only well adapted for the suburbs of towns, but should also be largely planted. It is very free indeed, and the colour singularly bright and effective. When well established it grows freely, and the modern jobbing gardener, who

Fig. 120.—Calceolaria Crystal Palace.

above all things believes in and carries into practice the notion that the round form is the most natural in bushes and trees, clips away at it with his shears in autumn, and makes the mop-head his ideal of beauty in outline. If he would only permit the tree to grow naturally, and be satisfied with simply cutting back into proper bounds all exuberant growths! Close by the spot where we are now writing there are two of these trees, one of which was cruelly trimmed back with the shears in November, and is now destitute of flowers; the companion tree was happily operated on by another gardener, and he contented himself simply with cutting out the gross shoots. This tree is now densely laden with trusses of bloom of the most cheerful character, and is the admiration and envy of passers by. The double Pink and double crimson forms are most effective also, but for picturesque effect the single form can hold its own against the finest of them.

—— Roses in Pots.—Mr. George Poulton, of Edmonton, is now sending into the market some plants of H.P. Rose Baroness de Rothschild, in 48-sized pots, that are most interesting illustrations of successful Rose culture. The plants are some 25 to 30 inches in height, they have three and four main shoots springing from the base of the plant, and each carries a fully developed blossom, with a companion bud or two. The flowers are large, full, and most charmingly coloured—a deliciously soft, silken, fleshy-pink; and the foliage is large, healthy, and plentiful. It is another testimony to the capacities of the 48 pot as a vehicle in which to grow plants of marvellous development. A lady can go to market and take away one of these Roses with comfort; but when 8-inch and 10-inch pots are used for Roses, the size and weight of the plants are qualities that tell against them. It would appear as if these Roses are on their own roots, and no one will be surprised to hear they are soon bought up at good prices.

—— Double German Wallflowers.—A remarkable, and, it may be added, an unusual collection of these fine Wallflowers is now in bloom at the London Road florists' flower seed grounds of Messrs. Sutton & Sons, at Reading. Two excellent qualities characterise these plants; one is that they show so much variety of colour, the other being their massive, well-furnished spikes, representing the outlines of German Stocks rather than Wallflowers; a third, and most excellent feature, is their dwarf growth, in which respect they differ materially from our English types of double Wallflowers, which are of tall and straggling growth. Some of the orange and golden self-colours are particularly fine, the individual flowers very large and full. Such a strain as that in the possession of Messrs. Sutton & Sons contains a very large percentage of double flowers, but this may be generally characteristic of strains of improved double German Wallflowers now offered for sale. Much has been done by careful selection; the flowers under notice had been selected with much care. The seeds were sown at the end of June or early in July last, and treated much as we treat single Wallflowers. If a stand of cut spikes of Messrs. Sutton & Sons' double Wallflowers could be, when in their best condition, exhibited at one of the meetings of the Royal Horticultural Society, much would be done towards securing for these most deserving subjects a greatly increased share of public attention.

—— Commemorative Tree Planting.—After taking part on Friday, May 21, in the presentation of a portrait to Principal Tulloch, the Lord High Commissioner, Lord Rosslyn, accompanied by the Countess of Rosslyn, Misses Maynard, Sir Arthur Halkett, Captain Baillie, Dr. Hamilton Ramsay, and Mr. Ellis, visited Sir Noel and Lady Paton, and spent some time in Sir Noel's studio. The distinguished party afterwards drove to the Royal Botanic Garden, where it had been arranged that his Lordship should plant a tree in commemoration of his present visit to Edinburgh. They were received at the entrance by Mr. Sadler, Curator of the Garden, and being subsequently joined by the ex-Regius Keeper, Dr. Balfour, were conducted to the terrace in front of the range of conservatories, where Mr. Sadler had made preparations for planting a fine specimen of Libocedrus decurrens, the White Cedar of California. The tree in question is a noble evergreen Conifer, found along the banks of the Columbia River and on the Californian mountains, where it attains the height of 140 feet. The Lord High Commissioner having duly performed the ceremony of planting, and filled in a considerable quantity of soil, a garden watering-pot was handed to Lady Rosslyn, who bestowed its contents upon the young Fir; his Lordship remarking that he had played the part of Paul, and her Ladyship that of Apollos, but the increase must come from a higher hand. The tree thus added to the ornaments of the garden comes in as a companion to that planted last year by the Countess of Rosslyn—a specimen of Retinospora obtusa, the Tree of the Sun of Japan—which, it may be mentioned, has thriven most satisfactorily. At the close of the ceremony, which was witnessed by a considerable number of people, the Lord High Commissioner and party visited Mr. Sadler's house, where they saw the famous Sea Anemone, "Granny," which has been in the same glass jar for the last fifty-two years.

—— Lilium polyphyllum.—We are informed that this Lily, a native of the western temperate Himalaya, is now in bloom at Mr. Bull's establishment. At the time that Mr. Baker wrote his monograph in our columns in 1871 no cultivated specimen had been seen.

—— Peas.—The market Pea crop will this year not be a heavy one, as extensive breadths show a thin plant, and only a change to warm rains and softer nights can bring about that filling out which sometimes helps to make a thin Pea plant profitable. The earliest sowings put in during February are now in full bloom and look well; these consist chiefly of Sangster's No. 1, still the hardiest and safest Pea for early sowing. It is not probable that green Peas will make any considerable show in the market until about June 10 or 12. The thinnest plant is found amongst the wrinkled Marrows, such as Veitch's Perfection and Champion of England, both favoured kinds. Rather better are the earlier intermediate sowings of Harrison's Glory and Laxton's Supreme, both kinds largely grown.

—— Late Frost.—The most destructive and perhaps the last of all the spring frosts was that of the morning of the 19th inst., when Potatos in the open field that had stood through the cold east winds succumbed to the first quiet cold night. This result shows once more how difficult it is to reconcile early planting with entire immunity from frost. Exposed Strawberry blooms have been blackened, but there is such a wonderful lot of bloom this year, and that so strong and healthy, that only an unwonted late frost can prevent a large crop of that fruit. Gooseberries exposed to the weather have been discoloured, but otherwise not materially injured. Such a curious result as entire beds of young plants of Veitch's Giant Autumn Cauliflower cut quite off were seen, and also Cape Broccolis. All these effects of the last frost, however, appear to be slight as compared with the mischief done to Vines and tender trees on the Continent.

—— Odontoglossum cristatellum.—This curious Orchid, supposed to be a hybrid between O. cristatum and O. triumphans, or epidendroides, is now in bloom in Mr. Bull's nursery. It was described in our columns by Professor Reichenbach, vol. x., 1878, p. 716.

—— Bath and West of England Society.—The hundred-and-third annual exhibition of this Society will be opened at Worcester on Wednesday next, and close on the evening of Monday, June 7. The exhibition is expected to be such as to have been hardly surpassed by any of its predecessors. In the implement department there is a large increase over last year, there being in the department of machinery in motion no less than eighty-five compartments, occupied by all the leading firms of agricultural engineers. The numbers in the live stock department are in the aggregate not unlike those of the excellent show of last year, although, of course, more numerous in the entries for the distinctive breeds of the district wherein the show is held. The poultry show will rival, if not exceed, that at Oxford in 1878, which was up to that time the largest ever held by the Society. An appropriate speciality of the exhibition will be an extensive and choice display of the artistic wares for which Worcester is famous. The Royal Porcelain Works and other well-known makers will have stands in the arts manufacture department, and their names are a guarantee that the reputation of the city will be maintained. The horticultural department will, as usual, form an attractive feature of the exhibition, and will consist of a number of rich specimens from the floral collections of gentlemen and nurserymen in Worcestershire and adjacent counties. It may be added that the showyard is particularly accessible from and near to the city and railway stations, and that special trains will be run to suit the convenience of visitors from all parts, many of whom will no doubt be additionally attracted by the architectural beauty of the Cathedral and the proximity of the far-famed Malvern hills.

—— College Garden, Dublin.—We are pleased to hear and have evidences of the activity of the newly appointed Curator of this establishment. In a box just received from him we find specimens of the following plants, together with notes, which will be read with interest:—"I was well pleased to see such a fine engraving of the autumn, winter, and spring blooming Euphorbia Characias in your last edition, and now send you a few more old friends with hardy flowers for packing material. Veronica Hulkeiana sprays, from outside; it is perfectly hardy here at Dublin, and is just now very beautiful, quite small wall shrubs of it being a dense mass of pale mauve panicles. Armeria grandiflora is one of our best and most constantly beautiful rockery plants. I send a spike of our variety of Orchis foliosa. It was brought to the garden here some years ago from Algiers by Dr. E. Perceval Wright, the Professor of Botany at Trinity College, and is one of the finest of terrestrial Orchids, having a constitution so robust that it increases in size and vigour from year to year. It grows robustly in a cold shady frame. The spikes when fully developed are a foot in length—that is, when in full beauty, with more buds to expand; but when fully developed—*i.e.*, when the last buds are open—they frequently attain a length of 15 inches. The Leptospermum scoparium forms a greenhouse shrub 6 to 8 feet high, and is covered with those sprays in a way very suggestive of Hawthorn. I shall be glad to know how damp paper and soft hardy flowers serve as packing [Very well]. I always detest the use of cotton-wool." [It should be peremptorily abolished for such purposes. Eds].

—— Origin of Pyrethrum Golden Feather.—With reference to the origin of this immensely popular bedding plant, the Rev. G. Pinder, late Vicar of Harford, writes to the *Journal of Horticulture*:—"So many erroneous statements have been made as to the origin of this plant, I am wishful that the honour of its origin should be given to the one to whom it is due. The originator of it was a Godmanchester man, Ebenezer Seward, who was once my gardener—a man of considerable intelligence. He found the plant in his cottage garden and brought it to me, and at my suggestion sent it to Messrs. Henderson & Sons. He named the plant himself 'Golden Feather,' and disposed of his stock to Messrs. Henderson. He is still living as gardener to P. E. Tillard, Esq., of Godmanchester, near Huntingdon. I saw him last month, and had the pleasure of telling him that I had seen his Golden Feather in common use in France and Italy."

—— The Irish Seeds Act.—At the instance of Mr. E. D. Gray, M.P., Lord Mayor of Dublin, the local Irish Relief Committees have begun to collect statistics as to the increase of local rates in the districts under the operation of the Seeds Act passed last session. Mr. Gray intends to propose that the districts receiving grants under the Bill shall receive aid in the repayment of the advances from the Imperial Exchequer, on the ground that it would be unfair to increase the local taxation during the prevalence of the distress.

—— The Kew Arboretum.—By inadventure in a recent issue we stated that no plan of the arboretum, available for public use, existed. In this we were in error. The last edition of the *Guide to the Royal Gardens* (Macmillan, 1878) does contain such a map, but one that, for students' use, requires amplification and further explanation.

—— Maculated Gloxinias.—This is, perhaps, the most fitting designation for a strain of Gloxinias of great delicacy and beauty that we have become familiar with during the past few years. A group of these was shown by Messrs. James Veitch & Sons

at the meeting of the Royal Horticultural Society on Tuesday last, and we were glad to note the substantial advance that is being made, not only in the brightness and variation of the colours forming the spotting, but in the unique and novel character of the markings. The varieties are nearly or quite all erect-flowered, which is desirable in order to survey the markings. A few of the leading varieties were as follows:—Lady Marriott, with lively rosy-pink markings on a white ground, and broad even white magin, very delicate and pretty; Christophe Colomb, rich purple, most charmingly and delicately maculated to the edge, which is of a paler tone than the throat; Professor Griesbach, very delicately inlaid with rosy-purple, bright and effective in colour, white margin; Prince of Wales, frosted with purple, and having a broad white edge; Zenobia, having the surface delicately maculated with purple and orange, broad white margin; Jeunne Meuret, having a slight spotting and white edge; Gaze Lilas, with purple surrounding the throat and lively purple on the lobes, very fine and distinct; Paul Deroulide, having a distinct margin of mauve, the throat maculated with the same; and Charme de Lutice, maculated with magenta more heavily than in the case of the varieties generally, but yet very handsome and distinct. What is wanted in the case of these most pleasing Gloxinias is more stoutness in the flowers. There is form, but they lack substance. This will be certain to come in time, but their richly jewelled blossoms, with their delicate nebulous tracings, are so attractive that they will be certain to find admirers, and receive the attention they so well merit.

—— Rhodanthes in Pots.—The beauty of the pots of Rhodanthes now being brought to market deserves a passing notice. The varieties mostly grown are Manglesii alba and maculata, affording an excellent contrast, the one being white, the other bright rosy-pink. The seeds are sown in January or February in the 48-sized pots in which they are marketed, placing them thinly in the soil, and when large enough the plants are thinned out to some eight or ten, and by May they are well in flower, and carry dense heads of bloom. We have lately seen pots of the two varieties named, on the plants forming which can be counted fifty or sixty opened blossom-heads, besides many in bud. When well-grown the plants are well furnished with leaves quite to the base of the stems. As the plants are grown on in a strong heat they need to be well hardened off before they are brought out for sale, and there is reason to think some of the growers are not quite careful enough to harden sufficiently, the consequence being that the foliage becomes withered, and a good deal of the beauty and symmetry of the plants is thereby lost. When well prepared for exposure pots of Rhodanthes make excellent subjects for the window, and they remain for a long time in good condition. After that quality has passed away the flowers can be cut, carefully tied away in bunches, and kept for winter decoration. The Rhodanthes are charming and useful subjects for bouquets; indeed, they are very useful flowers, that should be largely grown by gardeners.

—— Compliment to Mr. Goad.—On Saturday last Mr. William Lewis Goad was entertained at a dinner at Freemasons' Tavern, Great Queen Street, W. J. Nutting, Esq., in the chair, D. Syme, Esq. (Edinburgh), Vice. Among the gentleman present were R. T. Macintosh (Edinburgh), James Cowan, Peter Barr, John Fraser, David Allister, S. A. deGraaff (Haarlem), A. Barnart (Leyden), Frank F. Toole, John Horsburgh (Edinburgh), and several others. During the evening the Secretary, Sam. McDowall, Esq., presented Mr. Goad with a handsome Malacca cane and a gold chain and locket containing portraits of his (Mr. Goad's) two daughters. The usual loyal and other toasts were drank, and altogether a very "joyous" evening was spent.

—— Stopping Laterals on Grape Vines.—In a letter to us Mr. William Earley raises the question of the propriety of this practice and the time at which it should be done. Mr. Earley argues that as the activity of leaves and buds of the Vine is developed before that in the roots, which are formed in consequence of the latter, the practice of suppressing the young leaves is of doubtful utility. The point is undoubtedly one of importance, but so far as the first development of roots and leaves is concerned, it must be remembered that it is the nutriment stored up in the old cane which furnishes at first the necessary material for the growth of both.

—— Royal Horticultural Society.—We are glad to note that the *conversazione* held in the large conservatory on Wednesday was a very brilliant affair, and, thanks to a fine warm evening and a good company, passed off very satisfactorily.

—— Vine Louse in Sicily.—Mr. Consul Rose states, in a despatch from Palermo dated May 12, that according to a report made by Professors Doderleni and Paterno to the President of the Agricultural Society of Palermo—1, the Phylloxera has attacked the Vines of Riesi since 1872; 2, that these Vines, though diseased, present externally a flourishing state of vegetation; 3, that for eight years there has been no falling off in the yield of Grapes, and that the Vines would continue to give abundant crops of fruit for an indefinite period without their being totally destroyed; and, 4, that the comparatively slow progress made by the disease is attributable to the nature of the soil, to the special properties of the Sicilian Vines, and to the system of plantation and culture.

—— Linnean Society.—At the anniversary meeting of this Society, on the 24th inst., Prof. Allman was re-elected President, Mr. Currey became Treasurer in place of Mr. Gwyn Jeffreys; and Messrs. B. D. Jackson and F. Alston were elected Secretaries in the room of Messrs. Currey and St. John Mivart. The President's address took the shape of a review of the vegetation, indigenous and cultivated, of the Riviera. The financial position of the Society is satisfactory.

—— The Laburnum.—Amongst all our ornamental flowering trees the Laburnum is assuredly in the foremost rank. No garden seems complete without its glorious racemes of golden-yellow flowers. In the Arboretum at Kew the typical plant is altogether outshone by its varieties, Parksii and autumnalis, both of which have much finer flowers than the commoner and older form. The variety called quercifolium is a rather peculiar one, each of its leaflets being sinuated and bearing a more or less fancied resemblance in outline to an Oak leaf.

—— Publications Received.—*Portugal, Old and New*, by Oswald Crawford (Sampson, Low & Co.).—*The Amateur Gardener*, by Mr. Loudon, edited and revised by W. Robinson (Frederick Warne & Co).—*Bee-Keeping for Amateurs*, being a short treatise on apiculture, on humane and successful principles, by Thomas Addey (*Bazaar* Office, 170, Strand).

—— The Weather.—General remarks on the weather during the week ending May 24, issued by the Meteorological Office, London:—The weather was fine and moderately clear during the first two days, but quickly became less settled, and from the 22d till the close of the period the sky was dull or cloudy in all parts of the kingdom, with rain in several places, especially in the N. and N.W. Temperature was a little above the mean in "Scotland, E." and "Ireland, S.," and equal to the mean in "Ireland, N.," "England, S.W.," and "England, N.E.," but slightly below it in all other districts. The highest of the maxima (77° at Southampton, and 78° at Prawle Point) occurred on the 20th or 21st. At the commencement of the period the nights were rather cold, and in the central and eastern counties of England one or two slight frosts were registered. The rainfall was a little more than the mean in "Scotland, W.," and equal to the mean in "Ireland, N.," but in all other districts the fall was very slight. Bright sunshine shows a decided increase in all parts of the country, but was more prevalent in the south-west of England and south of Ireland than elsewhere. The wind on the 18th was easterly in nearly all parts of the country, but a southerly to a south-westerly breeze had appeared at our more northern stations, and gradually spread to all our coasts. In force the wind was light or moderate during the first few days; from the 22d till the end of the period, however, it blew freshly or strongly generally, and occasionally reached the force of a gale at some of our north-westerly stations.

Home Correspondence.

New Hybrid Rhododendrons.—I think a short notice of some Rhododendron blossoms received from Mr. C. Scott, of the Lawson Seed and Nursery Company, may be interesting to your readers. The blossoms are the produce of a cross between R. Aucklandii and one of our ordinary hardy varieties, and the remarkable feature about them is the intensity of the scent, quite as powerful and fragrant as that of R. Aucklandii itself, if not more so. The plant withstood, last winter, in the Edinburgh gardens, a temperature of 2° below zero, without injury to the blossom-buds. I have long hoped to see a race of hardy Rhododendrons exhaling the delicious odour which many of the tender species possess—a result to be obtained, as often stated in your pages, by crossing with the magnificent species introduced by Sir Joseph Hooker and others from the Himalayas. Hitherto I have seen none of this type which can properly be called hardy; but Mr Scott seems to have solved the problem at last, and deserves the thanks of all Rhododendron growers. *J. H. Mangles, Valewood, Haslemere.*

Passiflora racemosa.—This though an old inhabitant of our plant-stoves is but seldom met with in a really creditable condition—a circumstance that is much to be regretted, as it is a plant well worthy of careful culture, especially as a stove climber. I lately saw a fine healthy and well grown example of it growing in one of the plant-stoves in the gardens at Eridge Castle, near Tunbridge Wells. The plant in question was trained along the roof of the house, thus showing off to advantage its beautiful racemes of bright scarlet flowers. *T. W. S.*

Spotted Mimulus.—It may interest some who wish to have a beautiful flower-bed somewhat earlier than can be had through the usual summer bedding plants that I have a bed of these containing about 300 plants put out the first week in May, just as the first flowers were about to expand, and which have been all in beautiful bloom since. No keen cold winds or white frosts have injured them, as these Mimulus of Clapham's strain are very hardy. The colours and markings are legion and most beautiful, the flowers large and rounded, and the plants moderately dwarf. These are from seed sown in an ordinary greenhouse in January, and had previously to planting out been pricked off only once. If any one will try a bed of these next year and dibble in Asters amongst them they will have no cause to complain of the result. *A. D.*

Double Pyrethrums.—Among hardy border plants now blooming none are more showy and useful than the double Pyrethrums, of which there is great variety, embracing nearly all shades of colour from pure white to deep crimson, and as the flowers are as good in form as Chrysanthemums or Asters, they are of great value for cutting. Then they are much appreciated for this purpose, as they not only look exceedingly well dressed in vases but they pack safely and last long fresh in water, and as they force readily they may be had in early to help to embellish the greenhouse. In starting with these Pyrethrums, it is best to get young plants in pots, and then turn them out at once in the borders where they are to stand, but before doing this it is advisable to prepare the places for them by digging in some rotten manure, which will help materially in giving them a good start and strengthen them after. Should an increase be desired, it may easily be effected by division when the plants get large enough, the spring being the proper time for carrying it out, but it should be done early, as then there is no fear of losing them through the cut part rotting, as would be the case when growth is less active. I have tried raising them from seed, but never yet obtained any in that way worth having, the flowers that came being very poor indeed when compared with any of the named kinds, most of which are all that can be desired. *J. S.*

The Turnip-fly.—There is not a farmer in England who at the present is not dreading the attack of that pest, the Turnip-fly. If he will only drill in a small quantity of peat-charcoal along with his Turnip and Mangel seed he will find that the young plant rushes up into the broad leaf so quickly that the crop will be secured. If the drought becomes exceptionally severe a sprinkling of this charcoal on the little plant will also save it from being eaten up. I have seen the effects of it during the past three years, and think that your readers should know of it. The material is prepared at the Cowle Works, near Doncaster. *A. W. E.*

Advertising Exaggerations.—It is a pity for enterprising tradesmen to damage their business by careless exaggeration. In the *Gardeners' Chronicle* of May 22 is an advertisement stating that, at a cer-

tain establishment, there are "probably half a million of Primulas, Cinerarias, &c." Now, taking the length of the two houses as given at 100 feet run, and assuming a stage on each side of say, 4 feet wide, we have a total area of 1600 feet available for the cultivation of these seedlings (100 × 2 × 4 × 2 = 1600). Then, if we allow 150 plants to occupy one square foot of surface—that is, less than 1 square inch apiece—the total result amounts to only 240,000 (1600 × 150), or less than half the number so lightly named by the advertiser. In this calculation no allowance has been made for the loss of space due to the thickness of the boxes or room between them, still less for the further loss of space if the seedlings are in pots; in the latter case only three-quarters of the number could be accommodated without reckoning for the pots themselves. I do not make these remarks in any captious spirit, but merely to deprecate assertions being made, which are not only insusceptible of proof, but are absurd on the face of them. *J.* [No doubt exactitude is always desirable, but when, as in this case, our correspondent sums up 240,000 at about a square inch apart, and when it is remembered that at certain stages (not indeed over the whole area, but in parts of it) the square inch might include ten, fifty, or even 100 plants, there is not so much exaggeration after all. Eds.]

Green Frogs in the Orchid-house.—After a trial of some weeks I find the green frog one of the best remedies I have yet adopted for the destruction of vermin which infest the Orchid-house. Some weeks ago I purchased two dozen of this beautiful green frog from Jamrach, dealer in wild animals, London, and let them loose among the Orchids. Since then I have carefully watched their movements and have seen them "gobble up" all sorts of pests. I have examined their "droppings" and found the remains of the weevil, other beetles, woodlice, and ants. They possess one great advantage over the common toad in the Orchid-house, as they not only travel over the highest plants, but over the whole interior surface of the house in search of their prey, never injuring the most delicate shoot or flower-stem. The few ants we had in one house previous to the introduction of the frogs are now nearly exterminated. On my recommendation Provost Russell, of Falkirk, and Mr. Smith, Bentham Park, Stirling, procured a few dozens of them, and they are highly pleased with their services. I would advise all Orchid growers to give them a fair trial. Their presence gives an additional interest to the Orchid-house. *Alex. Paterson, M.D., Fernfield, Bridge of Allan, May* 24.

The Orchids at the late Manchester Show.—In your report of the Manchester show, just now closed, in referring to the Orchids you state that the premier amateur prize falls to a gentleman who on this occasion for the first time adventures on the trying number of fifteen. In this matter I find you have made a mistaks, and feeling sure you will be glad to have an error rectified, I refer you to the report in your paper of the show for 1879, where at p. 732, vol. xi., you will find that the same gentleman was on that occasion awarded the 3d prize. This disposes of the fact that he has won his spurs on his first appearance. Now, whilst writing of the matter of Orchid showing, it is well known that exhibitors are apt to grumble and to be dissatisfied when they have to take a step downwards, more especially when (to them) there are no valid reasons why it should be so. I know one can utter his thoughts and opinions, and however just they may appear to himself, it is difficult to prove to others that the man who has a grievance has always justice to back him up in it, and that a complaint may be made, and, because it is not rectified or the cause removed so that it may not occur again, such complaint appears to have been made unnecessarily. What I fail to see, however, in this case is—and this is the question I ask—Is a collection of fifteen plants strengthened or weakened by the admission of three plants of a sort? Separate names, as varieties, of course, may be affixed, but the distinction in this case was so slight that had all forms been in one pot no one could have objected to them. I answer for myself, that I consider it is weakened. Again, a collection in which there is not a Vanda, Aerides, Saccolabium, or Phalænopsis, with the exception of a piece of Saccolabium ampullaceum, is weaker, I think, than one in which two or more of these genera are represented. I know the schedule does not state the plants need be distinct, the prizes being awarded for fifteen Orchids, nine, &c.; but previous schedules have had the word "distinct" inserted, and those who showed distinct plants I consider abided by the spirit of the schedule, whilst, doubtless, they should have kept to the letter. In this respect the compilers of the schedule will, it is to be hoped, be a little more careful, and state under what conditions the plants must be staged—if duplicates are to be admitted, and whether preference will be given to the greater variety combined with excellence and skill, or whether show, colour, and effect only are to be taken into consideration. I can remember, only a few years ago, when a gentleman staged a large number of Cattleya Mossiæ, among them being many choice and superior forms: a slight acknowledgment, however, was all they succeeded in obtaining. Again, in the premier award for nine the judges should have thought seriously, and not have stamped with approval the practice you have condemned—shallow green boxes 2 feet or more square filled up with twelve, eighteen, or twenty plants. If this is admissible, why stay at 2 feet? If it is wrong, why award it the 1st prize? I consider the gentleman who was placed 2d has a just cause of complaint, and may well feel aggrieved. If the bedding-out system is thus to be patronised and approved it will be time to give over growing specimens and go in for quantity only, and order boxes from the joiner instead of pots from the pottery. If making up is admissible—or, rather, since the practice is so often adopted, whether the plants come from far or near—let it at least be done in such a manner that an appearance of naturalness is evident in the plants staged. If the practice is not to be tolerated let it be so stated in the schedules, and let prizes be offered to single specimens, that is, plants that have at least been twelve months in the pot or basket; and let a prize also be offered to such as are made up for the purpose. Doubtless the show managers are ever anxious to make a fine display; they should have a thought also to the advancing and furthering of the object for which shows were originally intended—to increase and extend the love and interest of the public in all that pertains to horticulture. More may perhaps have to be said on these matters generally, meanwhile exhibitors must observe a watchful attitude. *An Exhibitor.*

Boilers.—We have at present six large boilers heating 7 miles of hot-water piping, five of them saddles, 9 feet long, one Trentham, 12 feet long. My employer is desirous of substituting three large boilers a distance off, so as to get rid of the smoke, which is a great nuisance. Some of the houses will be 100 yards from the boilers, and most of them quite 50 feet above the boilers. Will some of your correspondents kindly give me their advice as to what is the best and strongest to stand the pressure and heat quickly and economically? *Eromegnar.*

Substitute for Box Edgings.—I saw at The Wilderness, Reading, recently, an excellent kitchen garden edging composed of a raised ridge of soil on either side of the path, and planted along the top with Sedum glaucum. This can be cut-in once a year with a spade, and will last for a long time. S. lydium also makes a good edging. I have found the tuft Wire-grass, Festuca viridis, to make a capital hardy and enduring edging, needing the flower-stems to be trimmed off only once a year. It is solid, yet graceful, and far more pleasing than are the stiff formal lines of clipped Box. *D.*

The Effects of the Winter upon Apple Trees.—I send herewith sample branches taken from Apple trees in a market garden near here which exhibit more forcibly than words can tell how destructive the severe frost of the past winter has proved to them. The garden contains about 1000 Apple trees in various stages of growth, varying from fifteen to three years planted, all up to the present remarkably healthy and clean, producing good crops of fine fruit and kept in good condition by careful culture. The trees are planted in rows of forty, and it is a pitiable sight to look along them—to see King of the Pippins, half-standards, some 14 feet in height, almost dead throughout; Wellingtons, almost as bad; Yellow Ingestres and Lord Suffield half-dead, the latter in some cases quite so; the favourite Early Julien also has suffered severely, together with Royal Russets, sample wood of all of which is sent. It is observable that many branches had burst both leaf and bloom buds as usual before they collapsed; indeed the real damage has only been just made fully obvious, as now probably the worst is visible. The injury is not confined to the wood of the past or even two preceding years, as many will be perhaps disposed to imagine might be the case, but is seen in growth four and five years old. The action of the frost has been peculiar, as in seen in the samples sent, the wounds inflicted resembling bruises as though produced by a blow, the wood on one side of the stem shrivelling and decaying for a length of from 1 inch to 4 inches, just as a Potato will decay in spots when affected by the fungus. The garden has a south-western aspect, the soil is stiff but not wet, and on it beneath the Apple-trees, Gooseberries, red and black Currants, and Strawberries thrive well. The rows of Gooseberries, perhaps, cannot be excelled in Middlesex for size, healthiness, and a good fruit crop. There is a good natural fall to the side, and water will not lie upon the surface. But what calls for special comment is that whilst half a dozen popular market kinds of Apples have so heavily suffered—so much so, in fact, that it is doubtful whether hundreds of fine trees will ever recover — yet there are another half-a-dozen equally fine-favoured kinds that are not only entirely uninjured, but are promising to produce abundant crops of fruit. These are not growing separate, but amidst the others, and therefore subject to the same temperature, soil, and treatment. Keswick Codlin, Cox's Orange Pippin, Stone's Pippin, Duchess' Favourite, Warner's King, and Blenheim Orange—all these look as well as Apple trees possibly could look, but unfortunately the Kings, Wellingtons, Ingestres, and Suffields—ominously high-bred names—are in the majority, and the loss resulting through these and the others will be heavy. A few trees of the Scarlet Nonpareil, also severely hurt, are well matched by a few of the new Hawthornden, which are in fine healthy condition. This form of mischief is considerable in some other gardens, whilst in yet others the trees have generally escaped. Old trees have suffered but little: in my own garden I have a row of about fifty trees some ten years old, all different kinds, and full of robust growth, the soil here also being stiff and clayey. Out of the number only Northern Spy, Lord Suffield, and the old Hawthornden have suffered, and in the same way, as an example of wood from the former will show. With the exception of a young shoot here and there, all the rest are as healthy as can be desired. *Alex. Dean, Bedfont.*

Autumn Strawberries.—I can fully corroborate all that Mr. Hinds says on p. 662, in favour of autumn Strawberries. A quantity of Vicomtesse Héricart de Thury were planted out here last year early in the summer, and bore a first-rate crop of fruit in the autumn, which was by no means a favourable one for them in this part. This spring they are throwing up a large quantitity of flowers, and bid fair to be the best piece of Strawberries we have, although all are looking exceptionally well. We find Vicomtesse H. de Thury to be the most useful variety of Strawberry we have; it forces well. Many of our fruit this year have weighed over an ounce each, and we have had sixteen fine fruits on a plant in a 6-inch pot, in many instances. It comes in for use quick, and after forcing, if planted out carefully, it yields another full crop in the autumn, without interfering in any way with the next year's supply. *W. H. Divers, Burghley.*

Rheum nobile.—We have a plant of the Sikkim Rhubarb, Rheum nobile, Hook. f., in flower here at present. It was raised from seed sent by Dr. King, of Calcutta Botanic Garden, about seven years ago. For several years it has grown in the open border without any protection, and has thus proved itself to be perfectly hardy. It is about 2½ feet in height, and is really an object of great beauty. I believe this is the first instance of its having flowered in Europe. It is a plant well worthy of cultivation. *J. Sadler, Royal Botanic Gardens, Edinburgh, May* 22.

The Effects of the Dry Weather on Trees and Shrubs.—Trees and shrubs, especially those that have been removed within the past twelvemonths, are now suffering severely, not so much from dryness at the root as for want of atmospheric humidity. The earth is also becoming dry in many places and the continued aridity of the atmosphere along with it will make unceasing work for gardeners: even heavy dews are absent, and upon the whole the prospects are growing gloomy. Tender trees, such as variegated Maples, are starting into growth but weakly, and many other trees and shrubs indicate that their condition will soon require attention. Where mulching can be done without being unsightly on lawns it will render great assistance to newly planted trees and save much labour in watering. *H.*

Carpet Beds.—During the incessant wet of last year, when flowering plants of all kinds, including the hardiest herbaceous plants, looked seedy and uninviting, the style of bedding popularly known as "carpet bedding" was singularly attractive among so much that was gloomy and disappointing. No one could visit such representative places as Hampton Court or Battersea Park without being struck with the incomparable and superlative beauty of those chaste designs aglow with so many shades of colours which are surely more refreshing to look upon than a painted scene in the distance, which hundreds frequently flock to see. We had an extreme of wet last season, and the weather prophets predict the other extreme during the present year. It will, therefore, be wise not to forget that the most attractive of carpet bedding plants, viz., Alternantheras, put on their best dress during plenty of sunshine and warmth. Succulent plants, too, assume that beautiful tinge of glaucous green in dry, sunny weather which is not enjoyed in wet seasons. With regard to carpet designs one cannot help being struck with the simplicity of many that are to be seen in our public parks, and it is more noteworthy still that simplicity of design invariably gives the best effect. I wish this fact could be more forcibly impressed upon that large class who will not think for them-

selves. There can be no possible objection—but the reverse—to copying a design where there is room to work it out upon a scale large enough to produce masses of colour which shall be clear and distinct, and where the eye can trace the meaning of the design from beginning to end. But, unhappily for the repute of the system, there are some who think that intricacy of design displays depth of ability, hence we have designs which are only suitable for large places squeezed in miniature fashion into an area where the most profound and erudite Greek scholar would be puzzled to determine the original idea of the inventor. We see initials of persons and places draped in various colours in a way that betrays the most shallow conception of anything chaste or original, in fact a meaningless labyrinth of tortured geometry. For small beds in a private garden three colours in a simple design will yield infinitely more pleasure than double the number would do in the same space. In large beds, as at Hampton Court, a great variety of plants are introduced into one design, but condensed masses of telling colours predominate in the principal figures, and the smaller ones of less striking colour only help to tone down the effect. *Carpet Bedder.*

Tradescantia zebrina as a Bedding Plant.—It may not be generally known by gardeners that this plant, which is chiefly grown in the plant stove, is eligible for purposes of bedding, but that it is a most satisfactory plant when tastefully employed there can be no doubt. Its beautiful zebra-like markings are never produced so truly in the heat and shade of a warm house, as when planted out in the open in a free open soil, and fully exposed to sun and light. It will prove useful for carpet-bedding or for margining beds where dark coloured plants are required for arranging with light contrasting colours. *W. H.*

Wistaria sinensis.—Your editorial remarks respecting standard Wistaria sinensis recalled to my memory that some years since there used to be (and may be still for what I know) specimens of it in the form of pyramids, or standards, growing in the pleasure grounds at Knole Park, Sevenoaks, where they had in the spring months a very graceful and pleasing appearance. It would be well if this showy climber was oftener used in this way, for it is equally as well adapted for such purposes as for covering walls and buildings, for which it is commonly used. Few shrubs can excel or even equal it for effect when in blossom. There were also at Knole specimens of the Judas-tree (Cercis Siliquastrum): this I think, although old, is rare, and seldom planted now, for I cannot remember seeing it at any other place. It is a treat now-a-days to go over old-fashioned pleasure grounds, where you can meet with old slighted trees and shrubs. *Thos. Coomber.*

Richmond Late White Broccoli.—Having seen in the *Gardeners' Chronicle* much controversy respecting the hardiness of Broccoli, I send for your inspection a sample of Richmond Late White. This Broccoli was sent out some twenty years ago, and withstood the severe winter of 1860, and at that time was fully commented upon in the columns of your journal as one of the hardiest and best in cultivation. I have only commenced cutting this variety to-day (May 24), and out of a flat of 6000 there are 95 per cent. living, which must be considered good when growing on a north-east aspect. *Hiram Shaw, Richmond Hill Nursery, Sheffield.* [Any variety which has withstood the weather of the last winter must have something to recommend it, but yours is neither so large nor so white nor so handsome and regular a sample as that shown last Tuesday at South Kensington, which was considered to be a good selection of Cattell's Eclipse. Eds.]

Setting Peaches.—It would be interesting to know what is the nature of the soil in which Mr. Smith's Peaches are grown. My impression is that he must be much more favourably situated for Peach and Nectarine growing than are many gardeners. By reading the pages of the *Gardeners' Chronicle* it may be seen from time to time that Peaches and Nectarines do not do in all soils and places alike. My own observation and experience have also taught me that such is the case—that however well the trees may be done in some places the results are not always so satisfactory to the manager as may be desired. Some soils are naturally cold and retentive, and in such Peach trees may exist between life and death, while in more gravelly soils the Peach will thrive and do well. The wonderful variations of soils throughout the country to my mind explains the causes of success or failure in Peach growing. On reading Mr. Smith's letter I had the impression that it may lead the proprietors of some gardens to infer that if such results can be obtained by "good management" in one place such success should be gained in all others alike: hence it is that I have been led to make these few remarks thereon. *E. Williams.*

Choisya ternata.—In your account of Choisya ternata (p. 626) you have omitted to notice one of its chief recommendations, the pleasant and delicate scent of the flowers. It is completely hardy: I have a good plant on a south wall that has stood quite uninjured during the two last winters without any protection whatever, so that I have no doubt it will do very well in the open ground. It strikes so readily, that it will probably soon become a very common and very favourite hardy flowering shrub. The flowers (and especially the buds) are so similar to those of the Orange, that I have been told they are commonly sold in Paris as substitutes for the Orange. *H. N. Ellacombe, Bitton Vicarage.*

Campanula persicifolia.—This is one of the finest of our old herbaceous plants, and one which

Fig. 121.—Double White Campanula Persicifolia.

is frequently met with in cottagers' gardens in one or other of its several forms. It is easily grown in good light garden soil, provided it is not too dry and hot, in which case the development is checked, and the plant dwindles and eventually dies. The leaves are long and narrow, like those of the Peach tree, whence its name. The flowering stems are erect and branched, from 2 to 3 feet high, according to soil and situation, and bearing during the early summer months a profusion of its showy bell-shaped flowers, which are broad and shallow, and either white or purplish-blue. We have said that there are several forms of this fine old plant in cultivation. The one we figure (fig. 121) is the double white, a very fine thing, which was shown recently at South Kensington by Mr. H. Cannell, of Swanley. The colour is pure, and the centre well filled. Mr. Cannell's plants had been evidently forwarded under glass, and hence we may conclude it would form a useful decorative pot plant, and an excellent subject for cut flowers. There is a double blue of similar character, and besides these four there is another called coronata, a white-flowered sort, in which the calyx becomes amplified and coloured white like the corolla—in fact, a hose-in-hose variety. *T. M.*

Remarkable Yew Trees.—A few months since you asked for information as to any remarkable Yew trees in the country. There is a fine one in the churchyard of Stedham, in West Sussex. I found its girth, at about 18 inches from the ground, to be 28½ feet; higher up the bole swelled out, but the Ivy prevented the measurement from being taken. The tree is in full vigour although hollow, but it is to be feared that the Ivy will soon injure it if not checked. *H. K.*

The Weather.—Every one familiar with the practical difficulties of agriculture or horticulture becomes painfully aware of the wonderful potency of the weather as a factor in production or non-production. The same truth is most powerfully illustrated in the able paper and speaking diagrams of Mr. J. C. Morton in his "Forty Years of Agriculture," to which you called the attention of your readers last week. Neither do we need to go back more than a week to find powerful illustrations of the same truth. Notwithstanding the severity of the past winter, and the dryness and low temperature of this spring, the more than average amount of sunshine had fostered our growing crops into a flourishing condition, so that our gardens had a flourishing look about the middle of May. The Potatos that had lain dormant longer than usual had at last burst through the soil and were growing fast; Cauliflowers—so carefully nurtured this year in the almost entire absence of Broccoli—had been relieved of their shelter of glass; Peas were in full flower, kidney and runner Beans several inches high; the wall trees, if not heavily laden with fruit, had set the few flowers that showed, and were clean and of healthy growth; the shrubs and trees were in full leaf, and many of them also in flower, on Whit-Monday. The day was beautifully fine, the night clear and cold, but not more so than others that had preceded it, until between 4 and 6 o'clock on the morning of the 18th, when a ground frost seemed to shoot along the surface of the earth, blasting and blighting all it touched as with the very finger of death. The Potatos were cut down, and all other tender vegetables, plants, and flowers were crippled or destroyed. The blister appeared on the wall trees in the rear of the wave of extreme cold, just as if it had mechanically blistered them. The plants and flowers not blackened to death have drooped and languished ever since, and all the evils of the frost have been aggravated by a series of cold gales of almost unexampled severity. As usual after such severe frosts, the sky became overcast with clouds, and a few drops of rain fell. Then the wind arose and drove the rain-clouds right over the crippled vegetation and the thirsty earth, and it has blown with such severity as to tear off the green leaves of Apple, Pear, and other trees by wholesale, and batter and tear many of those left; but up to the evening of the 24th no rain has fallen, and the weather is dry and harsh, more like October than May. It could not well be worse for bedding-out. But apart from its influence on this department, the harsh, ungenial weather must seriously damage all the crops of this season. The sharp frost of Whit-Tuesday can hardly have failed to have seriously thinned the Cherry, Plum, and Apple crops. In early districts it has destroyed all the forward bloom of the Strawberries, which looked so well. The centres of the fully-expanded flowers are quite black — a sure proof that the embryo fruit is destroyed. The suddenness of this frost seems to have intensified its destructive energy: it also seemed to hug this more closely than most frosts. The latter is a curious subject, that has hardly received the attention it deserves from practical men. Doubtless the zones of vegetation are determined by the zones of temperature, and as altitude is to a limited extent under our control, and the most intense cold seems as a rule within 6 feet of the surface, it would be wise in choosing sites for gardens to elect the highest sites available. The last winter furnished us with some curious illustrations of altitudinal thermal lines in the case of some of our trees and shrubs. Two Pinus insignis, for example, had most, in one case all, their bottom branches destroyed to a height of about 5 feet. Beyond that altitude they are uninjured. Query: had they been raised on an artificial mound would the entire tree have escaped — or does the mere proximity to the ground line depress the temperature, partly at least, independent of the altitude of the position? *D. T. Fish.*

Reports of Societies.

Royal Horticultural: *May* 25.

Scientific Committee.—Sir J. D. Hooker, K.C.S.I., in the chair.

Gall on Eucalyptus.—Mr. MacLachlan reported that the spindle-shaped gall, sent by Baron Von Mueller, was probably the work of a cynips, which had perforated the young flower-buds. Some of the galls contained a larva of a dipterous insect, itself attacked by a parasitic hymenopterous insect.

Colchicum as a Cattle Poison.—Dr. Masters showed specimens of Colchicum from a field in Lincolnshire, where cattle had died in consequence, it was believed, of eating the foliage of a plant recognised as Colchicum autumnale.

Dionæa.—Messrs. Veitch showed a specimen with a double lamina to the leaf.

Cytisus Adami.—Sir Joseph Hooker showed a specimen, showing the intermediate C. Adami and one of the parent forms, C. purpureus, growing on the same shoot.

Tulip.—Col. Trevor Clarke showed a large flower of Tulipa—originally grown by Mr. Jas. Carter, to whom it had been given by Mr. Strangways.

Puccinia Violarum.—Mr. MacLachlan exhibited leaves of the Violet affected with this fungus in a young state.

Floral Committee.—Dr. Denny in the chair. The most remarkable plant shown to-day was a magnificent example of Odontoglossum vexillarium, shown by G. Nevil Wyatt, Esq., Lake House, Cheltenham (gr., Mr. Simcoe), a genuinely grown specimen, with fifteen spikes of flowers, six to eight on a spike, fine in size, and a nicely coloured variety. The committee recommended the award of a Silver Medal. Zonal Pelargonium West Brighton Gem, a remarkably free-flowering dwarf scarlet, was shown by Mr. W. Miles, nurseryman, Hove; and Mr. F. Geary, gr. to the Earl of Portsmouth, Eggesford, sent examples of a golden variegated Birch, which is reported to have remained constant since 1876, when it was found as a sport on Betula alba. Messrs. James Veitch & Sons contributed, amongst other things, a very pleasing group of spotted Gloxinias, about which more is said in another column. From Messrs. James Garaway & Co., Durdham Down Nursery, Bristol, came a good specimen of a very striking Golden Horse Chestnut; and Messrs. John Laing & Co. contributed a small group of tuberous-rooted Begonias, all of fine quality, and a collection of herbaceous Calceolarias. Messrs. James Carter & Co. showed examples of a Mimulus named Ruby, with flowers of good size, ruby-red in colour, but with an orange throat spotted with crimson. Mr. J. H. Goodacre, The Garden, Elvaston Castle, showed some small flowering plants of what appears to be a minor form of Stephanotis floribunda, which has the reputation of being a much more profuse bloomer than the ordinary type, from which it also differs in having much smaller leaves. From Chiswick Mr. Barron sent a well-flowered and very select group of varieties of Nerium; and also two sets of cuttings of various plants, the one struck in sea-sand, the other in the ordinary silver-sand, and which plainly showed the advantage of using the former in preference to the latter, the rooted plants being altogether stronger and better coloured.

In addition to the usual display in the Council-room there was a capital lot of plants staged in the Western Arcade, most of which were destined to remain for the *conversazione* on the following evening. The most striking group of all was one of pot Roses, shown by Mr. Turner, which consisted of magnificently flowered plants ranging in size from good half specimens to the monster Charles Lawson, which must be quite 7 feet high and the same in diameter. Grand as have been the displays of pot Roses at Kensington before, it is doubtful if any surpassed these in quality; and the award of a Large Gold Banksian Medal was a none too flattering recognition of their merits. Mr. B. S. Williams and the General Horticultural Co. (John Wills), Limited, received the awards of Gold Medals for large and tastefully-arranged collections of fine-foliaged and flowering plants of rare quality; and Messrs. W. Cutbush & Son had a Silver Banksian Medal for a neat group of fine-foliaged and hard-wooded flowering plants. Mr. J. R. Bird, gr. to J. A. Causton, Esq., Lodgemore, West Dulwich, received a Silver-gilt Banksian Medal for a large group of herbaceous Calceolarias, and a dozen admirably grown specimens of standard tree Mignonette. Mr. Miles, of Hove, had a Bronze Banksian for a large group of Pelargonium West Brighton Gem and Mignonette. Mr. Aldous contributed a small group of decorative plants; and from Chiswick came a large and most interesting collection of Cape Pelargoniums, a good collection of Gloxinias and other plants, including the fine old Saxifraga pyramidalis.

New Plants Certificated.

First-class Certificates were awarded to Messrs. James Veitch & Sons, for Trichomanes parvulum, Lastrea Maximowiczii, Yucca filamentosa aurea elegantissima, Clove Carnation Sir Archibald Grant, a very distinct variety, with well-formed self, bright claret-coloured flowers of great substance; and Erigeron pulchellus, a low-growing species, with bright orange-coloured composite flowers. To Mr. William Bull, for Cereus C. M. Hovey, a large and lovely violet-purple coloured flower, with a bright crimson bar down the centre of the petals, a variety of American origin. To Mr. B. S. Williams, for Pteris internata, a West Indian plant near Pteris mutilata, and possibly a natural hybrid between that plant and P. heterophylla which it closely resembles in the younger stages of its growth; Croton Warreni, a handsome and striking novelty; and Nepenthes atrosanguinea, a seedling variety with long, deep blood-red pitchers, streaked with greenish-white. To Mr. G. Braid, Winchmore Hill, for decorative Pelargonium Defiance; and to Mr. W. Brown, Brent Nurseries, Hendon, for decorative Pelargonium Attraction, rosy-scarlet with maroon blotch and violet centre.

Fruit Committee.—Henry Webb, Esq., in the chair. The most striking object brought under the notice of this body was a magnificent female cone of Encephalartos Altensteinii, which measured 18 inches in length, and 27½ inches in circumference. It was exhibited by Mr. Bergman, gr. to Baron Rothschild, at Ferrières, who received a vote of thanks. Mr. John Simms, gr. to W. B. Eastwood, Esq., Kingswood, Englefield Green, showed a dish of President Strawberry of remarkably fine size, the finest dish that we have seen this season. A large dish of Dr. Hogg Strawberry was also sent by Mr. Miller, gr., Clumber. Mr. S. A. Woods, gr. to F. J. S. Foljambe, Esq., Osberton Hall, Worksop, sent a couple of fine fruits of seedling Melon, named "Luscious and Melting," a large, almost round, white-fleshed variety, of good flavour, but really too tender in the flesh—a most unusual fault to find in a Melon. Mr. R. Gilbert, of Burghley, showed a seedling Melon named Excelsior, a scarlet-fleshed variety of good quality, but not superior in this respect to others in cultivation. Mr. J. McIndoe, gr., Hutton Hall, Guisborough, sent a nice looking white-fleshed Melon named Marcellus, a most peculiarly flavoured fruit, which we can only compare with a Snowball Turnip mixed with a little sugar. From Mr. W. Child, gr. to the Earl of Coventry, Croome Court, Severn Stoke, came a brace of Cucumbers about 15 inches long, and white-spined but almost smooth; and Mr. S. Ledsham, Green Lane, Tarvin Road, Chester, again sent a fine sample of his Late White Broccoli, which was reserved for comparison with Cattell's Eclipse, which it was generally considered to resemble, and of which it is probably a well selected stock. In any case, considering the winter that the plants have passed through and their fine quality as shown, it is a variety of great merit.

Reading Horticultural: *May* 20.—The spring show within the Abbey ruins had several striking points of attraction, but it was generally thin. Reading needs a new generation of enterprising exhibitors. The prizes are on the whole pretty good, and of a character to tempt local exhibitors, as well as to bring some from a distance. The well laid-out turf banks form a large space to fill, which cannot be contracted as in the case of tents. But Reading has in its environs so many charming places where there is no stint of good accommodation, that we would fain hope new exhibitors will be forthcoming, and the townspeople appear willing to support the two annual shows if they can only be maintained in a character worthy of such support.

Stove and greenhouse plants in nines, sixes, and threes in the classes for specimens, are always the leading feature at the May show. Mr. Marsland, The Wilderness, White Knights (Mr. W. Lees, gr.), was 1st with a well-proportioned lot, consisting of Pimelea decusata, Clerodendron Balfourianum, Franciscea calycina major, very fine; Stephanotis floribunda, Anthurium Scherzerianum, Euphorbia splendens, very well bloomed; Azalea Charmer, Erica ventricosa grandiflora, Epacris miniata splendens, and Azalea Duc de Nassau. Mr. J. F. Mould, nurseryman, Pewsey, was 2d with a few remarkably good plants, in company with some that reduced the value of the collection as a whole. There was a splendid piece of Clerodendron Balfourianum, Aphelexis macrantha purpurea, Erica Cavendishiana, Dipladenia Brearleyana and D. regina, a charming pale-coloured variety; Lantana Don Calmet, a very pretty form, the flowers opening orange, and becoming orange-magenta and crimson, &c. The only exhibitor of six plants was M. Lonergan, Esq., Crestingham, Reading (Mr. E. Bennett, gr.), a new exhibitor that promises to take a good position at these exhibitions. In the class for the best flowering specimen of stove and greenhouse plants there was a spirited competition, Messrs. Lees and Mould being placed equal 1st, the former with a finely grown and flowered plant of Tabernæmontana coronaria fl.-pleno, that was one of the features of the show; and the latter with a perfect specimen of Aphelexis macrantha rosea. Other good specimens were Bougainvillea glabra, Anthurium Scherzerianum, &c. Major Storer, Purley Park (Mr. S. Mortimer, gr.), was 2d; and extra prizes were awarded to the Hon. R. F. Boyle, Purley (Mr. T. Hope, gr.), and Mr. E. Bennett.

Orchids in threes were remarkably well shown, the 1st prize going to G. May, jun., Esq., Reading (Mr. J. Pound, gr.), who had a fine and well-flowered example of Aerides Fieldingii, Cattleya Warneri, with two fine blooms; and Dendrobium suavissimum, very bright and effective. 2d, Colonel Loyd-Lindsay, M.P., Lockinge Park, Wantage (Mr. J. Atkins, gr.), with Dendrobium nobile, Oncidium sphacelatum, and Cattleya Mossiæ. An extra prize was awarded to W. J. Palmer, Esq. (Mr. W. Baskett, gr.). The latter had the best specimen Orchid in a good example of the beautiful Dendrobium Devonianum. Mr. Pound was 2d with the chaste D. Bensoniæ.

Pelargoniums were as usual very good, but the competition was unfortunately limited. The best nine Show varieties came from W. Fanning, Esq., Whitchurch (Mr. J. Ashby, gr.), who had good plants of Countess, Duchess of Edinburgh, Triomphe de St. Mande, Empress, Ernest, Mons. Duvall, Mabel, Ruth, Lilacina and Alchymist. The best six Fancy varieties came from Colonel Clayton, Maidenhead (Mr. W. Burgess, gr.)—small but nicely grown and flowered plants. In the classes for four Show and four Fancy Pelargoniums there was a good competition, Messrs. Ashby and Mortimer being 1st and 2d in the former class, and Messrs. Burgess and Baskett in the latter.

Roses in pots were very well shown, and they were much and deservedly admired by the visitors. In the class for six varieties Mr. Lees was 1st with Jules Margottin, Charles Lefebvre, with large and well-formed highly coloured flowers; La France, Charles Lawson, Maréchal Niel, and John Hopper. 2d, Mr. J. F. Mould; 3d, Mr. Baskett. In the class for four Roses in pots Lord Otho Fitzgerald, Windsor (Mr. T. Lockie, gr.), was 1st; and Mr. J. Tranter, Henley, 2d. Calceolarias were numerously and finely shown in the form of nice medium-sized specimens well balanced in flowers and foliage, the flowers large and finely marked. The best six came from Miss Patterson, Ascot (Mr. J. Tomlin, gr.), Messrs. Baskett and Burgess coming in 2d and 3d, and an extra prize was awarded to Mr. G. W. Palmer, Reading (Mr. W. Baskett, jun., gr.). One group of six Fuchsias was shown, from Mr. Lees, and remarkably good plants they were for the season of the year; and Lye's Elegance, a finely formed and very handsome dark variety, deserves especial mention as an exhibition sort.

The only exhibitor of nine Azaleas was Mr. E. Bennett; they were a little past their best, but showed ample indications of good cultivation: they were generally of large size. In the class for six varieties Nalder Clarke, Esq., Reading (Mr. W. Armitage, gr.), was 1st with small but remarkably well flowered plants; Mr. F. Lockie coming 2d. Ericas were also well shown, Messrs. Lees and Bennett competing cleverly with six varieties, the former having rather the best of it; the plants were highly creditable, and a few exceptionally good.

Foliage plants, as represented by the ordinary subjects, Ferns, Lycopods, &c., were as usual numerous. In the class for a specimen plant, shown for foliage, Mr. Mortimer was 1st with a magnificently developed specimen of Encephalartos villosus; E. Eyre, Esq., Newbury (Mr. Ross, gr.), being 2d with a very fine example of Platycerium alcicorne. In the classes for collections some good specimens were also shown.

Cut flowers comprised excellent Roses, stove and greenhouse plants, Mr. Bennett coming in 1st with a very fine lot of twelve varieties, Mr. Atkins being 2d. Vases for table decoration and bridal bouquets: in both of these Miss Phippin was placed 1st with admirable arrangements. Buttonholes and vases of wild flowers: these were numerous and very good, and attracted a large share of attention.

In the division for fruit there were some excellent exhibits. The Black Hamburgh Grapes were magnificent, Mr. Ashby, who was 1st, showing some excellent bunches; Mr. Atkins being 2d; while the same positions were held in the class for white Grapes, Buckland Sweetwater being shown. Mr. Ashby had some first-rate Early Ascot Peaches. Strawberries were very good. In the vegetable classes there was a very keen competition. Cucumbers were well shown, especially in the class where special prizes were given by Messrs. Sutton & Sons. Carter's Model and Sutton's Duke of Connaught were the best varieties, but there is little to choose between the former and Telegraph.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, MAY 26, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest	Temperature of the Air: Lowest	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity: Sat = 100.	Wind: Average Direction.	Rainfall.
May	In.	In.	°	°	°	°	°	°	°		In.
20	30.04	+0.30	68.9	48.5	20.4	57.5	+ 3.8	49.9	76	NNE: N.E.	0.00
21	29.98	+0.24	76.1	46.3	29.8	59.5	+ 5.6	15.8	60	N.W.	0.00
22	29.67	−0.08	62.0	49.8	12.2	55.6	+ 1.5	44.7	67	WNW: WSW	0.00
23	29.76	+0.02	60.8	40.5	14.3	52.5	− 1.8	47.5	83	W.: WNW	0.00
24	29.78	+0.03	65.1	51.1	14.0	56.5	+ 1.9	47.7	78	WNW: W.	0.00
25	29.89	+0.13	75.0	47.0	28.0	59.0	+ 4.0	47.7	66	N.W.: WNW	0.00
26	29.76	−0.01	87.2	50.0	37.2	66.7	+11.5	51.0	58	W.: WNW	0.00
Mean	29.84	+0.09	70.7	48.5	22.2	58.2	+ 3.8	48.0	70	W.: WNW	sum 0.00

May 20.—A fine day, but cloudy. Warm. Clear towards night.
— 21.—A fine bright day. Very warm. Breeze. Cloudy at night.
— 22.—Fine, though dull and cloudy till evening, then cloudless. Strong wind.
— 23.—A fine day, though rather dull and cloudy. Strong wind. Cooler.
— 24.—Generally fine and bright, though frequently dull and cloudy. Strong wind.
— 25.—A very fine, bright, warm day. Smart breeze. Clear at night.
— 26.—A very fine hot day. Cloudy after 5 P.M., few drops of rain at 7 P.M. Frequent lightning at night.

LONDON: *Barometer.*—During the week ending Saturday, May 22, in the vicinity of London the reading of the barometer at the level of the sea increased from 30.15 inches at the beginning of the week to 30.29 inches by the evening of the 18th, decreased to 30.11 inches by the evening of the 19th, increased to 30.29 inches by the evening of the 20th, decreased to 29.80 inches by the afternoon of the 22d, and was 29.86 inches at the end of the week. The mean reading for the week at sea level was 30.15 inches, being 0.05 inch above that of the preceding week, and 0.23 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 76° on the 21st to 58½° on the 19th; the mean value for the week was 65½°. The lowest temperatures of the air observed by night varied from 34° on the 19th and 37° on the 18th to 49¾° on the 22d; the mean for the week was 43°. The mean daily range of temperature in the week was 22½°, the least range in the day being 12¼°, on the 22d, and the greatest, 29¾°, on the 21st.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—16th, 54°, + 1°.7; 17th, 50°, — 2°.8; 18th, 48°, — 5°.2; 19th, 45°.7, — 7°.9; 20th, 57°.5, + 3°.8; 21st, 59°.5, + 5°.6; 22d, 55°.6, + 1°.5. The mean temperature of the air for the week was 52°.9, being 0.5° below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 155° on the 16th, 152° on the 17th, and above 140° on the 18th, 20th, and 21st; on the 19th and 22d the reading did not rise above 95°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 24° on the 19th, 26° on the 18th, 28¾° on the 17th; the mean of the seven lowest readings was 33½°.

Wind.—The direction of the wind was N.E., N.W., and W.S.W., and its strength strong.

The weather during the week was fine and bright, and very dry. The first four days of the week were cool, but the remainder were warm. No rain fell.

ENGLAND: *Temperature.*—During the week ending Saturday, May 22, the highest temperatures of the air observed by day were above 75° at Truro, Plymouth, Blackheath (London), and Cambridge, and below 67¼° at Brighton, Wolverhampton, Sheffield, and Bradford; the mean value from all stations was 70¾°. The lowest temperatures of the air observed by night were below 36½° at Bristol, Blackheath, Cambridge, and Wolverhampton, and above 40° at Plymouth, Sheffield, and Sunderland; the mean value from all places was 37½°. The extreme range of temperature in the week was above 42° at Blackheath and Cambridge, and below 28° at Sheffield and Bradford; the mean range of temperature from all stations was 33¼°.

The mean of the seven high day temperatures was above 66° at Truro, Plymouth and Cambridge, and below 61° at Norwich, Sheffield, and Hull; the mean value from all places was 63¾°. The mean of the seven low night temperatures was below 43° at Blackheath, Cambridge, Wolverhampton, Nottingham, and Hull, and above 47° at Truro and Plymouth; the general mean from all stations was 44½°. The mean daily range of temperature in the week was above 22° at Blackheath, Cambridge, and Nottingham, and below 16¼° at Norwich and Leeds; the mean daily range from all places was 19¼°.

The mean temperature of the air for the week from all stations was 52½°, being 1½° higher than the value for the corresponding week in 1879. The mean temperature was above 55½° at Truro and Plymouth, and below 51° at Norwich, Wolverhampton, Sheffield, and Hull.

Rain.—Very little rain fell. The largest amount was at Norwich, 0.18 inch, and the least at Cambridge and Bradford, both 0.01 inch; the average fall over the country was 0.03 inch. In the south and west of England no rain fell.

The weather during the week was generally fine, bright, and dry.

SCOTLAND: *Temperature.*—During the week ending Saturday, May 22, the highest temperatures of the air observed by day varied from 75° at Dundee to 66° at Greenock; the mean value from all places was 70¾°. The lowest temperatures of the air observed by night varied from 35° at Perth to 40½° at Glasgow; the general mean from all places was 38°. The mean range of temperature in the week from all stations was 32¾°.

The mean temperature of the air for the week from all stations was 53½°, being 4½° above that of the corresponding week in 1879. The mean temperature was above 55° at Glasgow, and below 52° at Aberdeen.

Rain.—The amounts of rain measured were small. At Edinburgh, Greenock, and Leith, two-tenths of an inch fell, whilst at Glasgow only one-hundredth of an inch was measured. At Perth no rain fell. The average fall over the country was 0.11 inch.

DUBLIN.—The highest temperature of the air was 72½°, the lowest was 35¼°, the extreme range 37¼°, the mean 54°. No rain fell.

JAMES GLAISHER, F.R.S.

Variorum.

MANURES.—The amount of manure employed per acre of land differs much according to the material used, and the land on which it is to be put. In the Lothians, farmyard manure, when used alone, is employed to the extent of 20 tons per acre, and from that up to 25 or even 30 tons per acre; dissolved bones, 6 to 8 cwt. per acre; dissolved bone ash, 7 to 9 cwt. per acre; and mineral superphosphate, from 8 to 10 cwt. per acre. The phosphatic and nitrogenous, or incomplete manures, may be advantageously employed together; the phosphatic being ploughed in and the nitrogenous applied in spring as a top-dressing. Mineral superphosphate or dissolved bone ash (5 cwt.) and nitrate of soda (2 cwt.), will be found a useful mixture; and where farmyard and dissolved bones are to be used together, 15 to 20 tons of the former, with 5 cwt. of the latter, will prove efficient. Fish guano may be used along with farmyard manure, in which case 5 cwt. of fish, with 15 tons of farmyard manure, forms a good mixture; or the fish guano, to the extent of 6 or 7 cwt., with 7 to 8 cwt. of dissolved bones, will be found to yield good results. For top-dressing, sulphate of ammonia is employed to from 112 lb. (1 cwt.) to 200 lb. per acre, or nitrate of soda from 154 lb. to 275 lb. per acre, that is in the proportion of 550 of nitrate of soda to 400 of sulphate of ammonia. With sulphate of potash 2 cwt. will form a good proportion. *W. Ivison Macadam, F.C.S.*

HORTICULTURE IN NEBRASKA.—Nebraska carried off the prize from all other States for her fruit several years ago, and she deserves it. The State has always taken an active interest in fruit culture, and it now keeps it up, as we see by the programme of a meeting of the State Horticultural Society held at Lincoln in January last. Liberal premiums were offered for winter Apples and Pears, and also for flowers, and a number of interesting addresses were given. The State is divided into six fruit districts, and reports were made from each. The prominence of Nebraska as a fruit-growing State is largely due to the efforts of this Society, and the success of the Society is largely due to the active interest of its president, Governor R. W. Furnas. *American Agriculturist.*

EUCALYPTUS DIVERSICOLOR.—One of the grandest trees of the globe, and one of the greatest wonders in the whole creation of plants. Astounding records of the height of the giant tree have been given. Messrs. Muir saw trees with stems about 300 feet high up to the first branch, and I myself noticed many trees which approached to 400 feet in their total height. When closely growing the young trees may have a comparatively slender trunk, so much so that a tree 180 feet high may show a stem hardly above a foot in diameter, in such a case the foliage, for want of space, is also only scantily developed, and the ramifications are but short in proportion to the tallness of the stems. In the mast-like straightness of the trunk and the smooth whiteness of its bark, this superb tree imitates completely the variety regnans of E. amygdalina of South-east Australia, with which also, and perhaps solely, it enters into rivalry as the tallest tree of the globe! Even the loftiest trees may not yet have been found out in the secluded humid forest valleys, in which E. diversicolor like E. amygdalina rejoices most and luxuriates to the greatest extent. But possibly in the 200 miles of uninterrupted length of Sequoia forests, a few years ago rendered known to exist in Southern California, mammoth trees of either Sequoia Wellingtonia or S. sempervirens may occur, which possibly excel in stupendous height even the famous individual trees of the Calaveras grove. "*Eucalyptographia.*" *By Baron Ferd. von Mueller, K.C.M.G., &c., Government Botanist for the Colony of Victoria.*

THE GRUB OF THE COCKCHAFER IN GERMANY.—In the *Monatsschrift*, &c., for March of the current year is a short article on this subject, from which it would seem that the grub of the cockchafer or Maybug is sometimes as destructive in Germany as in France. It breeds in enormous quantities in certain places, and if its existence is not early discovered it clears everything before it. The author of the article in question, M. Rönnenkamp, superintendent of the city gardens of Berlin, relates that he has experienced four recurrences of this plague. In one case the rich and valuable stock of a nursery was annihilated, and the owner parted from his land an impoverished man. Last summer these grubs appeared in astonishing numbers in the public garden called the Humboldtshain. It is computed that no less than 40,000,000 of them were collected from a piece of turf less than 15 acres in extent. The only effectual method of dealing with them was to collect and destroy. Various other means were tried, with very little success. Even moles will not eat them if they can get worms. Fluid applications only drove them to a greater depth, to return again, and many things that will kill the grubs leave the ground in an unfit state for vegetation. They ate away the roots of the turf, that the latter could be rolled up as if it had been cut in the ordinary way.

Enquiries.

He that questioneth much shall learn much.—BACON.

RHUBARB.—Could any one give us an idea what quantity of Rhubarb could be gathered from an acre of good ground in one season? *Connon & Reid.*

Answers to Correspondents.

BOTANY: *L. E.* It would be best to get the lad a situation at Kew, or some other botanic garden.

BOUQUETS AT MANCHESTER.—Mr. John Jones, The Nurseries, Coton Hill, Shrewsbury, requests us to state that he was awarded an extra prize at the late Manchester Show for bridal and ball bouquets.

BRAZILIAN GARDENING JOURNAL: *Barnes.* The only one we know of is the *Revista de Horticultura*, published at Rio Janeiro by Signor A. Albuquerque; but we do not know if it is still continued. It is a long time since we saw a number.

DISMISSAL: *Uncertain.* You have no legal claim against your employer for expenses.

GALVANISED WIRE FOR PEACH WALLS: *L. F.* The question has not been cleared up, so far as we know, and as the wire appears to be sometimes certainly injurious, we should in the meantime recommend the old plan of training by means of nails and shreds. Ordinary wire would soon perish from corrosion, so that it is not advisable to employ that under any circumstance. If you must use galvanised wire, we would certainly recommend you to paint it.

GLOXINIA: *E. J. J. P.* Very poor by comparison with hosts that have been exhibited. It would not pass muster at all at South Kensington,

MARKET PRICES: *R. C. H.* Our information is given us by the dealers, and represents the average retail price of the week. It does not, and could not, show the price the dealer would give to the producer. We have had very numerous complaints, year after year, but as we are not dealers ourselves we cannot rectify the matter, and if we were we should probably do as the dealers do.

NAMES OF PLANTS: *C. E. F.* Claytonia perfoliata, native of North America, but naturalised in this country.—*Minnie.* 1, Asperula odorata; 2, Prunus Padus (the Bird Cherry).—3, Centaurea montana; 5, Hesperis matronalis; 6, Aubrietia deltoidea; 7, Lastrea Filix-mas.—*C. H.* Lychnis dioica flore-

pleno.—*J. H., Cowbridge.* 1, Sedum Rhodiola ; 3, Polygonum Persicaria ; 4, Alchemilla alpina ; 5, Melissa Melisophyllum.—*H. H. H.* 1, Saxifraga hypnoides ; 2, Phlox reptans ; 3, Meum athamaticum ; 4, Saxifraga granulata flore-pleno ; 5, Genista tinctoria ; 6, Saxifraga aizoides.—*A. Vasey.* 1, Alopecuris pratensis ; 2, Bromus mollis ; 3, Anthoxanthum odoratum ; 5, Dactylis glomerata ; 6, Poa pratensis ; 7, Lolium vulgare.—*G., Bath.* Abies Pindrow.—*H. A. B.* The white variety of Myosotis sylvatica, not of M. dissitiflora.—*W. R.* 1, Athyrium Filix-fœmina, apparently the purple-stemmed type ; 2, A. Filix-fœmina, var. formoso-cristatum, or one of the closely allied forms, of which there are several.—*Wm. Potten.* Saxifraga granulata flore-pleno.—*T. S. P.* Sisyrinchium anceps.—*W. M.* Ornithogalum arabicum.—*R. D. Q. P.* The Fern is Pteris argyrea ; the Orchid was smashed beyond recognition.—*A. C.* Dendrobium barbellatum.—*Inquirer, Haydock.* 1, Trichopilia fragrans ; 2, Trichopilia lepida ; the shrub is Rhododendron Edgeworthii.—*S. L.* Lithospermum prostratum.—*F. W.* must send better specimens.—*T. D. M.* 1, Odontoglossum luteo purpureum ; 2, materials insufficient—perhaps Maxillaria variabilis.—*W. Bishop.* 17, 18, and 19, are all varieties of Cattleya Mossiæ.—*R. C. B.* The Carolina Allspice (Calycanthus floridus).

Tomatos : *C. M. F.* The plants are gross feeders, and the non-setting of the flowers may probably arise from dryness at the root.

Tomatos at Manchester.—We are informed that we were in error in stating last week that the magnificent dish of Tomatos exhibited at the late show at Manchester came from Mr. McIndoe, Hutton Hall Gardens. The exhibitor who should have had the credit was our esteemed correspondent, Mr. Miles, of Wycombe Abbey.

Turnpike Toll : *E. W. S.* Your question was published at p. 632, but we have not been favoured with any reply. Consult your solicitor.

Vines : *J. H. H.* We cannot find any trace of the Phylloxera on the sample received.

☞ Foreign Subscribers sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

Catalogues Received :—William Bull (King's Road, Chelsea, S.W.), a Retail List of New, Beautiful, and Rare Plants.

Communications Received.—R. D.—H. Ellis.—T. Weaver.—R. D. Q. P.—D. T. F.—F. W. B.—W. G. S.—R. B.—W. P.—R. W.—R. C. H.—C. D.—C. F.—E. F.—J. B.—E. A.—E. R.—E. K.

Markets.

COVENT GARDEN, May 27.

Our market, except for Strawberries, has been quiet, last week's prices being hardly maintained. *James Webber, Wholesale Apple Market.*

Fruit.—Retail Prices.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve ..	2 0- 6 0	Grapes, per lb. ..	3 0- 6 0
— American, barrl.	18 0-30 0	Lemons, per 100 ..	6 0-10 0
Apricots, per box ..	1 0- 3 0	Melons, each ..	3 6- 7 0
Cherries, per box ..	1 6- 2 6	Oranges, per 100 ..	6 0-12 0
Cob Nuts, per lb. ..	1 0- 1 6	Peaches, per doz. ..	12 0-18 0
Gooseberries, green,		Pine-apples, per lb.	1 0- 3 0
per quart	0 6- 0 9	Strawberries, per lb.	3 0- 9 0

Vegetables.—Retail Prices.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, per bundle ..	1 0- ..	Lettuces, Cabbage, per doz.	1 0- 2 0
— English, p. 100..	5 0- 6 0	Mint, green, bunch..	0 4- ..
— French, per bun.	3 0- 6 0	Mushrooms, p. baskt.	1 6- 2 0
Beans, French, p. lb.	1 6- ..	Onions, per bushel..	10 0-12 0
Beet, per doz. ..	2 0- 4 0	— Spring, per bun.	0 6- ..
Cabbages, per doz. ..	1 0- 2 0	Parsley, per lb. ..	0 9- ..
Carrots, per bunch..	0 8- ..	Peas, per lb. ..	1 0- ..
— French, per lb.	0 6- ..	— French, per qt..	4 0- ..
— New, per bunch	1 6- ..	Potatos (new), per lb.	0 2- 0 6
Cauliflowers, per doz.	2 0- 5 0	Radishes, per bun...	0 2- ..
Celery, per bundle ..	1 6- 2 0	Rhubarb (Leeds), per bundle	0 4- 0 9
Chilis, per 100 ..	3 0- ..	Small salading, pun.	0 4- ..
Cucumbers, per doz.	8 0-12 0	Spinach, per bushel	2 6- ..
Endive, per 2 doz. ..	1 6- 3 0	Tomatos, per dozen	4 0- 6 0
Garlic, per lb. ..	1 0- ..	Turnips, new, bunch.	1 0- 1 6
Herbs, per bunch ..	0 2- 0 4		
Horse Radish, p. bun.	4 0- ..		

Potatos :—Regents, 80*s.* to 120*s.* ; Flukes, 120*s* to 160*s.* ; and Champions, 170*s.* to 190*s.* per ton. German, 1*s.* 6*d.* to 5*s.* per bag ; Channel Islands, 2*d.* to 3*d.* per pound.

Plants in Pots.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0-12 0	Fuchsias, per dozen	9 0-15 0
Bedding Plants, various, per doz. ..	1 6- 2 0	Genista, per dozen..	9 0-18 0
Begonias, per doz. ..	6 0-18 0	Lilium eximium, doz.	30 0-60 0
Bouvardias, per doz.	12 0-24 0	Lobelia, per dozen ..	6 0- 9 0
Calceolaria, per doz.	8 0-12 0	Mignonette, per doz.	5 0- 9 0
— Herbaceous, doz.	6 0- 9 0	Myrtles, per doz. ..	6 0-12 0
Cinerarias, per doz..	6 0-12 0	Nasturtiums, dozen	4 0- 6 0
Cyperus, per dozen	4 0- 9 0	Palms in variety, each	2 6-21 0
Dracæna terminalis	30 0-60 0	Pelargoniums, dozen	9 0-24 0
— viridis, per doz...	12 0-24 0	— Ivy-leaved, doz.	4 0- 8 0
Erica various, per dozen	12 0-30 0	— Tricolor	4 0-12 0
Euonymus, various, per dozen	6 0-18 0	— scarlet, per doz.	4 0- 9 0
Ferns, in var., doz.	4 0-18 0	Roses, Hybrid Perpetual, per doz. ..	18 0-36 0
Ficus elasticus, each	1 6- 7 6	— Fairy, per dozen	6 0-10 0
Foliage Plants, various, each	2 0-10 6	Spiræa, per dozen ..	6 0-18 0
		— palmata, doz. ..	18 0-30 0
		Stocks, per dozen ..	4 0- 8 0

Cut Flowers.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4- 0 6	Pansies, 12 bunches	2 0- 6 0
Anemone, 12 bun. ..	3 0- 6 0	Pinks, white, 12 bun.	3 0- 9 0
Arum Lilies, per dozen	3 0- 6 0	Polyanthus, 12 bun.	1 6- 4 0
Azalea, 12 sprays ..	0 6- 1 0	Pelargoniums, 12 spr.	0 6- 1 0
Bouvardias, per bun.	1 0- 4 0	— zonal, 12 sprays	0 3- 0 9
Camellias, per doz...	2 0- 6 0	Primula, double, per bunch	1 0- 1 6
Carnations, per dozen	1 0- 3 0	Ranunculus, p. doz.	6 0- 9 0
Cornflower, per doz.	6 0- 9 0	Roses (indoor), doz	1 0- 9 0
Cowslips, 12 bunches	1 0- 1 6	— Roses, Fr., doz.	2 0- 6 0
Eucharis, per doz. ..	4 0- 6 0	Spiræa, 12 sprays ..	0 6- 1 0
Euphorbia, 12 sprays	3 0- 6 0	Stephanotis, 12 spr...	2 6- 4 0
Forget-me-not, 12 bunches	3 0- 9 0	Tropæolum, 12 bun.	1 0- 3 0
Gardenias, 12 blms..	2 0- 8 0	Tuberoses, per dozen	2 0- 4 0
Heliotropes, 12 sp...	0 6- 1 0	Tulips, 12 bunches..	4 0- 6 0
Lily of the Valley, 12 bunches ..	6 0-18 0	Violets, French, per bunch	1 6- 2 6
Mignonette, 12 bun.	6 0- 9 0	— English, p. bun.	1 0- 2 0
Narcissus, various, 12 bunches ..	4 0- 9 0	Wallflowers	4 0- 9 0
		White Lilac, Fr., per bundle	4 0- 8 0

SEEDS.

London : *May* 26.—The market to-day was very thinly attended, and the business doing as nearly *nil* as possible. The prolonged drought naturally stops all consumptive demand, and no speculative movement of importance has yet developed itself. Many descriptions of seeds, owing to the bad prospects of the growing crops, are held for more money : this is notably the case with Trefoil, red Clover seed, Trifolium, and winter Tares. The American and Canadian Clover crops, in particular, are also reported as most unpromising. Sowing Mustard and Rape seed keep firm. The trade for blue Peas gets better every week. Buckwheat is dearer. Linseed steady. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

There was nothing much doing at Mark Lane on Monday, and as regards Wheat the tone was not very good. There was no pressure to sell, and in the absence of business rates were much the same as on Monday se'nnight. Barley was quiet and without change in value. Malt moved off slowly on former terms. Oats were firm, and rates were 6*d.* to 1*s.* per quarter higher on the week. Maize advanced fully 6*d.* per quarter. Beans and Peas were quite as dear. Flour was dull and not very well supported.—On Wednesday there was a very limited attendance at market, and the small amount of business done was at about previous rates for sound descriptions. Foreign Wheat was in limited request at Monday's prices. Oats, Beans, and Peas remained firm ; but the Barley trade ruled quiet.—Average prices of corn for the week ending May 22 :—Wheat, 44*s.* 8*d.* ; Barley, 32*s.* 8*d.* ; Oats, 25*s.* 5*d.* For the corresponding period last year :—Wheat, 41*s.* 4*d.* ; Barley, 28*s.* 10*d.* ; Oats, 22*s.* 6*d.*

CATTLE.

At the Metropolitan Market on Monday trade in beasts was not brisk, but choice qualities were readily disposed of at rather over the previous Monday's quotations. The number of sheep on sale—considerably larger than was expected—was for the most part disposed of at fully late rates. Trade was slow for lambs, but choice qualities maintained their price. Quotations :—Beasts, 4*s.* 4*d.* to 5*s.*, and 5*s.* 6*d.* to 6*s.* 2*d.* ; calves, 5*s.* 4*d.* to 6*s.* 6*d.* ; sheep, 5*s.* 2*d.* to 5*s.* 6*d.*, and 6*s.* 4*d.* to 7*s.* ; lambs, 7*s.* 8*d.* to 8*s.* 4*d.* ; pigs, 4*s.* 6*d.* to 5*s.* 6*d.*—Trade on Thursday was quiet but steady, and the supply of beasts short. With a firm trade the tendency was against the buyer. Sheep and lambs were quiet but firm, calves sold at full prices.

HAY.

At the Whitechapel Market on Tuesday there was a large supply and trade was dull. Prices were as follows : —Prime Clover, 100*s.* to 132*s.* ; inferior, 60*s.* to 95*s.* ; prime meadow hay, 80*s.* to 102*s.* 6*d.* ; inferior, 30*s.* to 70*s.* ; and straw, 30*s.* to 37*s.* per load.—On Thursday there was a moderate supply of hay and straw on offer. The trade was good for best hay and straw, prices for which were dearer. Quotations :—Prime Clover, 100*s.* to 132*s.* ; inferior, 60*s.* to 95*s.* ; prime meadow hay, 80*s.* to 105*s.* ; inferior, 30*s.* to 70*s.* ; and straw, 30*s.* to 39*s.* per load.—Cumberland Market quotations :—Superior meadow hay, 100*s.* to 110*s.* ; inferior, 48*s.* to 78*s.* ; superior Clover, 126*s.* to 132*s.* ; inferior, 84*s.* to 108*s.* ; and straw, 34*s.* to 40*s.* per load.

POTATOS.

The Borough and Spitalfields Markets reports state that supplies have been on a moderate scale. The trade has been quiet, and prices are as follows :—Scotch Champions, 150*s.* to 160*s.* ; Lincoln ditto, 140*s.* to 160*s.* ; Victorias, 150*s.* ; German reds, 4*s.* to 7*s.* per bag ; and French whites, 4*s.* 3*d.*—The imports into London last week consisted of 17,393 bags from Hamburg, 476 packages from Lisbon, 3088 packages 4722 bags Malta, 11,949 bags Danzig, and 3968 packages from Huelva.

COALS.

The prices current at market during the week were as follows : — Walls End — Hetton, 14*s.* 6*d.* ; Hetton Lyons, 13*s.* ; Hawthorns, 13*s.* 3*d.* ; Original Hartlepool, 14*s.* 6*d.* ; South Hetton, 14*s.* 6*d.* ; Tunstall, 13*s.*

Government Stock.—On Monday Consols closed at 99⅛ to 99¼ for delivery, and $99\frac{3}{16}$ to $99\frac{5}{16}$ for the account. Tuesday's closing prices were 99⅛ to 99¼ for delivery, and 99¼ to 99⅜ for the account. The final prices of Wednesday were 99¼ to 99⅜ for delivery, and $99\frac{1}{16}$ to $99\frac{3}{16}$ for the account. Thursday's figures were 99¼ to 99⅜ for both account and delivery.

Lawn Mowers — Lawn Mowers.

THE GREAT SUPERIORITY OF

GREEN'S

PATENT "SILENS MESSOR"

AND

"MONARCH" LAWN MOWERS

Over those of all other Makers is universally acknowledged.

They will Cut

Either Short or Long Grass, Bents, &c., Wet or Dry.

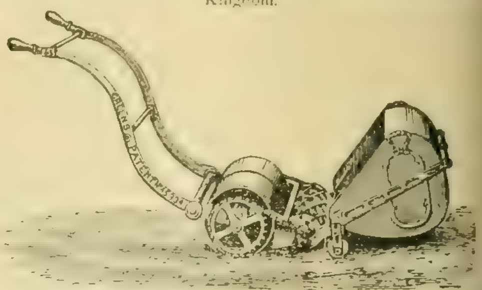
These advantages no other Lawn Mowers possess.

They have been in constant use for upwards of twenty years in

The Royal Gardens, Windsor,

Buckingham Palace Gardens | The Hyde Park Gardens
Marlborough House Gardens | Hampton Court Gardens
Royal Horticultural Society's Gardens, South Kensington | The Zoological Gardens, Regent's Park
The Royal Botanic Gardens, Regent's Park | The Dublin Botanic Gardens
The Crystal Palace Company's Gardens, Sydenham | The Liverpool Botanic Gardens
The Winter Palace Gardens, Dublin | The Botanic Gardens, Brussels
The Hull Botanic Gardens
The Leeds Horticultural Gardens

And in most of the Principal Parks and Squares in the United Kingdom.



They are the simplest in construction, the easiest to work, the least liable to get out of order, make little noise when in use, and are the most durable Lawn Mowers extant.

The above machines have proved to be the best, and have carried off Every Prize in all cases of Competition.

Every Lawn Mower is guaranteed to give entire satisfaction, otherwise it may be returned at once, free of cost to the purchaser.

The largest stock of Mowers kept in London, and including all sizes from 6 inches to 48 inches, is to be seen at our London establishment, 54 and 55, Blackfriars Road, where purchasers can select out of several hundred Machines, and have their orders executed the same day they are received.

To cut			£ s. d.
To cut	6 inches.	Can be worked by a lady	1 15 0
,,	8 ,,	,, ,, ...	2 10 0
,,	10 ,,	,, ,, ...	3 10 0
,,	12 ,,	Can be worked by one person ..	4 10 0
,,	14 ,,	,, ,, ...	5 10 0
,,	16 ,,	This can be worked by one man on an even lawn	6 10 0
,,	18 ,,	By man and boy	7 10 0
,,	20 ,,	,, ,, ...	8 0 0
,,	22 ,,	,, ,, ...	8 10 0
,,	24 ,,	,, ,, ...	9 0 0

Prices of Horse, Pony, and Donkey Machines, on application.

They can be had of all respectable Ironmongers and Seedsmen in the United Kingdom, or direct from the manufacturers.

Carriage paid to all the Principal Railway Stations in the United Kingdom.

Illustrated Price LISTS free on application.

N.B.—Those who have Lawn Mowers to Repair will do well to send them either to our Leeds or London Establishments, where they will have prompt attention, as an efficient staff of workmen is kept at both places.

GREEN'S PATENT ROLLERS

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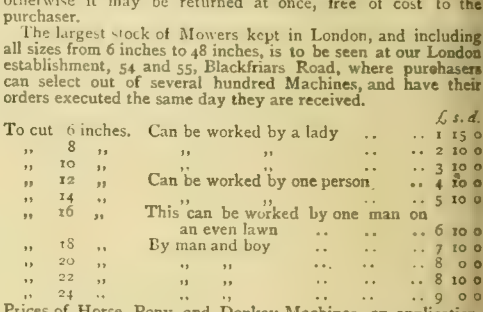
SUITABLE FOR HAND OR HORSE POWER.

These Rollers are made in two parts, and are free in revolving on the axis, which affords greater facility for turning. The outer edges are rounded off, or turned inwards, so that the unsightly marks left by other Rollers are avoided.



Diam. Length	£ s d	Diam. Length	£ s. d.
16 in. by 17 in. ..	2 15 0	24 in. by 26 in. ..	5 0 0
20 in. by 22 in. ..	4 0 0	30 in. by 32 in. ..	9 0 0

Prices of Rollers fitted with Shafts, suitable for Horse and Pony, on application.

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THE BEST STRAIN OF CALCEOLARIA.

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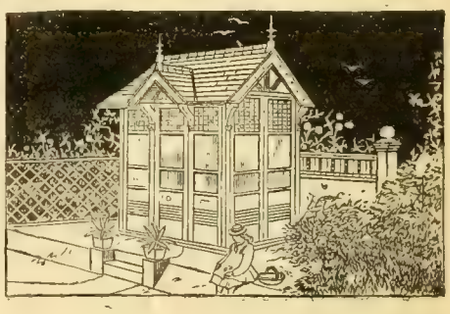

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THE ABOVE and many other PATTERNS are made in materials of great durability. The plainer sorts are specially suited for KITCHEN GARDENS, as they harbour no Slugs or Insects, take up little room, and, once put down, incur no further labour or expense, as do "grown" Edgings, consequently being much cheaper.

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"THE GARDEN" POTTERY.—"Your pots are the best."—MR. PAYNE, *Gr. to the* Rt. Hon. and Rt. Rev. the Lord Bishop of Bath and Wells.

Works:—Chilcompton and Evercreech Junction Stations.
Address:—T. J. HICKES, Shepton Malet.

Geometrical Mosaic and Encaustic

TILE PAVEMENTS, for Conservatories, Verandahs, Entrance Halls, &c. Enamelled and Decorated Glazed Tiles, for Wall Linings, Fireplaces, &c.; also Patent Indestructible Terra-cotta Plant Markers. Patterns and Prices sent post-free on application.

MAW AND CO., Benthall Works, Broseley, Shropshire.

HORTICULTURAL WINDOW GLASS,

15-oz. and 21-oz., in Boxes containing 200 feet,

Carriage Paid to any Railway Station in England.

Price Lists on application.

ALFRED SYER, Glass, Lead, Zinc, Oil and Colour Merchant, 6 and 8, Pentonville Road, London, N.

BELGIAN GLASS for GREENHOUSES, &c.,

Can be obtained in all sizes and qualities of

BETHAM & SON,
9, LOWER THAMES STREET, LONDON, E.C.

B. & Son have always a large Stock in London of 20-in. by 12-in., 20-in. by 14-in., 20-in. by 16-in., 20-in. by 18-in., in 16-oz. & 21-oz.

Established 150 years.
WINDOW GLASS, SHEET LEAD, PAINTS, &c.

THOMAS MILLINGTON AND CO., IMPORTERS and MANUFACTURERS, have a large quantity of GLASS in various sizes and thicknesses:—

	Inches.	Inches.		
15-oz.,	6 × 4 to 8 × 6,	11*s*., 12*s*., 13*s*., 14*s*.		Per 100 ft. Box.
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	13 × 9 to 18 × 12,	12*s*. 6*d*., 15*s*., 16*s*., 17*s*.		
	20 × 12 to 24 × 16,	12*s*. 9*d*., 15*s*., 16*s* 6*d*., 17*s*. 9*d*.		
	20 × 17 to 24 × 18,	12*s*. 9*d*., 15*s*., 16*s*. 6*d*., 17*s*. 9*d*.		
	Inches.	Inches.		
21-oz.,	Orchard House,	20 × 12, 20 × 13, 20 × 14, 20 × 15, 20 × 16, 20 × 17,	16*s*. 6*d*., 19*s*. 3*d*., 20*s*., 21*s*.	

15-oz., for Cutting up, 35*s*., 39*s*., 46*s*., 50*s*. per 300 feet case.
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LINSEED OIL, PUTTY, WHITE LEAD, OILS, and TURPENTINE, are very low in price at present.

Lists on application.
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BOOTE AND MILLSON, LEAD and GLASS MERCHANTS, 64, City Road, E.C., have always ON THE PREMISES a large Stock of all kinds of Horticultural Glass, at lowest market rates.

Stand 111. Shed 12. { **Bath and West of England Show,** June 2 to 7. } Stand 111. Shed 12.

LAWN MOWERS — LAWN MOWERS,

New and Improved Machines for 1880.

SAMUELSON & CO.'S
NEW
"VILLA" AND "FAVORITE"
PATTERNS ARE THE BEST.

London Agents: HILL & SMITH, Queen Victoria Street,
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MANUFACTORY: BANBURY, OXON.

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All the usual kinds at reduced rates. SACKS and SEED BAGS, new and second-hand, of every description. RAFFIA FIBRE, NETTING, and TIFFANY, TARPAULINS, RICK COVERS, HORSE-CLOTHS, ROPES, LINES and TWINES. Price LIST on application to

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ANDERSON'S RUSSIA MATS,

For COVERING, TYING, and PACKING,

are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

RAFFIA FIBRE.—A parcel of the best quality, just received from our agent at Madagascar, at a special low price.

MARENDAZ AND FISHER, James Street, Covent Garden, W.C.

MATS, RAFFIA for TYING,
TRAINING STICKS and LABELS,
Bamboo Canes, Virgin Cork, &c.

C. J. BLACKITH AND CO.,
COX'S QUAY, LOWER THAMES STREET, LONDON.

WM. PETERS has still some good colour Soft ARCHANGEL MATS, very suitable for tying purposes, also ARCHANGEL and ST. PETERSBURG MATS, for covering.

JUST TO HAND, *ex Duart Castle*, a parcel of RAFFIA, fine quality, good colour, and extra strong.

SEED BAGS and SACKS. Specially prepared Sewing or Tying, White or Tarred TWINE, ROPES, LINES, &c. NETTING and SHADING CANVAS. RICK CLOTHS and WATERPROOF COVERS of all descriptions.

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UPPER GROUND STREET, LONDON, S.E.,

Have the largest and most complete stock in the Trade; upwards of £20,000 worth to choose from.

HOT-WATER BOILERS, PIPES, and CONNECTIONS,

And all CASTINGS for HORTICULTURAL PURPOSES.

Their New Illustrated Catalogue, 10th Edition, now ready
(price One Shilling).

Hot-water and Hot-air Apparatus erected complete, or the Materials supplied.
Price List on application free.

"ARCHIMEDEAN" AMERICAN LAWN MOWERS,

Will Cut Long and Wet Grass (as well as Dry and Short) without Clogging.

They are especially adapted for Cutting Slopes, Steep Embankments, under Shrubs, and close up to Trees, &c.; and are also extremely light in draught, simple in construction, well made, and not likely to get out of order.

AWARDED,
Highest Prize—Paris, 1878.
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PATRONIZED BY
HER GRACIOUS MAJESTY THE QUEEN,
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"Far superior to any of ours."—*Vide* the *Field*.

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"The quickest, most simple, and most efficient mower ever used."—*Vide* the *Gardeners' Chronicle*.

"We feel bound to recommend it to our readers as one of the best mowers we have as yet made acquaintance with."—*Vide* the *Floral World*.

PRICES from TWENTY-FIVE SHILLINGS.
Warranted to give satisfaction.
Delivered Carriage Free to all Stations.
Illustrated Catalogue post-free on application.
CAN BE USED EITHER WITH OR WITHOUT GRASS BOX.

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PRICES:

8-inch ..	£2	2	0
10-inch ..	3	3	0
13-inch ..	4	4	0
15-inch ..	5	5	0
18-inch ..	6	6	0

"THE COVENTRY" LAWN MOWER

(REGISTERED). MANUFACTURED BY

NETTLEFOLD & SONS,

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The attention of the Public is invited to "THE COVENTRY" LAWN MOWER, which can be confidently recommended as the best and cheapest in the market; for lightness and ease in working it cannot be surpassed.

It has all the improvements which have of late been introduced into this class of Machine, either in England or America.

It will cut wet or dry grass of any length, will turn in its own width, and is so light that a lady can use a 15-inch Machine of this make with greater ease than a 10-inch of the ordinary kind.

It is cheaper than any other Machine of its class before the public.

It is made, as it name implies, at Coventry, by skilled English workmen, and of best English Steel and Iron.

These Machines can also be supplied with rollers at same price, and with Grass Boxes at a small extra cost.

NEW PATENT GRASS-CUTTERS

(PATRONISED BY THE BOARD OF WORKS).

W. CLARK, 232, Oxford Street, London, W.,

Begs to call public attention to a Patent Grass-Cutter he has just invented for use in the Garden and Farm, based upon the principle of the well-known "Clark's" Horse-clipping Machine, and which is, by its lightness of construction and rapidity of action, far preferable to the existing implements in use, and supplies a want long felt by every one who possesses a garden, namely, an instrument which will mow grass where inaccessible to the lawn mower, trim grass plot edges, clip Ivy and other creepers, also shrubs and trees, and keep in order Box borders and fancy Trees, &c.; all which this ingenious little instrument is capable of doing.

It is made in three sizes, to cut in breadth 8 inches, 12 inches, and 16 inches respectively; and is so easy in working, and at the same time so effective, that even ladies can work it without feeling fatigued, there being no occasion to stoop on account of the long wooden handles attached to the machine, and a greater quantity of work can be done in a given time than by any other method.

This invention is also applicable for Farm purposes—Reaping Corn and other Crops, Clover, Rye, &c., equally as well as accomplishing the objects for which it is required in the garden; and the cost being so small in proportion to the saving in time and quality of finish effected, it is placed within the reach of all, and needs but a trial to prove its superiority.

PRICES.

The 8-inch Machine, complete with Rollers and Tray	21*s.*
Ditto, without Rollers and Tray	18*s.*
The 12-inch Machine, complete with Rollers and Tray	28*s.*
Ditto, without Rollers and Tray	24*s.*
The 16-inch Machine, complete with Rollers and Tray	38*s.*
Ditto, without Rollers and Tray	33*s.*

To be obtained of all Ironmongers, Horticultural and Agricultural Implement Manufacturers throughout the Kingdom, and of the Patentee,

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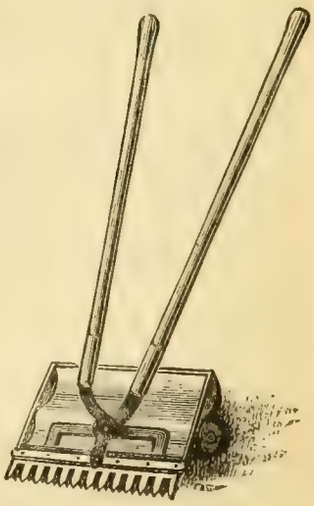

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JONES'S IMPROVED EXPANSION JOINT.

THE BEST HOT-WATER JOINT.

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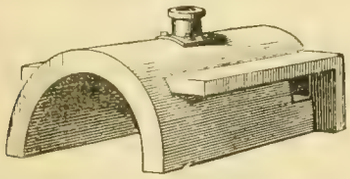
SIMPLE, DURABLE, NEAT, CHEAP.

Specially adapted for CHURCHES, SCHOOLS, MANSIONS, PUBLIC BUILDINGS, &c.

Illustrated CIRCULAR and Price LIST; also Estimates for Heating with the most improved BOILERS, EXPANSION JOINT PIPES, or COILS, on application.

Silver Medal, 1874.

THE TERMINAL SADDLE BOILER.—First-class Certificate, 1867; Highly Commended, 1873; and First-class Certificate, 1875.



"This boiler possesses the rare merit of sucking all the heat from the fire."—*Gardeners' Magazine*, p. 254.

"I have no doubt the Best Boiler, that will burn any kind of fuel, is the Terminal Saddle."—*Journal of Horticulture*, p. 327.

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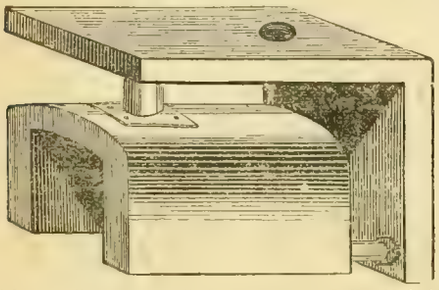
Prospectus post-free.
T. JONES, Temple Street, Manchester.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1000	16	0	0
24 ,,	24 ,,	48 ,,	1400	20	0	0
28 ,,	28 ,,	60 ,,	1800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

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When ordering Boilers please refer to the above advertisement.

IMPROVED GREENHOUSE GAS BOILER.—From numerous experiments, a Copper Laminated Gas Hot-water Generator has been produced and thoroughly tested. It obviates a failing that usually occurs in Boilers heated by gas, viz., the passing away of the heat through the flue with only imparting a small portion to the water. Price, with Pipes, &c., complete for standing in place, £5 10s.

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X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for
HOT-WATER PIPES and CONNECTIONS.
4-inch Pipes, 1s. 11d. per yard. Other sizes equally low.
F. AND J. SILVESTER, Castle Hill Foundry,
Engineering and Boiler Works, Newcastle, Staffordshire.

"EUREKA" FUMIGATORS are the best and cheapest for all purposes. May be had from all Seedsmen, &c., 2s., 2s. 9d., 4s. 3d., 6s. 6d. each, package extra. TOBACCO CLOTH, 10d. per pound. SEED DRILLS, CAP GLASSES, SYRINGES, &c. LISTS free. SYERS, Bowdon, Cheshire.

By Royal Letters Patent.

3 feet 6 inches, 5 feet, and 6 feet.

RITCHIE'S GAS LIGHTING and HEATING APPARATUS.

No Flue required. Specially adapted for Drying Newly-built Houses. Silver Medal awarded in 1878 at Wolverhampton Exhibition. The deleterious and unpleasant vapours arising from the burning of ordinary coal gas are prevented from escaping, and are made to circulate within the Apparatus or Stove in such a way that they become thoroughly condensed, and are carried off in the form of a liquid, in which will be found the sulphur and other poisons which are drawn from and would in the ordinary way be left in and mixed with the surrounding atmosphere; consequently health is not prejudicially affected, Works of Art, Plants, Pictures, Books, Furniture, &c., are not injured, and the atmosphere is rendered uncontaminated and perfectly healthy.

Prices from 50s. to £10 10s.

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THORNTON'S
GARDEN and EDGE TOOLS.

Excel in Durability, are unsurpassed in Quality, and Warranted.

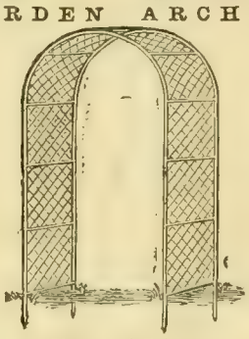
SPECIAL TOOLS FOR MARKET GARDENERS.
PRICES FREE ON APPLICATION.

I. THORNTON,
TURNHAM GREEN, LONDON, W.

GOLD MEDAL
AWARDED TO
J. J. THOMAS & CO.,
Paris Exhibition, 1878,
For Wire applied to Horticultural Purposes.

GARDEN ARCHES.

Pattern, No. 51.



Painted or Galvanised.

Sizes and Prices.

Out of Ground. High. ft. in.	Span. ft. in.	Wide. ft in	Painted Green. £ s. d.	Galvanised. £ s. d.
7 0	4 0	1 0	0 10 6	0 12 6
7 6	4 6	1 6	0 17 0	0 19 6
8 0	5 0	2 0	1 6 0	1 11 6

Other sizes at proportionate prices.

Illustrated and Priced Catalogues of Horticultural Wirework Fittings for Wiring Walls, &c., on application.

*** Five per cent. discount allowed for cash with order.

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Paddington Iron and Wire Works,
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P.O. Orders to be made payable at 310, Edgware Road, N.

WIREWORK SUMMER HOUSES
with Zinc or Trellis Tops).

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HORTICULTURAL IRON and WIRE WORKS,
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EDGINGTON'S GARDEN NETTING, the cheapest and most durable, at 1d. per square yard, or in quantities of 250, 500, or 1000 yards carriage free.
EDGINGTON'S MARQUEES and GARDEN TENTS are the prettiest.
EDGINGTON'S MARQUEES for Hire are the most handsome and capacious.
EDGINGTON'S RICK-CLOTHS for seventy-two years have maintained their celebrity as the best.
HAYTHORN'S and WALLER'S NETTINGS.
A quantity of good Second hand Government TENTS from Abyssinia for Sale, cheap.
Sample of material free on application.
Be particular—FREDK. EDGINGTON AND CO., 52 (only), Old Kent Road, London, S.E.

Protect your Fruit Trees, &c.

TANNED GARDEN NETTING, 1 yard wide, 1d., 2 yards wide, 2d., 3 yards wide, 3d., 4 yards wide, 4d. per yard.
SCRYM, TIFFANY, PATENT SHADING, &c.: sample-book of above, post-free two stamps.
SECOND-HAND BUNTING, all wool, 6d. per square yard.
ARCHANGEL and DUNNAGE MATS, &c.
Illustrated Catalogues of all their manufactures on application.
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NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3d. per yard, or 100 yards 20s.; 4 yards wide, 6d. per yard, or 50 yards 20s
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6d. per yard; 4 yards wide, 1s per yard; ¾-inch mesh, 4 yards wide, 1s. 6d. per yard.
TIFFANY, 5s. and 6s. per piece of 20 yards.
LAWN TENNIS NETS from 16s. to 25s.
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Oil Paint No Longer Necessary.

HILL AND SMITH'S BLACK VARNISH
for Preserving Ironwork, Wood, or Stone.
(*Registered Trade Mark.*)

This VARNISH is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in casks of about 30 gallons each, at 1s. 6d. per gallon at the Manufactory, or 1s. 8d. per gallon carriage paid to any Station in the Kingdom

UNSOLICITED TESTIMONIAL.

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CAUTION.—HILL & SMITH would particularly warn their Customers against the various cheap Varnishes now so much advertised.

H & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

Large Illustrated CATALOGUE of Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to

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LEETE'S IMPROVED
ZINC WHITE PAINT,
Specially prepared for Horticultural Buildings, Conservatories, Hothouses, Greenhouses, &c.,

Is the most durable and beautiful Paint for Internal and External Painting, is non-poisonous, always retains its colour, and is not affected by sulphuretted hydrogen.

"A" Quality, 40s. per Cwt.; "B" Quality, 30s. per Cwt.

LEETE'S
NEW SPECIAL PREPARED PAINT,
For Iron, Wood, Stone, Stucco, or Cement Work.
Ground in Oil. No Dryers required.

White Paint, 24s. per cwt.	Brunswick Green, three shades, 24s per cwt.
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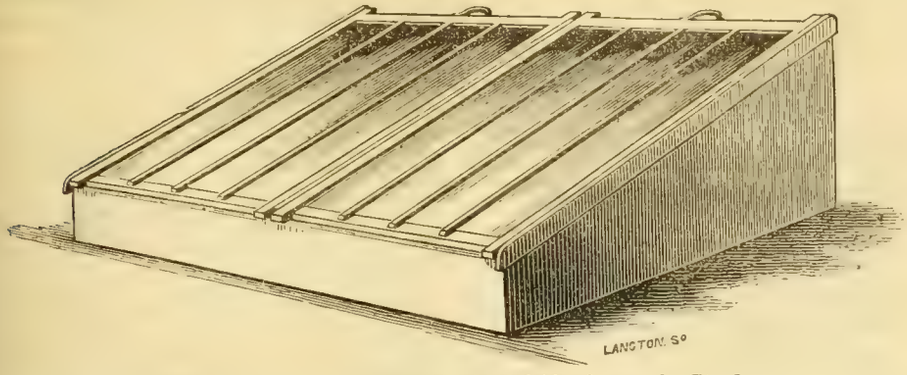
Thinnings required: Two gallons to 1 cwt. of paint, 3s. 6d. per gallon. Kegs and Cans charged and allowed for when returned—1 cwt. kegs, 2s. 6d.; 1 gallon cans, 1s. 6d.

VARNISHES: Oak, 7s., 8s.; Fine Oak, 10s., 12s. per gallon.
DRY COLOURS and BRUSHES at cheap prices. Cash only.

A. LEETE & CO.,
PAINT AND COLOUR MANUFACTURERS,
129, LONDON ROAD, SOUTHWARK, S.E.

BOULTON & PAUL, NORWICH.



MELON and CUCUMBER FRAMES always in Stock.

1-light FRAME, 6 feet by 4 feet, .. £2 0 0 | 3-light FRAME 12 feet by 6 feet, .. £4 17 6
2-light ,, 8 feet by 6 feet, .. 3 7 6 | 4-light ,, 16 feet by 6 feet, .. 6 7 6

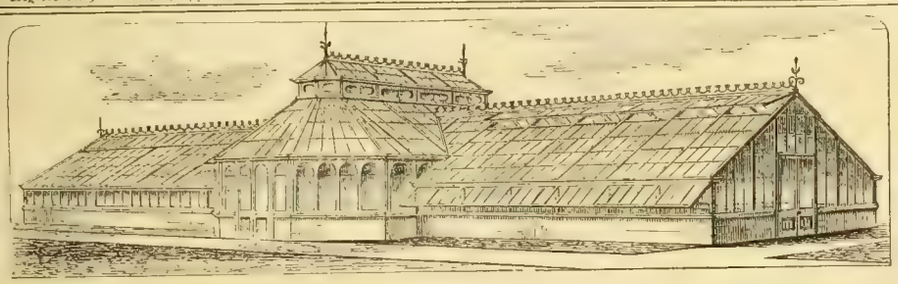
Made of the best seasoned red-wood deal. Glazed with English 21-oz. Sheet Glass. All painted three times in best oil colour. Iron Handle to each Light, and an Iron Cross Bar.

Carriage Paid to any Railway Station in England and Wales, also to Dublin, Edinburgh and Glasgow.

Any damage in transit made good, if advised immediately. Packing Cases not charged for if returned at once carriage paid.

Lights only 6 feet, by 4 feet, painted and glazed, 16s. each. *Orders amounting to 40s. carriage paid.*

Two Gold Medals awarded to us by Royal Horticultural Society, at the



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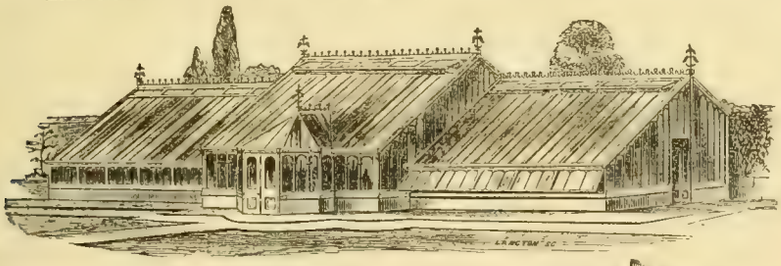

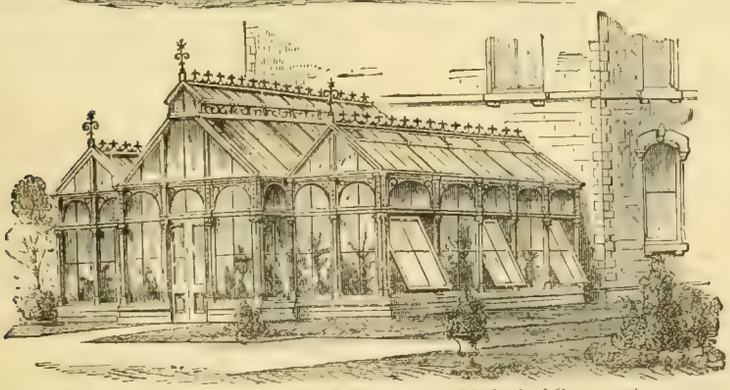

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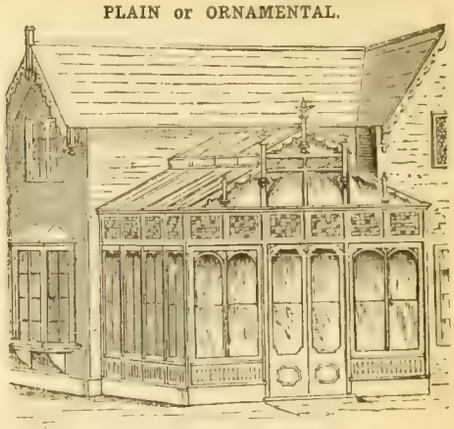

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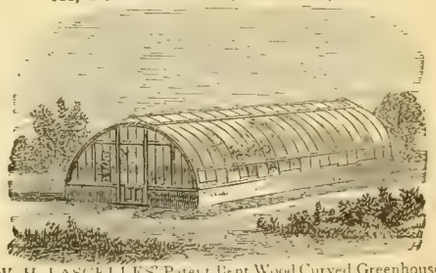

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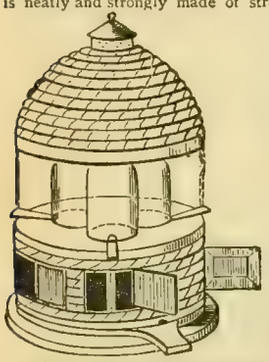

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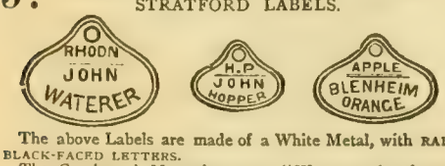

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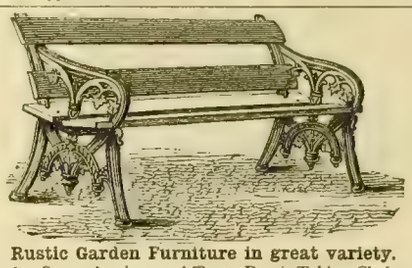

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PROPAGATOR (INDOOR).—Hard Stove and Soft-wooded. Nine years' experience. Three years and eight months in last situation.—W. R. R., 32, Faroe Road, Brook Green, Hammersmith, W.

PROPAGATOR and SECOND in Charge, or to Manage a Small Nursery.—Age 26; good experience and references.—H. C., Cambridge House, Avenue Road, Southampton.

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To Nurserymen.

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IMPROVER, under Glass, in a Gentleman's establishment.—Age 17; two years' experience.—W. JONES, Clay Hill, Lyndhurst.

IMPROVER, under a Foreman or Gardener. —Age 18; can make himself generally useful. Can have five years' good character. Premium given if required. Bothy preferred.—Address with particulars to G. CLARKE, Great Waltham, Langleys, Essex.

APPRENTICE, under a good Gardener.—Young, intelligent, and steady. A Premium with early employment.—Apply to GEO. McBEY, Ludbrooke Lodge, Lincoln.

To the Seed Trade.

TRAVELLER, MANAGER, BOOK-KEEPER, or CORRESPONDENT.—Has had twenty years' experience in London and Provincial Houses. Well acquainted with the road, and thoroughly conversant with the Wholesale Trade.—H. X., Heather & Rawkins, Brewery Stores, Walham Green, S.W.

To Nurserymen.

NURSERY FOREMAN, SALESMAN, MANAGER, or TRAVELLER.—Seventeen years' experience in leading London Nurseries in all branches of the trade—seven years as sole Manager.—T. C. BOSTON, 1, Clyde Terrace, Forest Hill, London, S.E.

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SHOPMAN, or TRAVELLER.—Age 29, married; fifteen years' experience in every branch. Now open for engagement; permanency required.—W., Minier & Co., 60, Strand, W.C.

CLERK (JUNIOR), or ASSISTANT in a Nursery or Seed Business.—Age 21; slight experience, but willing to take small commencing salary. Excellent references.—W., 10, Westbourne Street, Pimlico, London, S.W.

EPPS'S COCOA.

GRATEFUL AND COMFORTING.

"By a thorough knowledge of the natural laws which govern the operation of digestion and nutrition, and by a careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast tables with a delicately-flavoured beverage which may save us many heavy doctor's bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly-nourished frame."—*Civil Service Gazette.*

JAMES EPPS AND CO., HOMŒOPATHIC CHEMISTS.

WHAT PRODUCES HAIR?

"We are glad to be able to announce that an answer has been found to this long puzzling and perplexing of questions in Warde's Capillare, which, however, turns out not to be a 'new discovery,' but one that has been in use in the practice of a physician of eminence for many years . . . and so successfully as to produce many beautiful growths of hair, as also whiskers and moustaches in abundance. . . . The secret of its preparation has been purchased by Messrs. Warde & Co., and these gentlemen are giving to society at large what, until lately, has been confined to a limited circle—A REAL HAIR PRODUCER."—*Civil Service Gazette.*

A beautiful Head of Hair, Whiskers, Moustaches and Eyebrows positively produced by the use of

WARDE'S CAPILLARE

(The Real Hair Producer)

(After a course of Warde's Cappillare).

It preserves the natural colour of the hair; KEEPS IT FROM THINNING; is a SPECIFIC for PREMATURE BALDNESS; and thoroughly eradicates scruff and dandriff. Its fragrance and purity, moreover, recommend it FOR DAILY USE, as the bes dressing for the Capillature.

None genuine without Warde & Co.'s signature on the label, thus *Warde & Co.*

Beware of those who copy the style of our Advertisements, and then "Caution" you that theirs have been so treated. Directions for use with each bottle.

Price, 2s. 6d. per bottle, three bottles 6s. 6d.,
Privately packed, carriage paid.

Can be obtained from all Chemists, per order on Wholesale Houses; or sent under cover, upon receipt of remittance, by

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WHISKERS

Send for a Bottle, as it is guaranteed to effect this marvellous change in a few weeks.

Never fails.

BEFORE USE. **SAVILLE'S** AFTER USE.

CAPILLARY GERMINATOR

has been proved by hundreds to be the only real producer of **Whiskers and Moustaches and Curer of Baldness.**

PRESS OPINIONS.—"Decidedly the most efficacious and rapid in its operation of any preparation of the kind. A thoroughly reliable Hair Producer."—*London Press.* "Just what it professes to be—in effect."—*Irish Press.*

Of all Chemists and Perfumers. Sent to any address, *carriage paid*, free from observation, with testimonials, directions for use, &c., on receipt of 2s. 6d. Larger sizes, 4s., 8s., and 11s. Carriage paid, 1s. extra. JOHN F. SAVILLE AND SONS, 146, Regent's Park Road, London, N.W.

Important Caution! Beware!—Many persons are copying our title and advertisements. This is the *original* and only genuine "Capillary Germinator." Buy no other. Above title (registered) is moulded in every bottle.

KINAHAN'S LL WHISKY

KINAHAN'S LL WHISKY.
Pure, Mild and Mellow, Delicious and Most Wholesome. Universally recommended by the Profession. The Cream of Old Irish Whiskies.

KINAHAN'S LL WHISKY.
Dr. Hassall says—"Soft and Mellow, Pure, well Matured, and of very excellent quality."

KINAHAN'S LL WHISKY.
Gold Medal, Paris Exhibition, 1878; Dublin Exhibition, 1865, the Gold Medal.—20, Great Titchfield Street, London, W.

"OLD DR. JACOB TOWNSEND'S" SARSAPARILLA.
THE BLOOD PURIFIER.

This extraordinary Medicine has a singular influence upon the blood, which it enriches and purifies. It removes all pimples and blotches, purifies the system, and acts like a charm. As a sustaining and purifying tonic it is invaluable, and highly recommended in long-standing cases of indigestion, nervousness, coughs, colds, scrofula, gout, dropsy, and wasting of flesh. Sold by all druggists. Caution.—Get the red and blue wrapper, with the Doctor's head in the centre. No other genuine. In bottles, 2s. 6d., 4s. 6d., and 11s.—131, Fleet Street, E.C.

DINNEFORD'S MAGNESIA.

The Medical Profession for over Forty Years have approved of this pure solution as the Best Remedy for

ACIDITY OF THE STOMACH, HEARTBURN, HEADACHE, GOUT, AND INDIGESTION,

and as the safest Aperient for Delicate Constitutions, Ladies, Children, and Infants.

DINNEFORD'S MAGNESIA.

HOLLOWAY'S PILLS.—Easy Digestion.—These admirable Pills cannot be too highly appreciated for the wholesome power they exert over all disorders of the stomach, liver, bowles, and kidneys. They instantaneously relieve and steadily work out a thorough cure, and in its course dispel headache, biliousness, flatulence, and depression of spirits. It is wonderful to watch the daily improvement of the complexion, as Holloway's Pills purify the blood and restore plumpness to the face which had lost both flesh and colour. These Pills combine every excellence desirable in a domestic remedy. The most certain and beneficial results flow from the occasional use of this regulating medicine. Even persons in health, or when following sedentary occupation, will find it an invaluable aperient.

SEND FOR A PRICE LIST OF

JOHN BLAKE'S
PATENT SELF-ACTING HYDRAULIC RAMS,

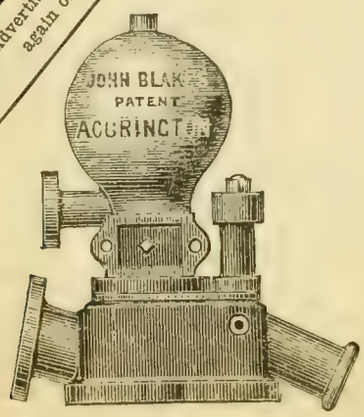
For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions, Fountains, Farms.

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

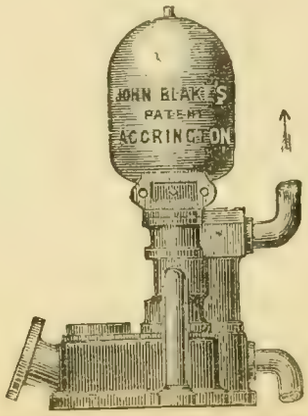
No Oiling or Packing Required.

Made in sizes to raise from 300 to 500,000 Gallons per day.

This Advertisement will appear again on June 19.

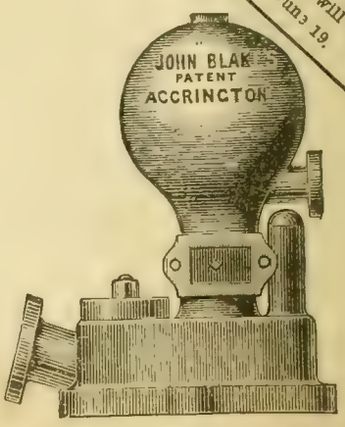


Th's Ram for small working falls.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 feet.

This Advertisement will appear again on June 19.



This Ram, for deep working falls, will force up one-third of the water passing through it

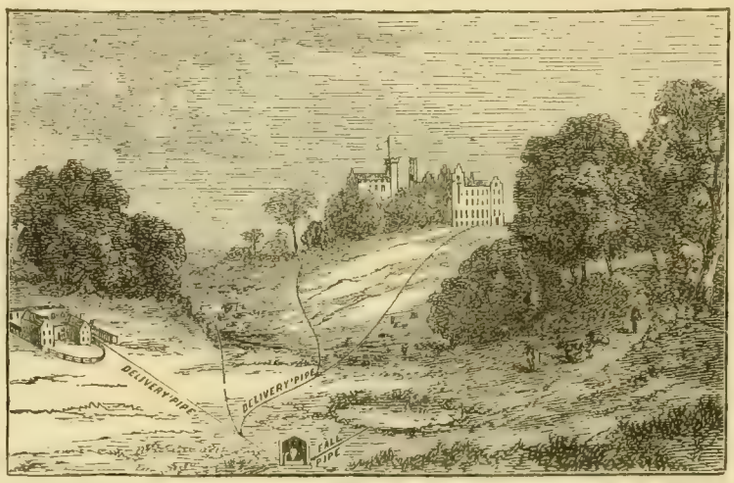
Parties requiring a Water Supply should not too readily conclude that the quantity and fall of water, if any is available, is too small to work a Ram before consulting J. B.

TESTIMONIALS.

From the Right Honourable the EARL of GRANARD, *Castle Forbes, March* 1, 1880.—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of a tower 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

From Col. TREMAYNE, *Perran-ar-Worthel, Cornwall, March* 7, 1880.—The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

From W. SCARTH, Esq., *Agent to* His Grace the Duke of Cleveland.—"Raby Castle, Darlington, July 16, 1878.—The Hydraulic Ram you supplied to his Grace the Duke of Cleveland in 1875 is a complete success. It worked for more than two years without once stopping, and throws more water than promised."



This view represents one Ram worked by water from a spring, and forcing it up to a Farm, Cattle Troughs, Kitchen Garden, and Mansion, all at different elevations, the highest being 444 feet, and to a distance of 2008 yards.

TESTIMONIALS.

From Capt. GANDY, *Castle Bank, Appleby, February* 11, 1880.—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 73 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

From JOHN WALKER, Esq., *Mount St. John, Thirsk, February* 13, 1880.—"In reply to your enquiry I am glad to inform you that the Hydraulic Ram you fixed here in May last has fully answered my expectations, and your promises as to the quantity of water it would force to a height of 185 feet. I consider it a very good machine, and superior to one I had in use previously."

From Captain TOWNSHEND, *Wincham, February* 10, 1877.—"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe, 900 yards long, at the rate of 80,000 gallons per day, although you only promised 50,000."

From JOHN TAYLOR, Esq., *The Rocks, Bath, August* 22, 1878.—"The Self-acting Hydraulic Ram you fixed here in March of last year continues to work well. It has only the same quantity of water and fall to work it as the water-wheel and pump which I used previously to force a height of 204 feet, and yet the Ram sends up more than double the quantity of water that the wheel did to the same height."

From Major STARKIE, *Lovely Hall, Blackburn, May* 13, 1878.—"Sir, I have great pleasure in testifying to the good qualities possessed by the Ram you erected here last year. It has done its work well, and not failed as the other Ram did, which was of a different construction, and supplied by a different firm. I consider that there are great difficulties to contend with here, but your practical mechanical knowledge, both as to the construction of the Ram and its situation here, overcame most of the difficulties that we had to contend against."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December* 21, 1863.—"Sir.—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force-pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

From the Right Hon T. SOTHERON-ESTCOURT, *Estcourt Park, Gloucestershire, September* 6, 1875.—"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful." (The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

Deanswater, Wilmslow, November 20, 1873.—"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house about 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required—namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—Yours, &c., L. HANMER."

From Mr. THOMAS MASON, *Alkincoates Hall, Colne, September* 30, 1871.—"Sir,—Your Self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours, to a height of 194 feet."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
Printed by WILLIAM RICHARDS, at the Office of Messrs. BRADBURY, AGNEW & Co., Lombard Street, Precinct of Whitefriars, City of London, in the County of Middlesex, and Published by the said WILLIAM RICHARDS, at the Office, 41, Wellington Street, Parish of St. Paul's, Covent Garden, in the said County.—SATURDAY, May 29, 1880.
Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

HERBACEOUS CALCEOLARIAS

Hybrids 722

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 336.—Vol. XIII. { New Series. } SATURDAY, JUNE 5, 1880. { Registered at the General Post-office as a Newspaper. } Price 5d. { Post Free, 5½d.

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
GREAT FLOWER SHOW, under the Large Tent, JUNE 8, 9, 10 and 11 ONE THOUSAND POUNDS in PRIZES. Competition for Silver Cups offered by Mr. William Bull, F.L.S., for New Plants; and for Prizes by Messrs. Sutton & Sons, for Vegetables; and Messrs. Joseph Davis & Co., for Plants. Horticultural Buildings and Appliances of all kinds will be exhibited in the Garden. Band of the Royal Horse Guards (Blue) each day.
Admission—Tuesday, June 8, from 1 o'Clock, 5s. Wednesday and Thursday, June 9 and 10, from 10 o'Clock, 1s. Friday, June 11, from 10 o'Clock, 6d.; or by Tickets purchased before June 8 by Fellows, for the first day, 3s. 6d. Tickets at the usual Agents and the Entrances to the Gardens.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—GREAT FLOWER SHOW. COMMITTEES' MEETINGS, Fruit and Floral at 11 A.M., Scientific at 1 o'Clock—Ordinary Meeting for Election of Fellows at 3 P.M., and Full Band of Royal Horse Guards at 4 o'Clock, on TUESDAY NEXT, June 8. Admission, 5s.

ALEXANDRA PALACE, Muswell Hill, N.
The GREAT ROSE SHOW will be held in the Central Hall, SATURDAY, July 10. ENTRIES CLOSE—SATURDAY, July 3. Schedule of Prizes, Rules, &c., may be had on application to
Alexandra Palace, London, N. Mr. J. S. COOKE, Sec.

HANTS and BERKS ROYAL COUNTIES AGRICULTURAL SHOW will be held at Portsmouth, JUNE 22, 23, 24, 25.
Uunder the Patronage of HER MAJESTY THE QUEEN.
The Floral and Horticultural Department open to all. No entrance fees. A large amount offered in Prizes for Plants, Cut Flowers, Fruit, and Vegetables. Several Special Prizes offered in addition to the Schedule. Application for Schedules and Forms should be made to
J. TAPLIN, Havant, SAM. KNIGHT, Portsea, } Hon. Secs.

TIVERTON (Devon) HORTICULTURAL SOCIETY.
TENTH EXHIBITION, JULY 1. Cut Roses (open to all England), 48 Perpetuals, £7, £4, £2; 12 Teas and Noisettes, £4, £2, £1. Liberal Prizes for Stove and Greenhouse Plants, Fruit and Vegetables. Schedules on application to
Messrs. PAINE AND MILLS, Hon. Secs.

At the same time and place the DEVON and EXETER BEE-KEEPERS' ASSOCIATION will hold an EXHIBITION of BEES and their produce. Schedules of
Alphington, Exeter. Mr. W. N. GRIFFIN, Hon. Sec.

LUDLOW ROSE SHOW—The ANNUAL EXHIBITION of ROSES will be held at the Assembly Rooms, Ludlow, on FRIDAY, July 9. Schedules of Prizes and Regulations may be obtained from the
Ludlow. Rev. V. T. T. ORGILL, Hon. Sec.

HERTFORDSHIRE BEE-KEEPERS' ASSOCIATION.
A COUNTY FLOWER, FRUIT and VEGETABLE SHOW, open to all persons residing in the county of Herts, will be held in connection with the Annual Show of the Association, at St. Michael's Lodge, Gorhambury, St. Albans, under the Presidency of the EARL OF VERULAM, on FRIDAY and SATURDAY, August 20 and 21. Application for Schedules to be made to the Flower Show Secretary,
King's Langley, Watford. Mr. JOHN HUCKLE.

GRAND FLORAL FETE, York.—Prizes nearly £500.
ENTRIES CLOSE on WEDNESDAY, June 9.

New Seedling Pelargoniums.
AN inspection of our extensive Collection of the above will well repay a visit.
F. AND A. SMITH, West Dulwich, S.E.

CALCEOLARIAS.—Golden Gem, several thousands, strong, in 60 sized pots. Price to Trade on application.
H. STROUD AND SONS, Green Lanes Nurseries, Stoke Newington, N.

To the Trade.
CALCEOLARIA and PANSY SEED, our own saving, from the finest strains. Price on application to
DOWNIE AND LAIRD, 17, Frederick Street, Edinburgh.

Orchids.
THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.
Lion Walk, Colchester.

To the Trade.
DAHLIAS—40,000, in 400 varieties, now ready. CATALOGUE and Price on application to
KELWAY AND SON, Langport, Somerset.

Sixty Thousand
HARDY and other BEDDING PLANTS, from 1s to 6s. per dozen. Special Prices per 100 or 1000 on application. Hardy and Exotic FERNS cheap. Apply for LIST to T. L. MAYOS, Nurseryman, Hereford.

Myosotis elegantissima.
The new Silver-edged, Blue-flowered Forget-me-not.
RODGER, McCLELLAND AND CO. are now sending out this superb Novelty for the Spring Garden. Good plants 3s 6d. each, 36s. per dozen. Can be sent by post. 64, Hill Street, Newry.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit.
CARTERS, the Queen's Seedsmen, High Holborn, London.

Now is the Best Time to Transplant Hollies.
HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d. to 31s. 6d. each Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HEREFORD. (Established 1785.)
Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

To the Trade and Amateur Rosarians.
NEW ROSES in POTS. TEA and NOISETTE ROSES in Pots.—One of the most extensive, most select, and perhaps the most thriving stock of young plants in the country.
Special LIST will be sent gratis and post-free to applicants.
EWING AND CO., Eaton, near Norwich.

BEDDING CLEMATIS, mixed colours.—A great bargain is offered in very fine plants—25 for 20s., 50 for 30s., 100 for 50s., package included. Cash with order. A magnificent stock of CLEMATIS LANUGINOSA on offer. CHARLES NOBLE, Bagshot.

Hyacinths, Tulips, &c.
BUDDENBORG BROS., Bulb Growers, House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

J. GRANT AND CO., COMMISSION AGENTS, 33, Catherine Street, Covent Garden, W.C., receive all kinds of FRUIT, FLOWERS, VEGETABLES, PLANTS, BULBS, SEEDS, &c., for immediate SALE. Cash remitted same day as sold.

W. CALE, FLORAL and FRUIT COMMISSION AGENT, begs to give notice that NO GOODS WILL BE RECEIVED UNLESS PREVIOUSLY ADVISED.
4, Tavistock Row, Covent Garden, W.C.

To Nurserymen, Florists, and others Cultivating MARKET PRODUCE.
SALE of SAME UNDERTAKEN, at moderate Commission, by
WISE AND RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

WANTED, MARÉCHAL NIEL and RED ROSES, GARDENIAS, STEPHANOTIS, and CARNATIONS. Letters and Consignments to
W. CALE, 4, Tavistock Row, Covent Row, W.C.

WANTED, in November next, DECIDUOUS TREES—Horse Chestnuts, Poplars, Limes, Maples, &c. Not less than 22 feet in height, and taller plants preferred. They must be previously prepared for safe removal. Address, with prices, height, and all particulars, to
GARDENER, Box 30, *Chronicle* Office, Shrewsbury.

SUTTON'S HOME-GROWN SEEDS, &c. PARIS, 1878.
In addition to FIVE PRIZE MEDALS awarded by the Juries, the LEGION OF HONOUR (*a superior distinction accorded to no other English Exhibitor of Seeds*) was conferred on our Managing Partner by the French Government.
SUTTON AND SONS, Reading, London and Paris.

PETUNIAS (strong seedling plants), violet, white and rose; ASTERS, same colours, all at 9d. per dozen or 5s. per 100. Packing free.
T. I. MAYOS, Nurseryman, Hereford.

ALPINES, HERBACEOUS and ROCK PLANTS, 24s. per 100, own selection. EUONYMUS JAPONICUS, Gold and Silver Variegated, suitable for bedding, 6 inches, 24s. per 100
STANSFIELD BROTHERS, Nurserymen, Southport.

Gardenias.
MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

Seeds—Seeds—Seeds.
WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

Centaurea candidissima or ragusina.
Wholesale price. Package free.
WOOD AND INGRAM offer fine Plants, thoroughly established in single pots, at 18s. per 100.
The Nurseries, Huntingdon.

New Cineraria Seed—1880.
F. AND A. SMITH can supply the above, saved from their superior collection, in 1s., 2s. 6d., and 3s. packets. Price by weight to the Trade on application. Also strong hardened plants, ready for 5-inch pots, at 2s. per doz.
The Nurseries, West Dulwich, S.E.

DOWNIE AND LAIRD, Edinburgh, are now EXHIBITING a Grand Strain of CALCEOLARIAS in their Winter Garden, West Coates. They have also, in FULL FLOWER, over 40,000 PANSIES and VIOLAS, at their Pinkhill Nursery. Inspection invited.

THE BEST of the New GERANIUMS and the New Tuberous BEGONIAS, in cuttings, very cheap. Denny's, Postans', and Pearson's new GERANIUMS (1879), 24 varieties for 8s., older varieties, but all new recently, 50 varieties for 4s. A quantity of the New Tuberous BEGONIAS, in cuttings, cheap. All post-free. CATALOGUES on application
RICHARD PANNETT, Nurseryman, Chailey, Sussex.

Stocks and Asters.
MESSRS. BIDDLES AND CO. are offering fine plants of the above, best varieties, at 6d. per score, carriage paid.
The PENNY PACKET SEED COMPANY, Loughborough.

Rhododendrons.
JOHN WATERER AND SON'S Exhibition of the above Plants is NOW ON VIEW daily, in the Gardens of Cadogan Place, Sloane Street, S.W.

Vines for Present Planting.
JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.
CATALOGUES free. The Trade supplied.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

To the Trade.
ENGLISH SOWING RAPE SEED and WHITE MUSTARD.
H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application.
Seed Growing Establishment, Wisbech.

Greentop Yellow Tankard Turnip.
JOHN ETHERINGTON DIXON, having grown a fine lot of this Turnip, can offer a few Bushels at a low figure. Price on application.
Seed Grower and Merchant, Gainsborough.

KOHL RABI and Robinson's CHAMPION DRUMHEAD CABBAGE—5,000,000 good Plants for Sale. Apply
WM. COLVIN, Money Bridge Gardens, Pinchbeck, Spalding.

CABBAGE PLANTS.—Drumhead Savoy, Enfield Market, Clarke's Nonpareil, Brussels Sprouts, Thousand-headed Kale. Apply, stating quantities required, to
T. DAVIES, Tangley, near Guildford.

SALES BY AUCTION.

Orchids.—Monday Next.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY NEXT, at 12 o'Clock precisely, about 400 lots of ESTABLISHED ORCHIDS, mostly from Private Collections for Sale without reserve. Amongst them will be found Cattleya exoniensis, Masdevallia psittacina, M. Lindeni, M. Harryana cœrulescens, Odontoglossum vexillarium, O. angustatum, Phalænopsis Schilleriana, and many other rare and fine species. 200 lots of IMPORTED ORCHIDS, including consignments received direct from Burmah of the scarce and handsome Dendrobium Jamesianum, also D. Bensoniæ, and others. A CASE of ORCHIDS from Jamaica, comprising several pieces of Ionopsis utricularioides, Oncidium luridum, in variety; Amaryllis tubispatha, &c., together with a few plants of the beautiful Dracæna Goldieana.

Catalogues at the Mart, and 98, Gracechurch Street, E.C.

The Floral Hall, Kingsland, N.

To FRUITERERS, FLORISTS, and OTHERS.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the Mart, Tokenhouse Yard, E.C., on MONDAY, June 7, at 1 o'Clock, the two valuable LEASES, GOODWILL, STOCK, and UTENSILS in trade of the Floral Hall, 374, Kingsland Road, N., occupying a commanding corner position, offering an eligible opportunity for securing a remunerative and old-established Fruiterer's and Florist's business.

Particulars and conditions of Sale may be had on the Premises; of R. H. HARRIS, Esq., 46, Finsbury Circus, E.C.; and of the Auctioneers and Valuers, 98, Gracechurch Street, E.C., and Leytonstone, E.

City of Ely, Cambridgeshire.

MESSRS. BIDWELL will SELL by AUCTION, at the Reading Room, Ely, on WEDNESDAY, June 23, at 2 o'Clock punctually, in 22 or more lots, by direction of the Executors of the late Mrs. Sherard, VALUABLE FREEHOLD and COPYHOLD ESTATES, situate in the parishes of Ely Trinity and Ely St. Mary, containing in all 151a. 0r. 23p. of Accommodation, Pasture and Arable Land, close to the City, and the exceedingly valuable property known as "The Vineyards," in the occupation of Mr. T. Pashler, comprising 14a. 1r. 21p. of most fertile and productive Garden Ground, in a high state of cultivation, planted with a choice selection of Apple, Pear, Plum and other Trees in full profit and bearing; a large portion of the ground is also well planted with Gooseberry and Currant Bushes, also about 3 acres of Asparagus Beds. Along the West and North boundaries are high Garden Walls for a distance of about 950 feet, facing East and South, well covered with Wall Fruit Trees, and a substantially built Residence, with Lawn and Pleasure Garden, which stands very pleasantly and commands "The Vineyards," with necessary Offices, Fruit House and Stable.

Particulars, with Plans and Conditions of Sale, may be had at the "Lion" Hotel, Cambridge; the "George" Hotel, Huntingdon; "Great Northern" Hotel, Peterborough; the "Estate Exchange," Tokenhouse Yard, London, E.C.; of E. C. SHERARD, Esq., Solicitor, Oundle, Northamptonshire; and of Messrs. BIDWELL, Land Agents and Surveyors, Ely, and 12, Mill Lane, Cambridge.

A Magnificent Importation of Vanda Lowii, splendid

pieces, in excellent condition; CYPRIPEDIUM LOWII and STONEI, in strong masses; CYPRIPEDIUM HOOKERÆ, very fine; CALANTHE, new species, with variegated leaves; BOLBOPHYLLUM BECCARI, the finest plants ever imported; CŒLOGYNE PANDURATA, very strong; and many other fine kinds.

MR. J. C. STEVENS has received instructions from Messrs. James Veitch & Sons to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, June 7, at half-past 12 o'Clock precisely, by far the finest importation of the above and other splendid kinds which has ever reached this country from Borneo. All the plants are in splendid condition.

On view the morning of Sale, and Catalogues had. Auction Rooms and Offices, 38, King Street, Covent Garden, W.C.

Choice Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 8, at half-past 12 o'Clock precisely, by order of Messrs. Hugh Low & Co., IMPORTED ORCHIDS, just received from Burmah in large quantities, and in the best possible condition, comprising Cypripedium Parishii, Dendrobium Bensoniæ, a grand lot, amongst them a splendid mass, 2 feet across, with upwards of 100 bulbs; D. thyrsiflorum, D. luteolum, D. Parishii, D. capillipes, D. senile, D. primulinum, D. eburneum, Aerides virens Dayanum, Saccolabium Blumei majus, &c.

At the same time will be offered fine plants of Cypripedium Argus, C. Haynaldianum, C. Boxallii, Aerides quinquevulnerum, A. crassifolium, Cattleya Dowiana, Vanda lamellata Boxallii, V. Denisoniana, Cymbidium Lowianum, Dendrobium superbum giganteum, in flower or bud; 200 Cattleya labiata speciosissima varieties, and other choice ORCHIDS.

Also will be offered, for account of Messrs. Parsons, Sons & Co., Flushing, N.Y., a quantity of rare JAPANESE PLANTS, in good health, and well established in pots, consisting of variegated Evergreen Oaks, Golden Hollies, variegated-leaved Camellias, and Daphniphyllum glaucescens.

May be viewed the morning of Sale, and Catalogues had.

Valuable Imported Orchids.

MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 10, at half-past 12 o'Clock precisely, very valuable importations of ORCHIDS, consisting of large masses of Cattleya Skinneri, Lycaste Skinneri, Barkeria Skinneri, Odontoglossom vexillarium, O. Roezlii, O. grande, Cattleya amethystina, C. amethystiglossa, C. Leopoldi, Epidendrum macrochilum atropurpureum, Cattleya bicolor, Lælia pumila, Cattleya candida, splendid clump of the beautiful Theropogon pallidus, from India, in flower, and various other Orchids.

May be viewed the morning of Sale, and Catalogues had.

Valuable Collection of Established Orchids.

MR. J. C. STEVENS has received instructions from Henry Wilson, Esq., Sheffield, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, June 16 and 17, at half-past 12 o'Clock precisely each day, a valuable collection of ESTABLISHED ORCHIDS, comprising choice specimens of most of the leading and well-known varieties.

May be viewed the morning of Sale, and Catalogues had.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, June 9, at half-past 12 o'Clock precisely, a small Collection of ESTABLISHED ORCHIDS, including Cattleya Exoniensis, C. dolosa, C. Dowiana, Lælia anceps Dawsoni, Saccolabium Holfordianum, Cypripedium lævigatum, Cattleya labiata, Warneri, and many other choice varieties, some of which will be in flower, the property of a Gentleman; an Importation of Dendrobium McCarthiæ, 100 Established Plants of Phalænopsis grandiflora, a quantity of fine pieces of Cypripedium Stonei and C. niveum; Established Orchids, including specimen plants of Odontoglossum vexillarium, O. Roezlii, O. triumphans, O. gloriosum superbum, Oncidium ampliatum majus, Maxillaria grandiflora, Phalænopsis Luddemanniana, P. Schilleriana, Vanda cœrulea, Cattleya Mendelii, Epidendrum vitellinum majus, Burlingtonia fragrans, &c.; and a Consignment of Bulbs from Algiers.

May be viewed the morning of Sale, and Catalogues had.

WANTED to PURCHASE, the FREEHOLD of a MARKET GARDEN or Small NURSERY, or LAND suitable for the above purpose, in a populous district, within easy distance of a large town of not less than 20,000 inhabitants.

B., 7, Davy Street, Wakefield Road, Bradford, Yorkshire.

Ireland.

TO BE SOLD, by Tender, in consequence of death of Proprietor, the Old Established PARK NURSERY, 1 mile from Wexford Railway Station. Contains 7 Acres, 2 Greenhouses, Propagating and Fern Houses, Foreman's Dwelling, also Seed Warehouse in Wexford. In full work: good connection. Farm of 15 acres, convenient, if required. Long leases. Tenders will be received and fuller particulars given by

JOHN HINTON, Auctioneer, Wexford.

Fifty Nurseries, Market Gardens, Florist and Seed

BUSINESSES to be DISPOSED OF.

MESSRS. PROTHEROE AND MORRIS, HORTICULTURAL REGISTER contains full particulars of the above, and can be obtained gratis at 98, Gracechurch Street, E.C.

A SMALL PRIVATE COLLECTION of STOVE and GREENHOUSE PLANTS for Sale.—For Particulars and Price, apply to Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

Flowering Pelargoniums.

F. AND A. SMITH can supply the above, in fine plants and best sorts only. Prices (which are low) on application.

The Nurseries, West Dulwich, S.E.

FOR SALE, cheap, 3000 ECHEVERIA SECUNDA GLAUCA.

S. DANIEL, Elsham House, Grantham.

TROPÆOLUM SPECIOSUM — Hardy Scarlet Climber. Now is the best time to transplant this, the best of all Climbers. Strong plants in pots, well sprung, 9s. per dozen, packing included, for cash.

HOWDEN AND CO., Inverness Nurseries, N.B.

CENTAUREAS, 16s. per 100.—A few hundred fine plants, in single pots, of candidissima and compacta at the above low price; gymnocarpa, 3s. per dozen; 7 dozen HELIOTROPES, in single pots, for 10s. 6d.

J. J. MARRIOTT, Littleton Street, Walsall.

BEDDING PANSIES and VIOLAS, for continuous blooming—Blue Bell, Clevedon Blue, Clevedon Yellow, Tory, Victoria, Waverley; strong plants, from open ground, with abundance of roots, all at 2s. per dozen, or 12s. per 100.

Golden Perpetual (best yellow), Purity (best white), at 3s. per dozen. Carriage paid on all orders above £1.

T. L. MAYOS, Nurseryman, Hereford.

STRONG SPRING SOWN PLANTS.—Varieties for succession: Cauliflowers, Broccoli, Brussels Sprouts, Savoy, Kale, Cabbage, Red Pickling Cabbage, Lettuce, &c. Best kinds at very low prices, in any quantities.

Mr. EDWARD LEIGH, Norcote Farm, near Guildford.

To the Trade.

KELWAY'S "Model" CALCEOLARIA and CINERARIA.

Vide Gardeners' Chronicle, May 24, 1879; *Journal of Horticulture*, May 22, 1879, and May 13, 1880; and *Gardeners' Magazine*, May 31, 1879, April 17, 1880, and May 15, 1880.

Price on application to

KELWAY AND SON, Langport, Somerset.

Cabbage Plants—Cabbage Plants.

W. VIRGO can now supply in any quantity good strong well rooted spring-sown plants of the following:—Robinson's Champion Drumhead Cabbage, Early Oxheart, Early Enfield Market, Wheeler's Imperial, and Drumhead Savoy. All at 4s. per 1000. Also Broccoli, Cauliflower, Brussels Sprouts, Winter Kales, Green Curled Savoy and Early Cabbage. The above in any quantity at 6s. per 1000, made up of different kinds. Cash or reference from unknown correspondents. Delivered free on rail.

Wonersh Nurseries, near Guildford, Surrey.

Exhibition of Rhododendrons.

Royal Botanic Gardens, Regent's Park, N.W.

ANTHONY WATERER'S Exhibition of Rhododendrons in these Gardens is NOW ON VIEW. Admission may be obtained by Orders of Fellows or from the Exhibitor.

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

☞ The fine Standard and other Rhododendrons and Azaleas in Rotten Row, Hyde Park, are from Anthony Waterer.

Verbenas—50,000 Now Ready for Sale.

S. BIDE can now supply, as he has done on previous occasions, really good strong spring-struck Plants of Purple, Scarlet, White, and Pink VERBENAS, at 6s. per 100. Good Exhibition Varieties, 8s. per 100. IRESINE LINDENI, 6s. per 100. HELIOTROPE, 6s. per 100. COLEUS VERSCHAFFELTII, 8s. per 100. MESEMBRYANTHEMUM CORDIFOLIUM VARIEGATA, 8s. per 100. Package free for cash with order.

Also strong healthy CUTTINGS of the above at half-price, free by post.

S. BIDE, Alma Nursery, Farnham, Surrey.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION, for the Relief of Decayed Farmers, their Widows and Orphans.

Patron—HER MAJESTY THE QUEEN.

President—HIS GRACE THE DUKE OF RICHMOND AND GORDON.

ALLOWANCES to PENSIONERS.

Married	.. ..	£40 per annum,
Male	.. ..	£26 ,,
Widows and unmarried Orphan Daughters		£20 ,,

Every information to be had of the Secretary, by whom Subscriptions and Donations will be thankfully received.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The ANNUAL GENERAL MEETING will be held at Willis's Rooms, St. James's, on WEDNESDAY, June 16, at 11 o'Clock precisely; and the ELECTION of PENSIONERS will take place on the same day, at half-past 11 o'Clock.

All Subscriptions shall be deemed payable on January 1 in each year; and no Contributor shall vote in respect of an Annual Subscription while the same is in arrear.

Offices of the Institution, 26, Charles Street, Haymarket, S.W.

Verbenas—Verbenas—Verbenas.

STRONG, HEALTHY, and WELL-ROOTED CUTTINGS, perfectly free from disease, of White, Purple, Scarlet and Pink, 6s. per 100; 50s. per 1000. One hundred rooted Cuttings, in twelve distinct and lovely varieties, First Prize Flowers, for 8s. Terms cash.

H. BLANDFORD, The Dorset Nurseries, Blandford.

FUCHSIAS, 100 nice young plants, in 12 splendid varieties, 8s.

HELIOTROPES, of sorts, 6s. per 100.

AGERATUM, Imperial Dwarf, strong young plants, 5s. per 100.

H. BLANDFORD, The Dorset Nurseries, Blandford.

New Hardy Fern.

MICROLEPIA ANTHRISCIFOLIA, a South African Fern, which for delicacy and beauty may be almost compared with the Lace Fern, Cheilanthes elegans; proves perfectly hardy, scores of plants having survived the past two winters with us in the open ground without the slightest artificial protection! It grows freely in any light rich soil, either in shade or full sunshine, and runs underground like the common Bracken, forming very pleasing tufts or edgings of light green, with very highly divided fronds, 6 to 9 inches high. As such it will be found very useful as an Edging for Bedding Plants, as well as for Greenhouse Decoration. That such a Fern should have borne the severe and protracted frost of the winter of 1878–9, and again a temperature of 6½° below zero last winter, with only a few inches of snow, is surprising indeed. We imported this pretty species three or four years ago, and can now offer well-established plants at 1s. 6d. each, or 15s. per dozen.

JAS. BACKHOUSE AND SON, York Nurseries, York.

BEDDING PLANTS, &c.

GERANIUMS, Bedding, Zonal and Nosegay, in choice sorts, our selection, 2s. 6d. and 3s. per dozen, 16s. and 20s. per 100.

GERANIUMS, Bedding, Bicolor varieties, 3s., 3s. 6d., and 4s. per dozen.

,, choice, for pot culture in summer or winter, twelve fine varieties, 4s. and 6s.

Our collection is second to none, including the best sorts from all raisers, home or foreign.

AGERATUMS and LOBELIAS, strong, and well hardened off from stores, 1s. per dozen, 5s. per 100.

,, ,, in pots, 2s. per dozen, 12s. per 100.

CALCEOLARIA, Golden Gem, 2s. per dozen.

DACTYLIS ELEGANTISSIMA, GOLDEN PYRETHRUM, SEDUMS of sorts, for Carpet Bedding, 1s. per dozen, 6s. per 100.

HELIOTROPES, COLEUS, TROPÆOLUMS, and SALVIAS, fine named sorts, 2s. per dozen, 12s. per 100.

ANTIRRHINUMS, PHLOXES, PANSIES, and PINKS, fine named sorts, 3s. per dozen; 12 of each, 48 in all, 11s.

ALTERNANTHERAS and IRESINES, of sorts, 2s. 6d. per dozen, 15s. per 100.

BEGONIAS, Tuberous, in great variety, 4s., 6s., 9s., and 12s. per dozen.

CENTAUREA RAGUSINA, 3s. 6d. per dozen.

CHRYSANTHEMUMS and FUCHSIAS in variety, 2s. 6d. per dozen, 15s. per 100.

HERBACEOUS and ALPINE PLANTS, 12 in 12 sorts, 4s.; 50 in 50 sorts, 12s.

DELPHINIUM, fine sorts, to name, 6s. per dozen.

PANSIES and VIOLAS, for bedding, in great variety, 2s. per dozen, 12s. per 100.

PLANTS, Stove, in great variety, 6s., 9s., and 12s. per dozen, our selection.

,, Greenhouse, 6s., 9s., and 12s. per dozen, our selection.

FERNS, Stove or Greenhouse, 9s. and 12s. per dozen, our selection.

CATALOGUES post-free.

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

G. FREELAND has a large quantity of good strong healthy Plants for sale of Cattell's Eclipse, Adams' Early, Purple Sprouting and Miller's Dwarf Broccoli, at 4s. 6d. per 1000. Thousand-headed and Scotch Kale, at 3s. 6d. per 1000. East Ham, Enfield Market, Early Barnes, Cattell's Reliance, and Drumhead Cabbage, at 3s. 6d. per 1000. Brussels Sprouts, at 3s. 6d. per 1000. Packing free for cash with order.

Nursery and Seed Establishment, Tonbridge.

VIOLAS, 20,000 fine strong plants:—

,, cornuta, white } 5s. per 100, 45s. per 1000.
,, ,, Queen of Blues, }

LOBELIA, Emperor William, strong autumn-struck, from stores, 2s. 6d. per 100, 20s. per 1000; from single pots, 5s. per 100, 45s. per 1000.

Cash only. Carriage and package free.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

To the Trade,

HOME-GROWN TURNIP SEEDS.

H. AND F. SHARPE invite the attention of the Trade to their fine selected Stocks of TURNIP SEEDS, which comprise, amongst others, the following excellent varieties, viz.:—

Sharpe's Improved Large Swede	Sutton's Mammoth Purple-top
Sharpe's West Norfolk Swede	Devonshire Grey Stone
Sutton's Champion Swede	Pomeranian White Globe
East Lothian Swede	Lincolnshire Red Round
Green-top Yellow Aberdeen	Stratton Green Round
Golden Yellow Aberdeen	White Stone or Stubble

The quality is very fine, and the prices will be found very advantageous to purchasers. For further particulars apply to Seed Growing Establishment, Wisbech.

CRYSTAL PALACE SHOW: PROTEST.

MESSRS. PAUL & SON

Feel compelled to take the unusual course of protesting against the Award of the Judges in the Class for Nine Specimen Roses at this Show.

As Growers, Exhibitors, and Judges, for many years, of Roses, they have no hesitation in saying that their Collection was in every way superior to that placed before it.

This opinion was confirmed by nearly all the leading Plantsmen present at the Show.

THE OLD NURSERIES, CHESHUNT.

SELECT INDEX OF PLANTS

The Publisher of the *Gardeners' Chronicle* recommends Subscribers who wish to have extra Copies of the Numbers containing the

SELECT INDEX of PLANTS from 1841 to THE END of 1878,

TO SECURE THEM AT ONCE.

The following is a List of those already published :—

1879.—October 11	1879.—November 29	1880.—February 7, 21
,, 25	December 13	March 20, 27
November 8	1880.—January 10	April 3
,, 15	,, 24	May .. 8, 29

Price 5d. each, post-free 5½d.

W. RICHARDS, 41, WELLINGTON STREET, STRAND, W.C.

NEW ENGLISH ROSES for 1880.

WM. PAUL & SON

(SUCCESSORS TO THE LATE A. PAUL AND SON—ESTABLISHED 1806),

PAUL'S NURSERIES, WALTHAM CROSS, HERTS,

BEG TO OFFER

The following NEW ROSES, strong plants, 7s. 6d. and 10s. 6d. each :—

MASTERPIECE (H.P.)—Magnificent bright rosy-crimson blooms; large, full, and of perfect globular shape. A seedling from "Beauty of Waltham." Growth vigorous, habit good, and foliage fine.

"Probably the finest Rose of the year."—*Gardeners' Magazine.*
"A very full rosy-pink flower, of excellent form."—*Gardeners' Chronicle.*

CROWN PRINCE (H.P.)—Flowers bright purple, centres shaded with lurid crimson, very large and double, petals fine; excellent growth and habit. A most effective garden Rose, yielding large quantities of fine flowers, either for decoration or cutting, of a colour very scarce amongst Roses of its quality.

"Crown Prince, also raised at Waltham, claims special attention."—*Gardeners' Magazine.*

LITTLE GEM (Moss).—A miniature Moss Rose, which may be described as a crimson Mossy de Meaux. It forms compact bushes densely covered with small, double, crimson flowers, beautifully mossed. It is of charming effect in the garden, and most valuable for bouquets or vases.

"A charming little Moss Rose."—*Gardeners' Chronicle.*
"Will make its way as a garden Rose, and be in request for cutting."—*Journal of Horticulture.*

THE NEW FRENCH ROSES OF 1880, 30*s.* per dozen.

THE NEW ROSES OF 1879 (including Duchess of Bedford and Countess of Rosebery), 21*s.* to 36*s.* per dozen.

Good plants of the older Roses, in pots, for present planting and for greenhouse culture, 9*s.* to 18*s.* per dozen; £3 15*s.* to £7 per 100.

The same, of extra size, 24*s.* per dozen and upwards.

Priced Descriptive CATALOGUES post-free on application.

Visitors by Railway can enter the Nurseries from the platform, Waltham Station, Great Eastern Railway, half an hour's ride from London.

Now Ready—Good Spring-sown Cabbage and Other PLANTS, &c.

GEE'S superior Bedfordshire-grown Plants, &c., grown from his far-famed selected stocks, can again be supplied in any quantities, as follows, for cash with orders :—

CABBAGE PLANTS.—Early Enfield, Nonpareil, Large Drumhead, Thousand-head, and Red Dutch.
SAVOY.—Large Drumhead, and Dwarf Green Curled.
SCOTCH KALE, BRUSSELS SPROUTS, finest.
KOHL RABI.—Large Green.

All the foregoing at 4*s.* per 1000.

BROCCOLI.—Purple Sprouting, Adams' Early White, Knight's Protecting, and Wilcox's Large Late White, 5*s.* per 1000.
CAULIFLOWER.—Veitch's Giant, true, 7*s.* 6*d.* per 1000; Early London and Walcheren, 6*s.*
LETTUCE.—Old Brown Cos, Victoria, Drumhead, and Paris Green Cos, all at 5*s.* per 1000.

Packages 6*d.* per 1000 extra.

F. GEE, Seed and Plant Grower, Biggleswade, Beds.

MATRICARIA INODORA PLENA (NEW DOUBLE MAY-WEED).

Figured in *Gardeners' Chronicle* of December 13, 1879. Will bear the severest winter without protection. If grown in a rich border it will flower in the greatest profusion from June till October, and the flowers, which are pure white, are equal to those of a Pompon Chrysanthemum. It is invaluable for cutting. 1*s.* 6*d.* each, 12*s.* per dozen, 75*s.* per 100. Engraving sent with three plants. The usual discount to the Trade.—Messrs. DICKSONS AND CO., 1, Waterloo Place, Edinburgh.

To the Trade.

YELLOW and WHITE BANKSIAN ROSES, good, in 4½-inch pots, 75*s.* per 100; MABEL MORRISON, REINE MARIE HENRIETTA, 12*s.* per dozen; MARÉCHAL NIEL, extra size, in 7-inch pots, 24*s.* per dozen.

GEORGE COOLING, The Nurseries, Bath.

PLANTS.

VEITCH'S AUTUMN GIANT CAULIFLOWER, 4*s.* per 1000.
BRUSSELS SPROUTS, 3*s.* per 1000.

Guaranteed to be strong and well-rooted. Post-office Order, or Cheque with order, as no consignments are in any instance made without a previous remittance order of

R. BATH, Crayford; or JOHN BATH, Covent Garden, W.C.

Important Notice.

ROSES—ROSES—ROSES.—Hybrid Perpetuals, Tea-scented, and other Roses in pots, for blooming in conservatory, or planting out at once, fine strong healthy plants, including A. Sisley, C. Mermet, C. Paris, C. Devoniensis, I. Pirola, J. Ducher, Lamarque, Mad. Lambard, Niphetos, S. Hibberd, S. d'Elize, S. P. Neron, &c., 12*s.*, 15*s.*, 18*s.*, and 24*s.* per dozen. Also a very fine lot of Bennett's Pedigree Roses, including the new striped Rose, American Banner, 24*s.* per dozen. Fine plants of American Banner, 5*s.* each. LIST gratis on application.

J. HOUSE, Eastgate Nurseries, Peterborough.

Bedding Plants, &c.

F. AND A. SMITH offer the undernoted in well established hardened plants, at low prices :

Alternantheras	Fuchsias
Ageratums	Geraniums, best sorts
Coleus in variety	Heliotropes
Cupheas	Lobelias
Cobœa scandens	Petunias
Calceolarias	Tropæolums
Dahlias	

The Nurseries, West Dulwich, S.E.

MESSRS. THOMAS CRIPPS AND SON are now sending out the undermentioned three new CLEMATISES, all of the viticella or Jackmanni section :—

EARL BEACONSFIELD (T. Cripps & Son).—A splendid hybrid, described in the *Gardeners' Chronicle*, June 22, 1878, as "a beautiful flower of a rich royal purple colour, and splendid form. This variety belongs to the viticella type, and is remarkably richly coloured." First-class Certificate Royal Horticultural Society. Price 15*s.* each.

LILACINA FLORIBUNDA (T. Cripps & Son).—Pale grey-lilac, deeply veined: flowers the size of C. Jackmanni, but having six petals and of perfect shape. This is the lightest variety and most abundant bloomer in this section. An admirable contrast to C. Jackmanni for bedding purposes. Price 10*s.* 6*d.* each.

OTHELLO (T. Cripps & Son).—Flowers medium, a good shaped six-petalled variety. Late and very free flowering: colour dark velvety purple. Price 10*s.* 6*d.*

Discount to the Trade.

Plates of "Earl Beaconsfield" and "lilacina grandiflora," 2*s.* 6*d.* each.

The Tunbridge Wells Nurseries, Kent.

New Coleus, Petunias, and Fuchsias of 1879 and 1880.

THE EXECUTORS of H. WALTON beg to offer the following NEW COLEUS of 1880:—Duchess of Teck, Empress of Germany, James Barnshaw, Juno, Lovely, Royal Purple, and Sensation, 1*s.* each. New Varieties of 1879:—Aurora, Butterfly, Firefly, Glow, Magic, and Sparkler, 8*d.* each, strong, well rooted plants; the thirteen varieties, 10*s.*

New Double Fringed PETUNIAS of 1880. These have been selected with great care from an extensive collection, and can be confidently recommended as being a great advance on anything hitherto offered. Strong, well-rooted plants, 2*s.* 6*d.* each, 24*s.* per dozen varieties, post-free.

New Double Fringed PETUNIAS of 1879, 1*s.* each, 9*s.* per dozen varieties.

New FUCHSIAS, 1879 and 1878, very choice sorts, 9*d.* each, all post-free, for cash with order.

A fine collection of BEGONIAS, Tuberous-rooted and Ornamental-leaved, Half Specimen ERICAS, &c., the best exhibition varieties.

For descriptions of the above see CATALOGUE, sent post-free, on application.

Edge End Nursery, Brierfield, near Burnley.

Bennett's Pedigree Roses.

Should be in every Collection.

GEORGE COOLING has pleasure in offering fine plants coming into bloom of these desirable varieties, viz.:—

Beauty of Stapleford	Jean Sisley
Duke of Connaught	Michael Saunders
Duchess of Connaught	Nancy Lee
Duchess of Westminster	Pearl
Honourable George Bancroft	Viscountess Falmouth

The complete Set, 25*s.*, basket and packing free for cash with order. Usual discount to the Trade.

New LIST of Roses in pots, Clematis, &c., post-free.

The Nurseries, Bath.

Awarded First-class Certificate Royal Horticultural Society, May 25, 1880.

Now being Distributed!

NEW ZONAL PELARGONIUM,

WEST BRIGHTON GEM.

Unsurpassed for Winter Flowering.

This has been awarded a First-class Certificate as a New Plant by the Brighton and Sussex Horticultural Society, and a Cultural Commendation by the Royal Horticultural Society. Price 10*s* 6*d*. each, two for 20*s*. (usual allowance to the Trade). As the stock is limited, orders will be booked and executed in strict rotation.

For further particulars see the *Times* of December 17, 1879, the *Journal of Horticulture* of December 18, the *Gardeners' Chronicle* of December 20, and for full description and CATALOGUE of Alternantheras, and other Carpet Bedding Plants, apply to

WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

MILES' HYBRID SPIRAL MIGNONETTE.

Extract from the *Journal of Horticulture*:—"This is the finest Mignonette that has come under our notice. It is the same variety that attracted the attention of Her Majesty the Queen, at the great Exhibition at South Kensington."

Plants of the above splendid variety, established in pots, 6*s*. per dozen.

WM. MILES, West Brighton Nurseries, Cliftonville, Sussex.

CABBAGE PLANTS, &c.

CABBAGE, SAVOY, CAULIFLOWER, BRUSSELS SPROUTS, BROCCOLI, CELERY.

List of sorts and prices on application, to

CRANSTON'S NURSERY and SEED COMPANY (Limited), King's Acre, Hereford.

DANIELS' Unrivalled Strains of Choice FLORISTS' FLOWER SEEDS, post-free.

☞ *In the rearing of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few plants from seed of the choicest quality, than from a large quantity raised from seed of an inferior description.*

FOR PRESENT SOWING. *Per pkt.*—*s. d.*

AURICULA, Daniels' Prize Alpine	1	0
CARNATION and PICOTEE, from stage flowers, very choice .. 2*s*. 6*d*. and	5	0
,, ,, yellow varieties	2	6
CALCEOLARIA, Daniels' Superb Prize, 1*s*. 6*d*., 2*s*. 6*d*. and	5	0
CINERARIA .. 1*s*. 6*d*, 2*s*. 6*d*. and	5	0
GLOXINIA HYBRIDA, magnificent .. 1*s*. 6*d*. and	2	6
PRIMULA, Daniels' choicest red .. 1*s*. 6*d*. and	2	6
,, ,, ,, white .. 1*s*. 6*d*. and	2	6
,, ,, ,, mixed .. 1*s*. 6*d*., 2*s*. 6*d*. and	5	0
,, ,, Fern-leaved .. 1*s* 6*d* and	2	6
,, ,, superb double .. 2*s*. 6*d*. and	5	0
PANSY, Daniels' Show and Fancy .. 1*s*. 0*d*. and	2	6
,, ,, superb blotched, magnificent .. 2*s* 6*d* and	5	0
,, ,, improved striped	2	6
POLYANTHUS, fine gold-laced	1	0
PRIMROSE, hardy, beautiful varieties, mixed	1	0
SWEET WILLIAM, Daniels' Prize	1	0

DANIELS BROS.,
ROYAL NORFOLK SEED ESTABLISHMENT,
NORWICH.

Come and See.

My Carpet and Other Bedding Plants.

H. CANNELL begs to announce that he has a large quantity of the most effective plants, and can offer either by the dozen, 100, or 1000, CATALOGUE and special quotation on application.

DAHLIAS.—The most complete and the finest collection ever offered. Large Show and Fancy, the best for shrubberies; Pompons, and the ordinary Bedding kinds. But the most novel and effective beds of the season will be those planted with the single kinds. For full particulars of Mr. Moore's grand new Bedders see H. C.'s "Floral Guide," post-free for 1*s*.

PARAGON, 2*s*; and LUTEA, 1*s*.; the most lovely and by far the most useful for cut flowers.

CERVANTESII, 2*s*.
COCCINEA, 9*d*. } First introduced species.
MEXICANA, 1*s*

All sent post-free. Price per dozen and 100 on application.

THE HOME FOR FLOWERS,
SWANLEY, KENT.

Primulas — Primulas — Primulas.

Eleventh Year of Distribution.

WILLIAMS' superb strain, 1*s*. 6*d*. per dozen, 10*s*. per 100; package and carriage free.

CINERARIAS, choicest assortment, same size and price.

The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

FLORVITA.

THE LIFE OF FLOWERS.

For Stimulating and Quickening the Growth of Plants, and producing a rapid and high development of blossoms.

Samples, post paid, 1*s*. 2*d*. Prepared only by PRENTICE BROS., Chemical Laboratory, Stowmarket.

Sold by all Chemists and Florists, in bottles 1*s*. and 2*s*. 6*d*. each, and in jars 18*s*. and 36*s*. each.

TEA SCENTED ROSES,

For Planting Out or Greenhouse Culture.

Upwards of 20,000 strong, well established plants, in pots.

List and Prices on application to

CRANSTON'S NURSERY & SEED COMPANY, Limited,
KING'S ACRE, near HEREFORD.

CAULIFLOWER AND CABBAGE PLANTS.

Our own selected stocks, in good strong plants Veitch's Autumn Giant Cauliflower, per 1000, 7*s*. 6*d*.; Walcheren and Early London Cauliflower, per 1000, 6*s*.; Brussels Sprouts, per 1000, 5*s*.; Daniel's Defiance Cabbage, per 100, 1*s*., per 1000, 7*s*. 6*d*.; Enfield Market, Early Nonpareil, and other sorts, per 1000, 5*s*; Champion Drumhead or Cattle Cabbage, extra fine stock, per 1000, 4*s*. 6*d*.

Free on Rail at prices quoted. Orders of 20*s*. and upwards carriage free.

DANIELS BROTHERS,
The Royal Norfolk Seed Establishment, Norwich.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

Vines—Vines—Vines.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, has still on hand a fine Stock of Fruiting and Planting CANES of Muscat of Alexandria, Bowood Muscat, Mrs. Pince, Gros Guillaume, Burchardt's Prince, and Madresfield Court. Also Planting Canes of several other varieties. CATALOGUE free. The Trade supplied.

IMPORTANT NOTICE.

J. CHAMBERS, Westlake Nursery, Isleworth, W.,

Is now prepared to send out his two new Hybrid Bulbous BEGONIAS, ROYAL STANDARD and AVALANCHE, in nice healthy little plants at 15*s*. each. They received First-class Certificates, June, 1879, both at South Kensington and Richmond. These are undoubtedly the two grandest Hybrid Begonias ever offered: see *Gardeners' Chronicle*, June 28, 1879. Both varieties can be seen in flower at the nursery.

Also a new White LOBELIA MAGNIFICA ALBA. The habit is identical with that well-known variety magnifica. As a pot plant for general decoration with Lycopodium, Maidenhair, and other small Ferns, I know of nothing to equal it. Nice plants at 1*s*. 6*d*. each, or 12*s*. per dozen.

Usual allowance to the Trade. Terms cash. Post-office Orders payable at Spring Grove, Isleworth, W.

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s*. per truck.

BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s*. per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4*s*.; 5 bags, 20*s*.; 10 bags, 36*s*. Bags, 4*d*. each.

Fresh SPHAGNUM, 10*s*. 6*d*. per bag.

WALKER AND CO., Farnborough Station, Hants.

CHOICE IMPORTED ORCHIDS.

MR. J. C STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 8, at half-past 12 o'Clock precisely, by order of Messrs. HUGH LOW & CO., Imported ORCHIDS, just received from Burmah, in large quantities, and in best possible condition, comprising:—CYPRIPEDIUM PARISHII, DENDROBIUM BENSONIÆ, a grand lot, amongst them a splendid mass, 2 feet across, with upwards of 100 bulbs; D. THYRSIFLORUM, D. LUTEOLUM, D. PARISHII, D. CAPILLIPES, D. SENILE, D. PRIMULINUM, D. EBURNEUM, AERIDES VIRENS DAYANUM, SACCOLABIUM BLUMEI MAJUS, &c.

At the same time will be offered fine plants of CYPRIPEDIUM ARGUS, C. HAYNALDIANUM, C. BOXALLII, AERIDES QUINQUEVULNERUM, AERIDES CRASSIFOLIUM, CATTLEYA DOWIANA, VANDA LAMELLATA BOXALLII, V. DENISONIANA, CYMBIDIUM LOWIANUM, DENDROBIUM SUPERBUM GIGANTEUM in flower or bud; 200 CATTLEYA LABIATA SPECIOSISSIMA varieties, and other choice ORCHIDS.

Also will be offered, for account of Messrs. PARSONS, SONS & CO., Flushing, N.Y., a quantity of rare JAPANESE PLANTS, in good health, and well established in pots, consisting of Variegated Evergreen OAKS, Golden HOLLIES, Variegated-leaved CAMELLIAS, and DAPHNIPHYLLUM GLAUCESCENS.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

VALUABLE IMPORTED ORCHIDS.

MR. J. C. STEVENS has received instructions from Mr. F. SANDER to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 10, at half-past 12 o'Clock precisely, very valuable Importations of ORCHIDS, consisting of large masses of CATTLEYA SKINNERI, LYCASTE SKINNERI, BARKERIA SKINNERI, ODONTOGLOSSUM VEXILLARIUM, O. ROEZLII, O. GRANDE, CATTLEYA AMETHYSTINA, C. AMETHYSTOGLOSSA, C. LEOPOLDI, EPIDENDRUM MACROCHILUM ATROPURPUREUM, CATTLEYA BICOLOR, LÆLIA PUMILA, CATTLEYA CANDIDA, splendid clumps of the beautiful THEREPOGON PALLIDUS, from India, in flower, and various other ORCHIDS.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

A MAGNIFICENT IMPORTATION OF

VANDA LOWII, splendid pieces, in excellent condition;
CYPRIPEDIUM LOWII and **STONEI**, in strong masses;
CYPRIPEDIUM HOOKERÆ, very fine;
CALANTHE, new species, with variegated leaves;
BOLBOPHYLLUM BECCARI, the finest plants ever imported;
CŒLOGYNE PANDURATA, very strong;
CATTLEYA GIGAS, magnificent plants, full of leaves;
PHALÆNOPSIS SCHILLERIANA, fine established plants, with a mass of roots;

And many other fine kinds.

MR. J. C. STEVENS has received instructions from Messrs. JAMES VEITCH & SONS to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on MONDAY, June 7, at half-past 12 o'Clock precisely, by far the finest importation of the above, and other splendid kinds, which has ever reached this country from Borneo.

ALL THE PLANTS ARE IN SPLENDID HEALTH.

May be viewed the morning of Sale, and Catalogues had.

AUCTION ROOMS AND OFFICES, 38, KING STREET, COVENT GARDEN, LONDON, W.C.

CATTLEYA TRIANÆ.

JOHN H. LEY, ROYAL NURSERY, CROYDON,

Has just received an importation, in SPLENDID CONDITION, of this most valuable and beautiful species, which, coming from a new locality, and varying very much in the pseudobulbs, will probably contain many distinct and beautiful varieties. Prices, at present low, as follows :—

CATTLEYA TRIANÆ, strong imported pieces	... **1st size**	...	**£10 per dozen.**
,, ,, ,, ,, ,,	... **2d ,,**	...	**£5 ,,**
,, ,, ,, ,, ,,	... **3d ,,**	...	**£3 ,,**

Also Established Plants of Choice Varieties, as follows :—

EPIDENDRUM VIT. MAJUS, strong	.. **21s. to 60s. per doz.**	**ODONTOGLOSSUM CIRROSUM**	.. .. **42s. to 60s. per doz.**
ODONTOGLOSSUM ROSSII MAJUS	.. **21s. to 42s. ,,**	**CATTLEYA CITRINA**	.. .. **42s. ,,**
DENDROBIUM FREEMANNI	.. .. **42s. ,,**	**ODONTOGLOSSUM GRANDE**	.. .. **60s. ,,**
DENDROBIUM RUCKERIANUM	.. .. **30s. to 42s. ,,**	**ODONTOGLOSSUM LONDESBOROUGHIANUM**	.. **84s. ,,**

JOHN H. LEY, Royal Nursery, CROYDON.

PARHAM'S PATENT SYSTEM of GLAZING WITHOUT PUTTY,

With Wrought-iron Channelled Rafters, Continuous Lapped Glass, and Rainproof Ventilators under Glass Super Roof.

Parham's Patent Registered Plant Preservers,
With "Truss" Hinge, and no Principals. The Ridge always fits close, the interior is free from all obstruction, and the corners are secured in iron angle-plates: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
6 feet by 3 feet	.. ..	£2 7 6	12 feet by 3 feet	.. ..	£4 0 0
6 feet by 4 feet	.. ..	3 0 0	12 feet by 4 feet	.. ..	5 0 0
6 feet by 5 feet	.. ..	3 15 0	12 feet by 5 feet	.. ..	6 5 0
6 feet by 6 feet	.. ..	4 15 0	12 feet by 6 feet	.. ..	7 10 0

Any other sizes at proportionate price.

Both systems avoid the heavy expense of re-puttying and breakage of glass, and effect a great saving in cost of re-painting and repairs, combined with absolute freedom from drip.

The sole manufacture of both the above systems is carried on by

WILLIAM PARHAM,

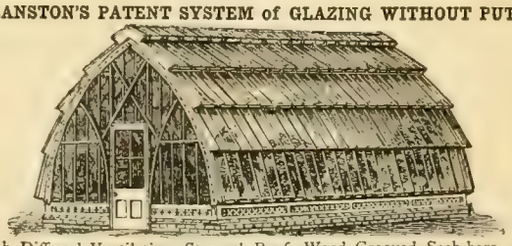
Horticultural Builder and Hot-water Engineer,
NORTHGATE WORKS, BATH;
AND
280, Oxford Street, London, W.
(Who has purchased the Business of the late Firm of
CRANSTON AND LUCK,
Birmingham).
Specimens of both Systems on view at either address.

Illustrated Catalogues free.

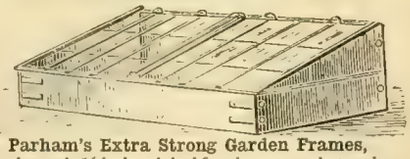
*** Orders amounting to £3 and upwards delivered free to any Railway Station in England and Wales, and to the Principal Ports in Ireland and Scotland.

No Charge for Packing Cases if returned free and in good condition.

CRANSTON'S PATENT SYSTEM of GLAZING WITHOUT PUTTY



With Diffused Ventilation, Stepped Roof, Wood Grooved Sash-bars, and Curvilinear Outline on Laminated Principals.



Parham's Extra Strong Garden Frames,
With 2-inch sashes and 1½-inch red deal framing, secured at each corner with two wrought-iron strap bolts: patent glazed, without putty, with 21-oz. glass.

Long.	Wide.	Price.	Long.	Wide.	Price.
4 feet by 6 feet, 1 light	..	£2 2 0	16 feet by 6 feet, 4 lights	..	£7 5 0
8 feet by 6 feet, 2 lights	..	3 12 0	20 feet by 6 feet, 5 lights	..	8 15 0
12 feet by 6 feet, 3 lights	..	5 7 6	24 feet by 6 feet, 6 lights	..	10 10 0

Patent Glazed Sash Lights, as above, with Sills and Bearers for Brickwork, at proportionate prices.

NEW "CHESHUNT" RAISED and ENGLISH SEEDLING ROSES,
For Spring of 1880.

PAUL & SON, THE OLD NURSERIES, CHESHUNT,

Beg to announce for delivery at once, a very excellent set of NEW ROSES. They cannot but quote the pleasure the many encomiums passed on their great stride in colour, H.P. DUKE OF TECK, and may be pardoned for pointing out that the New Roses previously distributed by the firm may now be seen in every garden, and in most stands at the Rose Shows. DUKE OF EDINBURGH, CHESHUNT HYBRID, SULTAN OF ZANZIBAR, S. REYNOLDS HOLE, DUKE OF CONNAUGHT, JOHN BRIGHT, MRS. LAXTON, and CHARLES DARWIN are guarantees of the careful trial Roses have to go through before being sent out from Cheshunt.

H.P. DUKE OF TECK (Paul & Son).

First-class Certificate, Royal Horticultural Society; First-class Ceitificate Alexandra Park Rose Show; First Prize, Best New Roses not in commerce, National Society Show, Manchester, 1879; *First-class Certificate, Richmond,* 1877.

Bright crimson-scarlet, clear and distinct in its vividness of colour beyond anything else; a real march towards a true scarlet Rose. The flower is large, very double, of good bold pointed globular form. Very free flowering habit, and bold erect growth, with grand foliage; probably the finest Rose we have yet raised. Strong plants, in pots, 10*s.* 6*d.* each. Figured in the *Garden* and *Floral Magazine;* plates 1*s.* each.

OPINIONS OF THE PRESS.

"To Messrs. Paul & Son, Cheshunt, a First-class Certificate was awarded for a splendid new flower of the Duke of Edinburgh type, and the nearest approach yet made to a scarlet."—*Gardeners' Chronicle*—Report of the Royal Horticultural Society's Show, July 12.

"Conspicuous in these stands was a new H.P., named Duke of Teck, a colour the nearest approach to scarlet, of excellent size and brightness of colour, besides being a strong grower. This is the best seedling of the season so far."—*Gardeners' Chronicle,* July—Report of Alexandra Palace Show.

"Only one Certificate was awarded, viz., for Duke of Teck, a seedling Rose of Duke of Edinburgh race, but much brighter in colour, brighter even than John Bright, the smooth crimson petals being suffused with scarlet. Being a free grower and bloomer, the Duke of Teck must be pronounced a Rose of great promise."—*Journal of Horticulture.*

"In Messrs. Paul & Son's 48 trebles, the best were Glory of Cheshunt and Duke of Teck."—*The Garden.*

"Extremely brilliant, and the nearest approach obtained yet to a good scarlet Rose."—*Journal of Horticulture*—Report of Norwich Show.

"Mr. Hawtrey's prize for the best seedling English Rose, not yet in commerce, was won by Messrs. Paul & Son with H.P. Duke of Teck, a very vivid scarlet. The plant, removed from the open ground, was strong and robust, and of good habit."—*Journal of Horticulture*—Report of Manchester Show.

"Messrs. Paul exhibited a box of the very brilliant Duke of Teck, so bright that it put their Duke of Edinburgh in the shade, and even in this cloudy year, when the Duke of Edinburgh almost always seems shaded, this most brilliant flower was of the clearest and most intense scarlet."—*Journal of Horticulture*—Report of Reigate Show.

H.P. GLORY OF CHESHUNT (Paul & Son).

This is a seedling from CHARLES LEFEBVRE, with flowers of a rich shaded crimson, very bright and vivid—perhaps hardly as full, but a fine early show Rose. Its main value, however, will be for its grand qualities as a bold shrub Rose, or for pillars or climbers; it is almost everblooming and evergreen, and stands now about the nursery as a large bush 6 feet high and as much through. Price, 7*s.* 6*d.* each.

OPINIONS OF THE PRESS.

"Glory of Cheshunt is a rapid yet strong growing plant, with fine foliage and flowers, similar in colour, and nearly as fine as Reynolds Hole: so that it will rate at once both as the finest dark climber and as an exhibition Rose."—*Journal of Horticulture.*

"In Messrs. Paul's 48 the best were Glory of Cheshunt and Duke of Teck."—*The Garden*—Report of Royal Horticultural Society's Exhibition.

Both these Roses have stood unprotected here this severe winter, and remain absolutely uninjured in the slightest degree by the frost.

EARL OF BEACONSFIELD (Capt. Christy and Paul & Son).

Light cherry-carmine, shape perfectly exquisite, deep close centre, with beautifully recurved outer petals, very double. A fine exhibition Rose, but not of vigour enough to make a good garden Rose. *Second Prize Seedling Rose, National Rose Society.* Price, 7*s.* 6*d.* each.

OPINIONS OF THE PRESS.

"A grand Rose as regards growth, foliage, and flowers, and will go far towards immortalising the name of Capt. Christy, by whom it was raised."—*Journal of Horticulture.*

DR. HOGG (Thomas Laxton, Esq., and Paul & Son).

Deep violet, nearest to the blue colour sometimes desired in Roses, pretty shell-shaped petal, very vigorous habit, and very hardy. Price, 3*s.* 6*d.* each.

The Set for £1 5s. Usual discount to the Trade when three of each sort taken.

NEW FRENCH ROSES of 1880.

Strong plants *now ready,* 3*s.* each, 30*s.* per dozen. Descriptive LIST on application.

BENNETT'S NEW ENGLISH HYBRID TEA ROSES.

3*s.* 6*d.* each, the set of eight best for 25*s.*

BEAUTY OF STAPELFORD.
DUKE OF CONNAUGHT.
DUCHESS OF CONNAUGHT.
DUCHESS OF WESTMINSTER.
HONOURABLE GEORGE BANCROFT.
JEAN SISLEY.
MICHAEL SAUNDERS.
VISCOUNTESS FALMOUTH.

NEW ENGLISH ROSES of SPRING, 1879.

3*s.* 6*d.* each.

CHARLES DARWIN.
COUNTESS OF ROSEBERY.
DUCHESS OF BEDFORD.
DR. SEWELL.
WILLIAM WARDEN.
HARRISON WEIR.
MARQUIS OF SALISBURY.

BEST NEW FRENCH and ENGLISH ROSES of 1879.

2*s.* 6*d.* each; 24*s.* per dozen.

H.P. CLIMBING BESSIE JOHNSON.
" EDWARD MORREN.
COMTESSE DE CHOISEUIL.
EGERIA.
GASTON LEVEQUE.
HENRY VILMORIN.
JULES CHRETIEN.
LOUIS DORE.
H.P. MABEL MORRISON (Bennet).
MADAME ALP. LAVALLEE.
MADAME AMELIE BALTET.
MADAME EUG. VERDIER.
MRS. LAXTON (Paul & Son).
PENELOPE MAYO (Turner).
PAUL JAMAIN.
PREFET LIMBOURG.
H.P. SOUVENIR DE VICTOR VERDIER.
WILLIAM KEILE.

HYBRID TEAS.

REINE MARIE HENRIETTE.
MADAME ETIENNE LEVET.
MADAME BRIGETTI VIOLLET.

PAUL & SON are preparing a Special Supply for Planting in June and July,

Strong plants, in 48 pots, to bloom in autumn, at 18*s.* per dozen, of all the best Tea-scented Roses. Extra strong plants of the leading Noisette and Climbing Tea Roses, such as Maréchal Niel, &c., at 42*s.* to 84*s.* per dozen.

Cut Roses can be supplied nearly all the year round. Prices on application.

Choice Cut Cheshunt Roses, during June and July, delivered free in London, or on G.E.R., at 20s. per 100.

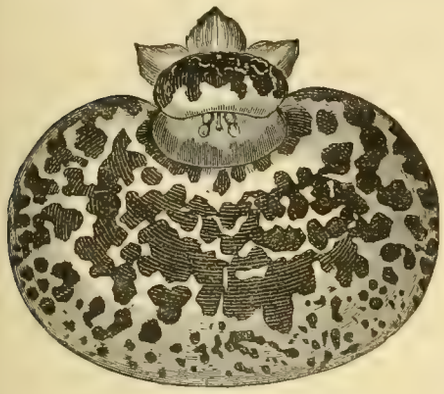
B. S. WILLIAMS'

PRIZE MEDAL

FLOWER SEEDS.

POST-FREE.

	Per packet—s.	d.
AURICULA, Show, finest mixed	1	6
AURICULA, Alpine	1	0
CARNATIONS, finest mixed..	1	6
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and	1	6



From Mr. R. CAMPBELL, *Utica, U.S.A., July* 28, 1879.
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THE

Gardeners' Chronicle.

SATURDAY, JUNE 5, 1880.

GROSVENOR GALLERY.

THE present exhibition of pictures at the Grosvenor Gallery bears a similar relation with those of former years to the neighbourin annual exhibition at the Royal Academy. The number of pictures at the Grosvenor is much smaller than the collection at Burlington House; but one no sooner enters the rooms of the former than an impression is received that the pictures are of a generally superior class in comparison with those seen on the walls of the latter. No pictures are hung high and almost out of sight in the Grosvenor rooms, and this is a great advantage, as all the pictures are easily visible. Nothing is more provoking and wearisome than first trying to decipher the number of some picture placed near the ceiling, then looking it out in the catalogue, and too often finding that after all the picture is of no special interest, or is possibly a portrait of some individual one never before heard of. There are portraits at the Grosvenor, but we can say with truth that there are very few portraits without some interest attached to them, either on account of the person painted, the painter, or the manner of painting.

If the pictures are followed in the sequence of the numbers, the visitor comes upon a group of portraits on first entering the West Gallery, and a more remarkable and excellent series we have seldom seen. 2, "Portrait of W. Holman Hunt, Esq.," W. B. Richmond, is one of the most admirable examples of this artist's work we have seen. The general effect of the picture is greatly aided by the broad, simple black frame. As a rule picture-frames (and especially gilt frames) are atrocious in design and dimensions, and too often have a tendency to ruin a picture. This portrait is on the right of a doorway, and we will break through the sequence of the numbers to refer to a picture on the other side of the same doorway, painted by W. Holman Hunt himself—89, "Portrait of Cyril B. Holman Hunt." The two pictures are as unlike as possible, the latter being crude and staring in style and furnished with an extraordinary frame on which are models of Apples life-size (one cut in two, showing the pips): these Apples are gilt, and introduced with profuse white blossoms and leaves. Such treatment of a picture cannot be right; it is a wonderful frame with a picture inside, reminding the spectator of some of Mr. Whistler's productions, where, if the picture took ten minutes to paint, the frame must have taken ten hours to decorate with similar material. In 9, 10, 11, are three other portraits, by J. Bastien Lepage; these are in different styles, but all excellent, the most remarkable being that of Mdlle. Sarah Bernhardt. The lady is shown in profile, with a statuette in her hands. This picture is furnished with a broad and remarkable frame in metal, but as the colour is very low and dull it is not obtrusive, but suits the picture. In 19 we have a portrait of Professor Huxley by A. Legros, exhibited,

as many similar portraits have been of late years, without a background; and in 40 a portrait of Charles Darwin, by W. B. Richmond, the painter of W. Holman Hunt's portrait in No. 2. Neither of these two portraits strike us as being specially life-like, and Charles Darwin looks strange in his profuse crimson academical robes. In 20, "The August Moon," by Cecil Lawson, we have a very large and roughly executed landscape of a full moon shining over a swampy vale; and in a neighbouring picture close by, 23, "The Voice of the Cuckoo," painted by the same artist. Opinions will be probably divided as to the merits of these pictures; that they have beauties of their own no one can deny, and that they show facility of execution is also apparent. They are, however, extremely rough, with no attempt at definition of objects, and the figures in the latter picture are ill-drawn and uncouth-looking. 18, "Plums," 24, "Quinces," both by W. Hughes, are two excellent pictures of branches of these fruits, placed upright in china jars; both are drawn and painted with great fidelity to Nature, but we think the leaves have been less carefully studied than the fruits in both instances. 31, "The Waters of Lethe," R. Spencer Stanhope, is a well-conceived and ambitious picture, in the style of E. Burne-Jones, of which artist's works there are far too many imitators in the Grosvenor Gallery. The execution does not equal the generally good conception of the design, for, apart from the figures, the rocky foreground is very curious, and still more curious is the flowery garden in the distance. The picture repeats many of the odd vagaries of some masters of the old Italian school, and one figure on the right, taking an awkward "header" into the "waters of Lethe," will remind visitors of the picture in the last year's "Old Masters," where a similar figure was taking a "header" into an element of a different nature. The faces and feet have been studied from Burne-Jones, and though the figures are in many places out of drawing the picture shows considerable genius. Wretched individuals of both sexes are pacing across the picture from left to right and diving into a pool; one plunger appears to have come to grief, for nothing but the soles of this person's feet are visible above the water-line: the refreshed bathers are reposing in groves and gardens in the distance, and pacing from right to left. In 49 and 54 we have two magnificent portraits by J. E. Millais, R.A., two of the finest we have seen from the brush of this master of portraiture. At 51, 52, and 53 are three admirable little gems by L. Alma Tadema. In all, especially the two first, the effect of light and shade is excellent; the pictures are named respectively, 51, "A Question," a Roman black-haired youth at full length on a stone seat gently twitching the garment of a fair-haired girl, and asking no doubt "the" question; 52, "A Garden God," a dancing female figure before a small altar, from which smoke ascends to the top of the picture, all placed in the shadow of a wall with small gleams of brilliant sunlight here and there, and a clear sky above; and 53, "A Pastoral." Above these three exquisite little works is placed 50, "Marsyas and Apollo," J. M. Strudwick, a good picture in the Burne-Jones style, but very inferior to the master's work, and in marked contrast with the three small pictures beneath. Reference may be made to the ill-drawn plant nonentities in the foreground of "Marsyas and Apollo;" if plants are required at all, surely it is better to take them from a garden than from some young lady's sampler. 70, "Last Gleanings," is an uncommonly good picture of a late autumn evening with cloudy sky, and a group of rustics proceeding homewards with their last gleanings; the picture is well and boldly executed. 72, "After a Gale," and 76, "Half a Gale," both by H. Moore—the former a view of sea only, with sky clearing; the latter, the sea with a few ships in the distance and birds. These two pictures are remarkable examples of Mr. H. Moore's great power as an artist; the sea and sky in both pictures are masterpieces of positively accurate yet unlaboured pourtrayal of natural phenomena.

Passing to the East Gallery we get two pictures by W. T. Muckley—98, "May," 103, "Fruit and Flowers." Although we have often had reason to praise this artist's admirable work, we think these two subjects show a greater mastery of drawing and painting flowers and fruit than any works we have hitherto seen from his brush. 98 represents some large branches of Hawthorn in a glass globe or vase: it would be difficult to surpass the beautiful drawing and painting of this picture. The glass globe is likewise a remarkable piece of truthful reproduction. 103 represents Oranges in blossom and the fruits in different stages of growth. Like the last, it is a perfect piece of work, and worthy of close study. 100, the "Grass of the Field," is an Eastern landscape of great beauty, with a foreground of flowers, remarkable for its evident truth to Nature, and its rich and harmonious colouring. 111, "Truth and the Traveller," Walter Crane. We should have expected greater care and accuracy in drawing from this well-known artist. If the two figures are removed from consideration, it will be seen that the architecture, perspective, and Acanthus plants, are by no means what they should be. The two figures are of the Grosvenor Gallery type, apparently derived from studies of the mannerisms of Holman Hunt and Burne-Jones. "Truth" is particularly ill-favoured and scraggy in her nakedness, but as she is stated in the *Catalogue* to have "wandered long in dens and caves," this may account for her angular and cadaverous aspect. The picture, however, like the other works by Walter Crane, shows considerable power of drawing, principally of the archaic kind. We have now reached "The Golden Stairs," by E. Burne-Jones—a galaxy of beautiful damsels descending a narrow and winding staircase without handrails. The figures have white drapery and naked feet, and lightly descend the stairs in "lines and forms of wondrous art." The figures carry instruments of music in their hands, and one or two of the ladies are striking a last chord. As a mystic picture of beautiful maidens gracefully descending from an upper to a lower storey the picture may be pronounced a very fine one. As to its meaning we cannot give one; it is like a "song without words," each spectator may put his own interpretation upon the subject before him. It may perhaps be considered invidious to mention the pale amber "stairs;" they are drawn with great regard to detail, so that a skilful builder could construct a somewhat similar structure. In a mystic picture of this nature would it not have been better to have kept the stairs less obtrusive, not to have given all the joints of the stairs, the stones of the floor, and the walls of the ugly corner underneath which no broom could ever reach. The exigencies of the composition might have required a flight of the nature drawn, but why, being a structure impossible of descent for heavenly or earthly maids, is it detailed with such extreme care? 125, "Omnia Vincit Amor," G. H. Boughton, A.R.A., represents a courtly knight of the middle-ages in a woody place playing sweet music to a lovely keeper of swine. It is clearly not a case of the "selection of the fittest" as even the page who holds the horse in the distance can plainly see. This is a very good picture, well drawn and painted; the face and position of the feet in the pig-tending beauty are very amusing.

In the Sculpture Gallery we have in 195, "Sunflowers," and a similar subject close by in 291, by G. Hart Taylor. Both are decorative pictures, dull in colour and outlined with black: they are not of the first class. 202, 203, 204, "Portraits in red chalk of the Children of Prince and Princess Christian," are very poor productions, and very different in power from other portraits and sketches in the exhibition. 209, "Study of Pomegranate Flowers," Miss M. Corkling, and 211, "Nasturtiums," J. M. Jopling, are poorly executed little pictures, the nature of the plants not being properly apprehended by the painters. 214, "Azaleas," Miss Maud Naftel, is superior to the two last, but the subject of Azaleas in this style has been exhausted long ago. There are several other little pictures of flowers in the Water-Colour Gallery, but they call for no special remark, being as a rule neither very good nor very bad, and too similar to the little productions of the same class in the Royal Academy and elsewhere. The three pictures by R. Doyle in this gallery, 238, 239, 240, will prove attractive, especially the last and largest of the three—"The Battle of the Elves and Frogs," with its droll and amusing description. The picture is in Doyle's best style, admirably drawn and full of quiet humour.

New Garden Plants.

Dendrobium tetrachromum, *n. sp.**

This is a Bornese novelty, introduced by Messrs. Veitch quite lately, through their collector, Mr. Curtis. Its stem is evidently rather long, thin, and terete. The piece at hand consists of a dozen of joints. The flower is white in general, and much in the way of the flowers of Dendrobium moniliforme (true japonicum, not my Linawianum, the so-called elder D. moniliforme of gardens), and aqueum, Lindl. It has, however, a very acute chin, flowers from the old stems, and with a longish rather narrow lip. This organ is washed with ochre-yellow before the point, and at the base of the median lobe there at a black-purplish radiating blotch; the back of the chin is green: thus giving four colours, whence the name is taken. *H. G. Rchb. f.*

Masdevallia Vespertilio, *Rchb. f.*

This is one of the Chimæra section, with flowers usually equalling those of the better varieties of M. Nycterinia. It is spotted on a pale ground like a leopard, and ranks in the small group of the Chimæras with M. bella and Nycterinia, having the same lip with a marvellous dilatation at its anterior part. Mr. C. F. Lehmann was successful in bringing this rare thing over alive. *H. G. Rchb. f.*

Odontoglossum crispum Lehmanni, *n. var.*

This is a rather curious plant, much smaller than the Bogotese one, rather narrow leaved, and with a distinct inclination to produce branched inflorescences as that celebrated herculean plant does in Sir Trevor's Orchid paradise. Mr. C. F. Lehmann, the successful discoverer of this variety, saw as many as fifty flowers in one panicle. There is usually purple and brown tint in the flowers. *H. G. Rchb. f.*

NOTES FROM A LANCASHIRE GARDEN.

May 23.—This last winter has been almost more hard upon us than that of 1878-79. I have had to cut away all the branches but one of the large Buddleia, and very unhappy it is looking, holding out its one remaining arm like a signal of distress. A Gum Cistus, which year by year has grown and flourished and blossomed, is all but killed. The Clematis that trailed round the withies in the garden bed, and the Clematis that climbed up the house, are both cut down to the roots, and the Escallonia is quite killed, root and branch. Several of my standard Roses are only dead dry sticks, and various other plants and shrubs are sick unto death.

And then this dry weather, with its shrivelling east winds, makes matters worse. Nothing comes

* *Dendrobium tetrachromum*, n sp.—Affine Dendrobio aqueo: caule teretiusculo, foliis dejectis florido, racemo uni-seu bifloro, mento extinctoriiformi; sepalis ligulatis acutis; tepalis rhombeis obtusis, labello trilobo, lobis lateralibus semiovatis denticulatis, lobo antico oblongo ligulato obtuso undulato, jugo calloso inter lobos laterales; columna apice tridentata.

Inter D. moniliforme, Sw., verum (nec Linawianum, Rchb. f., moniliforme, Lindl.), ac aqueum, Lindl., medium. Illius caulis tenuis, sed meatum extinctoriiforme, nec obtusissimum, hujus prope labellum, ad lobum anticum multo longior, mentum multo magis argutum et flores non exeuntibus foliatis *H. G. Rchb. f.*

out as it should, leaves turn brown, and a sort of blast destroys whole branches. The wall fruit is looking miserable: of Peaches and Nectarines and Apricots there will be hardly any, and the Plums, which promise better, are getting infested with insects. There is greenfly among the Gooseberries, and the Currant caterpillar is eating circles in the leaves of the black Currant.

Nor have my vineries escaped. One night we found that a Canon Hall Muscat and two pot Fig trees were all but entirely destroyed. It was a blast, but what a blast is I cannot tell. The two Fig trees were on a line with the Muscat; one seems quite dead, but the other has now thrown up a shoot. As for the Muscat, one of its branches is entirely killed, and the other is killed for two-thirds of the length.

I have other disappointments in the vineries—the big Orange tree never showed so little flower, and from the Lemons I have never yet been able to get any flower. A Pomegranate also refuses to flower, though it looks vigorous enough. Can any of your readers give me any hints as to the management of Lemons and Pomegranates? The Clethra arborea is, however, looking very healthy, and a Passion-flower which trails along the wall of the second vinery is laden with blossom.

Out-of-doors the flowering shrubs are less beautiful than I ever knew them. Of Lilacs I have scarcely any, and only the Berberries (of some three different kinds) and the yellow Ghent Azalea are behaving as they should. The double Gorse, which used to be so ornamental at this time of year, has all been killed, and even the Thorns are less full than usual. The Horse Chestnuts, too, hold up fewer lights of waxen blossom than is their wont—in short, I never knew the shrubberies so bare of interest before at this time of year.

The walled flower garden, however, never fails me utterly, and it is now gay with blue masses of Myosotis dissitiflora, among which we find mixed here and there a patch of the white Myosotis sylvatica. Then there is a bed of large double Wallflowers of great size and beauty, almost the handsomest I ever saw; and then in another week there will be beds of Anemones and Ranunculus, and then for the Roses and all the summer flowers. Meanwhile there is every day something new to notice on the herbaceous borders. The Snowflakes and the starch Hyacinths are passing away, and the Auriculas and Polyanthus, but our losses are less than our gains. I once observed that the flowers of winter are chiefly white, and it has lately occurred to me that the flowers of spring are chiefly yellow. At this moment we have yellow Alyssum, yellow Wallflower, and yellow Asphodel, the beautiful double Marsh Marigold, which is new to me, and the Golden Ball, Trollius europæus. What a delightful old flower this Golden Ball is! You may see it, but not often, in old gardens, but you may also see it growing wild in some of the loveliest scenery of Wales. In one of Campbell's prettiest poems he says how he loves the "wildings of Nature"—

> "For lulling me back into dreams
> Of the blue Highland mountains and echoing streams,"

and this the Golden Ball can always do for me. I have found it growing near an old bridge that spans the outlet of a wild lake, and I have found it in a little glen half covered with the spray of a rushing mountain stream.

May 28.—At last the rain has come, and everything is looking happy and scenting the air with sweet spring odours. I have been walking through our little wood and find the Blue Bell and another grey Scilla, the precise name of which I do not know, in great beauty, though rather trodden down by the feet of the rook-shooters of ten days before. The Celandine is over, but the Cuckoo-flower lingers on. By-the-bye, I sometimes fancy that I must be as regards scent, whatever is equivalent to being colour-blind. At least, I can't smell the perfume of dying Strawberry-leaves, which several friends whose veracity I cannot doubt describe as delightfully aromatic, and still less can I smell the perfume of the Cuckoo-flower: and yet Tennyson speaks of the "melancholy" of his Margaret as being

> "Sweet and frail
> As perfume of the Cuckoo-flower."

In the garden the Irises are now the gayest things. The poor Buddleia stands in a large round bed, all Irises of the old large handsome blue variety, and nothing can look better than they do. It is curious how seldom the Iris is mentioned by our English poets, and yet it is none other than the historic Fleur de lis. Milton, it is true, speaking of Adam's bower, mentions among the plants that grew there (the seasons of Paradise were not quite the same as ours)—

> "Iris all hues, Roses, and Jessamine;"

but I hardly remember any other familiar passage.

The Lily of the Valley is almost over. Certainly the poets have not neglected *it*, and we all know how in the Garden of the Sensitive Plant—as everywhere else—

> "The light of its tremulous bells is seen
> Through their pavilions of tender green."

Before bringing to-day's note to a close, I must mention a little incident which has rather struck me. The other day, three men were seen rambling over our field, evidently in search of something. They turned out to be Frenchmen, who had come to the neighbouring town, as cabinet makers, and they were out for a country walk to look for some "Oseille" (the common field Sorrel), to cook with a *fricandeau*. It was the first and (unless my French friends come again) will probably be the last time that any one has thought of making use of this wild vegetable of my field. I wonder if Sorrel is much grown and used in England—and if not, why not? *H.* [It is to be found in most large establishments. EDS.]

COLONIAL BOTANIC GARDENS.

(*Extracts from Mr. Dyer's lecture, concluded from p.* 683)

SOUTH AFRICA.—Turning to the botanical establishments of South Africa, the most important of these would of course be looked for in Cape Town, the seat of the Government. The Botanic Garden there appears to have been established by Sir Harry Smith in 1848; the ground was given by the Government, with £300 a year, to be met by an equal sum to be raised by subscription. The rest of the expenditure was to be defrayed by the profits from the sale of plants. Sir William Hooker was consulted by the Secretary of State for the Colonies at the time, and Kew has always maintained an active correspondence with it. The present superintendent, Mr. McGibbon, was appointed in 1830, and his annual reports tell a continuous story of an arduous struggle with crippled means and incapacity from other difficulties to make the establishment worthy of its position. Mr. McGibbon seems to have had a very just idea of what might be expected of it in this respect. Thus in 1868 he remarks in his report: "These gardens, with the contiguous kindred institutions of library and museum, both of which are really in the botanical garden, being the only place for visitors to these shores, should at all times be in a state to elicit the commendation of men of science, as well as of the ordinary traveller and visitor." The effect upon a visitor to the colony who had seen other colonial gardens may be judged from a communication to the *Gardeners' Chronicle* in 1878, where it is described as "rather small, and poorly and unsystematically laid out." Its position in the centre of the town is unfortunate, and prejudicial to the purposes which it should fulfil. In 1873 Mr. McGibbon reports: "The propagation and cultivation of young fruit-trees in these gardens have never been attended with marked success, especially in stone fruits, the soil and situation being quite unsuited to their wants." Again: "Very few Conifers succeed in the close, dusty, stifling atmosphere of the parent garden, nor is there space for them here. In future years the whole colony would be supplied with seeds for planting from such as would be found to succeed best." Nor do the gardens appear to be better suited to the characteristic types of South African vegetation. In 1874 Mr. McGibbon reports: "Two of the most extensive Cape orders, Ericaceæ and Proteaceæ, which are always desiderata in other countries, cannot be kept alive in the atmosphere of the Cape Botanical Garden." The ground, already restricted, seems to have been diminished by space taken for the erection of public buildings, and which involved the loss of many valuable trees. It is of course difficult to decide for those who have to deal with such matters on the spot. But, as I have already suggested, there certainly seems to be something like a case for the removal of the Cape Botanic Garden into the country along the line of railway, and its reconstruction on a wider and more liberal basis. Even under present circumstances the garden seems to have secured a firm hold upon the colony. In 1860 Mr. McGibbon writes: "At one time, only a few years since, such easily-produced things as Gum-trees, Hakeas, could be procured only at the gardens. The Botanic Garden has not only pointed out the necessity and created a taste for planting, but has also called into existence a branch of industry [nurseries] not previously existing at the Cape." And in 1868 he states: "There is hardly a village or district in the Colony and in the Free State which does not avail itself of the garden to procure seeds and plants at a moderate price."

The financial affairs of the garden have always languished. The original Government grant of £300 a year was reduced in 1867 to £250, but raised again in 1872 to £500. In 1877 the radically unsound system of allowing the superintendent to farm the sale of plants and seeds was abolished, and an increase was made to his salary, which had always been too small, especially as he was not supplied with a house, in lieu of it. The result has so far been advantageous.

The gardens seem steadily to have kept in view the important function of bringing new industries into the Colony. Except where affected with prolonged droughts, the cultivation of all kinds of fruit trees suited to a temperate climate is of course of first-rate importance. Not less is the introduction of useful timber trees; and both these appear to have been steadily pursued. The germs of two important industries started in the Botanic Garden. In 1863 the best kinds of Olive plants were procured from Europe. The tree appears to flourish and fruit abundantly now in the western part of the Colony. The difficulty appears to be to find a market for the produce; yet, in Europe, I believe it is notorious that the supply of olive oil is largely supplemented by that of the ground-nut. In 1867 the Governor, Sir Philip Wodehouse, ordered the introduction from France of 3000 white Mulberry trees for rearing silkworms, and defrayed all the expenses personally. The following year 25,000 additional trees were imported by the Government. I do not know what progress since, if any, the business of silk-worm rearing has made.

Mr. McGibbon, it is only just to mention, records in 1873 that "an active exchange of plants, seeds, &c., is kept up with kindred institutions abroad. In our lists of desiderata, preference is always given to economical subjects." He has, however, always been hampered by the difficulty of performing one of the most important functions of his office—that of travelling in the interior of the Colony for the purpose of collecting and so obtaining new seeds and plants and objects of natural history, especially dried plants, which would be acceptable by way of exchange to botanical institutions at home. As he states in 1868: "It is impossible for the superintendent of the gardens, with his present duties resting on his shoulders, to make frequent and extended journeys for collecting." For this reason also the herbarium, which was "in its infancy" in 1856, never seems to have emerged from the infantile stage; nor is there in the garden anything of the nature of a museum.

Botanic Gardens, all no doubt destined eventually to attain considerable importance, exist at Port Elizabeth, Graham's Town, Graaff Reinet, King Williamstown, and Queen's Town; with all except the last, which has apparently but lately come into existence, Kew has entered into correspondence, and it has assisted them in various ways. The legislation, of somewhat doubtful policy, which has recently prohibited the importation into the Cape Colony of living plants of any description, for fear of bringing with them the Phylloxera, will undoubtedly hinder its botanical enterprise, and practically puts a stop to any further correspondence with Kew, except in the shape of seeds. It is peculiarly unfortunate that the introduction of new kinds of fruit trees, for the cultivation of which South Africa is peculiarly suited, should now for the present be put an end to.

All these gardens should be affiliated in some degree to the metropolitan establishment at Cape Town. It is scarcely necessary for each of them to have a herbarium and an economic museum, or even any one with more qualifications than those of a good practical gardener to manage them. But it seems to me that at the seat of Government there should be an establishment—on a modest scale no doubt—but which should be the headquarters of all that relates to the botany of South Africa. I understand that the natural history museum and the library, with its important philological collections, are not unworthy

of so important a Colony. But considering how very remarkable a flora temperate South Africa possesses, it is not too much to hope that Cape Town will in time add to its other natural history collections a thoroughly good herbarium and a museum of local vegetable economic products. These should be placed in charge of a competent botanist, who would assist in keeping the nomenclature of the other botanic gardens up to an accurate standard, and who would have the assistance of Kew in all difficulties. Such an officer the Colony formerly possessed in Dr. Pappe, and I believe his herbarium was purchased at his death for the South African Museum. It would be needless to refer to the circumstances under which the tenure of office of his successor came to an end. But I think that now, as we all hope, a great future is in store for our South African colonies, it is time that the reconstitution of this important scientific department, in a way worthy of their metropolis, should be again considered; and it is a pleasure to say that there are abundance of able colonists in South Africa who would, I am convinced, be only too pleased to undertake the task.

The Botanic Garden in Natal, as perhaps might be expected, is in a somewhat dormant condition. It is said to be a common remark in the Colony that nothing good will grow there; but private gardens are said also to produce in profusion everything that is worth cultivating in the tropics. The Botanic Garden appears to have maintained an active exchange with India and Australia, and the last reports we received held out some promise of a successful beginning being made with Tea cultivation.

The Botanic Gardens of Mauritius, at Pamplemousses, owe their origin to the munificence of a wealthy French gentleman about a century ago, who gave the land to the Government. Its principal business of late years has been the introduction and distribution of new varieties of Sugar-cane. Of these a collection of about 130 kinds is now cultivated. There is also a temperate garden at the height of 2000 feet in the centre of the island; here Cinchona (from Ceylon seed) and Tea do well. Mr. Horne, the director, who is now in this country, has lately made an extensive tour in the southern hemisphere as far as Fiji, where his advice has, as I have pointed out, been of great service to the Government. He utilised his travels in increasing the Mauritius collection of Sugar-canes, which must now be the most extensive in the world. To Mr. Horne we are under great obligations for his assistance in sending collections to Kew for the preparation of Mr. Baker's Mauritian *Flora*.

In the Seychelles, botanical interests are cared for by the Chief Commissioner. We have supplied him with Liberian Coffee, and are preparing to forward the Cola-nut and other plants.

And here I must not forget to mention Dr. Kirk, Her Majesty's Political Agent at Zanzibar, who is indefatigable in the midst of arduous official work in procuring for us botanical novelties of every kind. To his energies are largely to be attributed the development of the trade in East African caoutchouc, of which, through his aid, we now have two kinds in cultivation at Kew. With our settlements on the West Coast of the continent we have also occasional correspondence, and from Cape Coast we obtained in 1872, and grew at Kew for the first time in Europe, the celebrated Liberian Coffee, since distributed to so many parts of the world. It is much to be wished that at some point in Western tropical Africa a botanical station could be established.

NOTES FROM CHATSWORTH.

Outdoor vegetation at Chatsworth has not suffered through the effects of the exceptionally low temperature of the past winter nearly so much as in the winter of 1860-61, when so many trees and shrubs succumbed. This may be accounted for by the autumn of last year being much drier for a considerable period previous to the frost setting in, and thus preparing most things better to withstand extreme cold than they were nineteen years ago, when warm moist weather almost like spring continued up to within a few days of the frost commencing. In addition to this, after the experience of the 1860-61 winter, the wise precaution was taken not to again plant such species of coniferous trees as were then destroyed, a course which, if followed generally, would not have resulted in the many vacant places from whence the dead have been removed, or the still more unsightly presence of the quantities of half-killed specimens that are now to be met with in some parts of the kingdom. Nevertheless, the frost has left its mark, if to a limited extent, notably in the destruction of the fine old Wistaria on the wall immediately above the long glass corridor leading from the mansion up to the Orchid-houses. This plant occupied some 65 yards in length of wall from point to point of its branches; its stem a little above the ground was 5 feet in circumference. The grounds as a whole show little trace of the unusually severe frost; the rockwork in most cases is now all but covered with trailing shrubs, that look as fresh and green as if the winter had been mild.

The conservatory, which probably more people from all parts of the world have visited than any other structure of a similar kind in a private establishment, has during the last year or two undergone a regular course of renovation. The plants in it look in the best of health, the permanent occupants comprising Palms, Musas, Tree Ferns, Cycads, and a host of kindred subjects continue to flourish as they have always done. One of the most effective and useful plants here is Bougainvillea glabra, grown in numbers, trained in the shape of straight columns up to the roof on the inside of the path on the south side of the house; when in flower its innumerable mauve bracts must have a charming effect. B. spectabilis is also similarly grown in company with it. In the extensive collection of Epiphyllums which occupy the stage on the south side of the house, some beautiful large-bloomed kinds were in flower. The roasting they get here near the glass is just in accordance with their requirements. The fine Chinese Orchid, Renanthera coccinea, which so few people succeed in flowering, seems to be nearly always in bloom here; a strong large plant was bearing a couple of immense spikes, the largest of which, with four branches, was near upon a yard across. Few flowers last so long, and its colour, bright red, is scarce amongst Orchids.

In the Orchid-houses the plants look well; hung up near the roof I noticed a number of examples of Dendrobium Bensoniæ in small shallow pans that had made very strong growth. Some of the bulbs were bearing as many as twenty-eight flowers each. The old but most useful of Orchids, D. nobile, is grown in quantities to bloom in succession. Calanthe veratrifolia and C. Dominiana, both excellent subjects for lasting either on the plant or when cut, were blooming well. A plant of Odontoglossum vexillarium, grown from a single break in four years, had on it sixty-one flowers. A single growth of Aerides Fieldingii, with twenty-six healthy leaves, was bearing a three-branched spike 2 feet in length. The stronger growing Vanda, such as those of the V. suavis and V. tricolor sections, grow like weeds: they almost fill the centre portion of a good sized house; one specimen of V. suavis is near upon 8 feet high by 6 feet through, clothed with healthy foliage, and there are numbers only something smaller. Kinds like Cœlogyne cristata, Calanthe Veitchii, C. vestita, Pleiones, and other winter flowering sorts, are grown in quantity. Cattleyas and Lælias are in a house by themselves, and apparently doing very well. Some fine varieties of Cattleya Trianæ and C. Mendelii were in bloom. A nice collection of cool species, comprising Odontoglossums and Masdevallias, are coming on. A number of strong plants of the Cape Disas is located in one end of a house filled with Cape Heaths, which include most of the best hard-wooded varieties in good healthy condition, showing unmistakably the treatment they receive, and at the same time indicating what the Disas like.

In the Camellia-house the plants have grown to a very large size, and are in fine order. Lapagerias are grown along with them, and also the beautiful but seldom seen Luculia gratissima. The long glass corridor affords facilities for growing a number of plants that require room to spread to an extent they do not get under ordinary conditions, and here there is always something interesting. When I saw them in the early part of May, Rhododendron Edgworthii and a Brugmansia, each covering a large space, were clothed with a complete sheet of flower, such as not possible when grown where their head-room is restricted. With them were the two enormous specimens of Camellia reticulata, each covering a space some 30 feet high, and bearing hundreds of their immense flowers, resting on a background of deep green healthy leaves.

Ixoras are grown in quantity for cutting, especially the old and still the best, I. coccinea. A house is devoted to these plants, and remarkably well they look, with long stout healthy young shoots that have already in many cases reached a length of 2 feet. They comprise, in addition to I. coccinea, the best of the hybrid varieties, such as I. Williamsii, I. Colei, and a number of seedlings.

In the Victoria-house this year's specimen of the big Lily recently planted is just beginning to grow away; the rapidity with which this plant gains strength and size when once it gets established is in keeping with its extraordinary habit generally. The immense specimens of Achimenes grown in wire baskets suspended from the roof of this and the Palm-house, and which yearly are such a feature at Chatsworth, are making progress, and will doubtless, as heretofore, produce an effect which few, if any, other plants used for a like purpose are capable of. The Amherstia nobilis is fast attaining the proportions of a tree, and threatens at no distant time to outgrow the house in which it is planted.

Those who have been in the habit of visiting Chatsworth during the spring for some years will have noticed that Mr. Speed depends largely upon pot Vines for early Grapes, which are very well done. This year is no exception. The two large houses thus occupied have in them an immense number of these pot plants bearing a uniform heavy crop of well-finished fruit—the earliest house about ripe; the sorts grown are principally Black Hamburgh and Foster's Seedling: the second house was just beginning to colour. This year the house occupied with permanent Vines, and started the same time as the first of the pot-plants, has distanced the latter for time, as the crop was mostly cut before the pot-fruit was ripe. The remains hanging in this earliest house were beautiful examples of early Grape growing, both as to size and general finish.

The house of old Hamburghs—now, I understand, some forty years planted—contains an excellent crop fast coming on. The long range of vineries, in six divisions, planted by Mr. Speed, and now in full bearing condition, from present appearances all promise to produce an excellent crop, as also do the latest houses, four in number, let to start of their own accord, and which, from the abundance of fruit showing, evidently had their wood fully matured last autumn, notwithstanding the adverse summer and not over-favourable locality for the indispensable ripening process.

In the first Peach-house Early Beatrice was just about ripe; the other kinds associated with it are mostly old well-proved kinds. In the succeeding house, occupied by Elruge Nectarines, Royal George Peach, and Hale's Early Peach, the last-named excellent variety was quite a month before the former kind. Peaches will not succeed on open walls at Chatsworth, but a very large extent of glass is occupied with this fruit. The trees in the successional houses, as in those already described, are in good bearing order and carrying heavy crops in various stages. What still remains of the two once immense old trees, Royal George and Admirable, in the large house, which, as many who visited the place in years past will remember, had grown to a size and covered a space as gave them a celebrity unequalled in the cultivation of this fruit, are at last fast going the way that the trees of this comparatively shortlived species does; branch after branch has gone, but still the portions that remain have set thousands of fruit. As the trees have gradually become smaller young ones have been planted to fill up the space vacant. The Fig-house here is a very wide structure; the plants are trained on an almost flat trellis. A splendid crop was coming on.

Strawberries in successional stages of growth were equally well done, and in quantities corresponding to other forced fruits, occupied shelves overhead in the various forcing-houses, and from the heavy crop of large handsome fruit they were carrying, have clearly done better here than in many places after the very indifferent season the last was for maturing the plants. The Cape Gooseberry is evidently a favourite, a spacious span-roofed house being devoted to it, where it is kept going so as to furnish a supply of fruit nearly the whole year round.

The variety of the Madagascar Lattice-plant, known as Ouvirandra Berneriana, is considered here a more satisfactory plant to grow than O. fenestralis, particularly when confined to a limited space; it was growing in one of the forcing houses in an ordinary

wooden tub not more than 3 feet diameter. Nothing could possibly be doing better, as proved by the quantity of clean healthy leaves it bore, some of them quite 15 inches long. The nature of the water in which this most singular plant is grown has evidently something to do with its well-doing; in some places its leaves keep clean and free from the conferva-like sediment, whilst in others, under exactly similar treatment, they become coated with slime to an extent that not only renders them unsightly to look upon, but destroys the foliage prematurely, through which the plant gradually becomes enfeebled.

The effects of the last sunless wet summer upon hardy fruits, so apparent in many parts of the kingdom, are more visible at Chatsworth than in most places, as with few exceptions the trees have very little bloom upon them. The situation is such as to make the cultivation of outdoor fruits precarious, even when the wood has been fully ripened—a condition in which it was very deficient last autumn. *T. Baines.*

GREENHOUSE PLANTS FOR WINTER AND SPRING DECORATION.

Correas, and more particularly C. cardinalis, are an exceedingly useful class of plants, the one specified being most brilliant in colour and affording a continuous succession of flowers the whole of the winter. These being tube-shaped, and hanging from the slight twiggy shoots, have a graceful appearance, and the only drawback the plant has is its somewhat curled and very sparse leaves, but so beautiful are the blooms that this defect is hardly noticed when backed up by others having more foliage. The best way of managing it after it has done flowering is to keep it in a house where it can have a little artificial warmth, moisture, and slight shade, such as is required for Fuchsias or other similar plants when making their growth; and to improve the shape and render it of a more bushy habit, the points of the young shoots should be nipped out after they have got 6 or 8 inches long, which will induce them to break again, and thus keep it well furnished below. The growth complete, a half shady place outdoors during August and September will suit it best, but like all hard-wooded fine-rooted subjects, it is important that the pots be protected, or the fine fibrous portions that touch the sides are apt to perish through being dried on the sunny side or from parching winds acting on the exposed surface, the desiccating effect of which is so great that it is very injurious.

Heaths of the free flowering class, such as hyemalis, Wilmoreana, and gracilis, are quite indispensable for winter blooming, and so easy to manage that any one having a slight knowledge of plant culture is able to grow them. The best way with these is to buy them towards the autumn when they have got to a serviceable flowering size, and after their beauty is over then to cut them back and keep them in any warm house or pit where they can have an occasional syringing to encourage fresh growth; on which they will bloom the year after.

Salvias are perhaps the best and most showy among soft-wooded plants that come in during the winter, and when well grown and flowered make a grand display owing to the exceeding brilliancy of their blossoms, the bright glowing scarlet of which quite lights up any house they may be placed in. The three most useful species are S. splendens, S. Heeri and S. gesneræfolia that flower in the order in which they are named, the first commencing early in the autumn, and lasting till Christmas, the two others following immediately on in succession and continuing in full beauty till April. The proper way to manage them, unless very large plants are desired, is to propagate fresh stock annually about February, and grow them on outdoors in a fully exposed situation where they can be plunged in some non-conducting material, such as half-decomposed leaves, so as to shade the pots and prevent the soil in which the plants are grown from drying too rapidly, as it otherwise would. A hard coal-ash bottom to stand them on, or a small piece of slate placed under each, will prevent the ingress of worms, and any stopping they require to keep them bushy should not be done later than the middle of August, or they will not have time to form strong shoots that will develope fine spikes of bloom. The most suitable soil to grow them in is a stiffish fibry loam, enriched with a little mild, thoroughly decomposed manure, in which mixture they will thrive in the most satisfactory manner possible.

Libonias, such as floribunda and penrhosiensis ×, should be largely grown wherever free-flowering plants are required, as they are not only exceedingly showy, but they last in perfection a great length of time, and are so neat and compact in their habit as to occupy very little room. Libonia penrhosiensis is a hybrid, the result of a cross between L. floribunda and the well-known Sericographis Ghiesbreghtiana, so useful as a winter-blooming plant. In general character and appearance it is intermediate between the two, and partakes in every respect of the good qualities of both, so that altogether it is a most valuable and desirable thing to have where a display has to be kept up during the dull season of the year. Although under certain conditions the habit of L. floribunda is, as its specific name implies, a very free blooming plant, many fail with it through not getting the young growth on which the flowers are formed thoroughly ripe and mature, which can only be done by exposing the plants to full sun and air towards the autumn by withdrawing the lights during the day and closing them again in the evening after being syringed. Managed in this way they make short stubby growth, that is so floriferous that any one cannot fail to be pleased with them; and on such plants it is very rare that any of the leaves fall in the way they sometimes do when the stems are sappy and green. Dryness at the root, or any sudden transition of temperature, will likewise aid in bringing about this shedding of foliage, and therefore changes of this kind should be avoided as much as possible. Any one having old plants of either of these useful Libonias should cut them well back at once, and thin out the branches a little so as to leave room for the young growth that will follow to take their place. The kind of soil best adapted to grow them in is a mixture of loam and leaf-mould in the proportion of three-parts of the former to one of the latter, both of which should be well incorporated, and the plants, after being partly shaken out, potted somewhat firmly. Cuttings struck at once and pushed on quickly will make nice useful stuff by the autumn, and come in well for growing on as specimens for the following year.

Richardia æthiopica is a grand decorative subject for embellishing greenhouses and conservatories during the winter and early spring, a time when its pure lily-like flowers are doubly acceptable. To get it in, however, at these seasons it is necessary to afford the plants a little warmth just to give them a start, after which they will continue to send up their blooms in succession. The best and easiest way to manage this useful Richardia is to carefully divide it any time in spring and plant out during May or early June in well enriched shallow trenches similar to those generally prepared for Celery, only not so deep, and every few days during dry weather to soak them well with water, of which, sunk below the level as the crowns of the plants will then be, they will get the full benefit. It should be borne in mind by all who grow them that they are semi-aquatic, and cannot, therefore, be kept too moist all through the summer months, as then it is that the flowers are formed, and any check is sure to limit the number of these very materially. Plants kept in pots are generally starved, and this is why it is that they are so rarely seen in really first-class condition, with the strength and vigour they have when planted out and well cared for. Although Richardias are hardy if kept with their crowns under water, a very little frost disfigures the foliage, and this being the case, it is necessary to take them up towards the end of October, that they may be potted and got under cover.

Cyclamens.—A greenhouse without these during the winter would lack one of its principal charms, so varied and beautiful are they in their rich glowing colours. To have these really fine and keep up a stock of healthy free-flowering bulbs seed should be sown annually, and fresh plants raised to replace such as become old and exhausted, as they become in the space of a few years. In the management of these the best way is to turn them out of their pots after they have done flowering, and to plant them in a bed of prepared peat or leaf-soil in some half shady spot where they can be sprinkled overhead every afternoon during dry sunny weather, so as to encourage plenty of healthy foliage, without which they never produce flowers in the free manner they are capable of. The old plan of growing Cyclamens and drying them off immediately they had done blooming caused much loss of vital power in the bulbs, but since a different kind of treatment has been pursued astonishing results have followed, as the plants one sees now will abundantly testify. When not planted out, the next best way of managing them is to keep them in a shady pit or frame, where they can be well syringed and have the lights placed on by night, so as to maintain a warm, humid atmosphere—a condition highly favourable to their welfare, especially as regards young plants raised from seed during the present season, and which have to be helped on in their growth. In the case of such as are planted out it is important that they be lifted early in the autumn and potted, that they may have time to make fresh roots and become thoroughly established before winter sets in. The assistance of a close, warm frame for a week or so will greatly aid them in this, after which the most suitable place for them is a light shelf near the glass in a greenhouse, where they can be afforded a temperature ranging between 40° and 50°.

Primulas of the Chinese section are likewise indispensable, and fine plants of these may be grown in any ordinary garden frame; indeed, so suitable is this to their requirements that they succeed better there than anywhere else. What is needed is a firm bottom of ashes to stand them on, and such natural shade near as is afforded by a tree or building, so as to obviate the necessity of using mats or anything of that kind on the glass to keep out the sun, for they not only do this, but they obstruct the light likewise, and this causes the plants to become etiolated and weak, instead of being sturdy and strong, with thick stout leaves and stems, such as they have when the conditions are favourable. In order to preserve a moist atmosphere around them the floor of ashes on which they stand should be kept well damped down, which may be done by sprinkling the plants overhead before closing them for the night, but this ought only to be carried out when the external air is dry and renders such a course necessary.

Cinerarias, too, that are now so popular owing to the great improvement made in the size and form of the flowers, should be treated in like manner, as no place suits them so well as where they can get natural shade and a cool moist bottom to stand on, in which position, kept duly watered, they are rarely assailed by red-spider, a pest that otherwise is often most troublesome.

Solanums of the berried sections, such as Wetherell's Hybrid, should not be omitted, as they are of great decorative value when properly managed, but many fail to get them well fruited through not planting them out in an open, sunny position, or from not keeping them uniformly moist at the roots. In pots it is most difficult to do this, and therefore the blooms tumble off instead of setting as they would do if the plants had plenty of soil to feed on. Before planting them out, however, the heads should be pruned hard in, as all the bloom and berries they form come on the young growth made during the summer, besides which, the pruning is necessary to keep them close and compact. *J. S.*

NEW MEDICINAL PLANTS.

The rate at which new drugs are introduced to British commerce now-a-days is somewhat surprising, and it is a notable fact that most of these new introductions are of vegetable origin. Many of them no doubt are destined to be heard of once and then forgotten, but on the other hand there are some that seem of real value and are being taken up enthusiastically by the medical profession, and further are being or have been carefully examined and experimented upon in our large London hospitals. This application of plants to the cure of diseases of the human frame is one of the highest to be sought for, and we must all hail with satisfaction any addition to the list of efficient drugs. Not long since we referred to the introduction of a new substance under the name of Quebracho. Two kinds of Quebracho are now known in English commerce, namely, the white, Quebracho blanco (Aspidosperma Quebracho), and the red, Quebracho colorado (Loxopterygium Lorentzii). The first of these is an Apocynaceous tree growing abundantly in the province of Santiago, and the bark has been used for many years as a febrifuge in South America, instead of Cinchona; latterly, however, it has assumed a prominent position in this country, and is in great

demand as a remedy in dyspnœa. The bark has been found upon examination to contain a crystallisable alkaloid called aspidodermin. The wood of this plant, together with that of the red Quebracho, is used in tanning on account of its astringency.

Under the name of Dito Bark, that of Alstonia scholaris has latterly attracted some attention. This tree is widely diffused in India and the Moluccas. The wood is extremely light, and is said to be used in Ceylon for making coffins. The bark is intensely bitter, and is well-known in India for its medicinal properties, being used as a tonic in dysentery, diarrhœa, and similar complaints. A substance contained in this bark, which was at first mistaken for an alkaloid principle and named ditaine, has since been found to be "a substance of a complex nature containing a definite principle, ditamine, which acts on the animal economy like curare, and which it would be very dangerous to use as quinine."

Another species of Alstonia (A. constricta), a tree widely distributed in Australia, produces a bark which as it appears in commerce is thick, of an ash-grey colour on the outside and of a brightish yellow inside. This bark has been introduced for the cure of malarial disorders.

Perhaps one of the most remarkable introductions, however, of late years is a new remedy for neuralgia, which has latterly attracted much attention in consequence of the difficulty there has been in discovering the botanical source of the ingredient used. This new medicine is known by the name of Tonga, and has been brought into this country from the Fiji islands. As seen in the London market, it consists of a mixture of broken pieces of bark, leaves, and woody fibre; into such small fragments indeed is the whole composition broken up that it is very difficult to detect any special characters by which its botanical origin might be traced. These broken pieces of bark, &c., are loosely tied up in bundles about the size of a small Orange, the wrapper being a portion of the sheathing base of the leaves of the Cocoa-nut Palm.

In a paper on the "Composition of Tonga," read at a recent meeting of the Pharmaceutical Society by Mr. A. W. Gerrard, the author says the drug was brought to Professor Sydney Ringer by a gentleman residing in Fiji, with the following account:—It has been used several years by the aborigines of the Fiji islands, and a European, who married a chief's daughter, learnt the secret from his father-in-law, in whose family the knowledge of the composition of this remedy had been an heirloom for upwards of 200 years. The name Tonga seems to have been given to the drug without any meaning, and simply for want of something more definite. For use, the rough native bundle, with the cocoa-nut fibre still attached, and without being unfastened, is recommended to be steeped in half a tumbler of cold water for ten minutes; the bag or bundle is then to be squeezed into the tumbler, and the infusion so prepared taken in doses of a claret glassful three times a-day about half an hour before a meal. After so using, the bundle or bag is to be hung up in a dry place to prevent it getting mouldy, and it is ready for use at any time, the same bag answering the same purpose for a year or more. A persistent use of the Tonga infusion thus prepared is said to be a certain cure for neuralgia; indeed, it is stated as a fact that a cure has been effected on the second or third day. The drug has been recently sent out by an eminent firm of London chemists both in the form of the native bags, and prepared as a tincture or infusion. The reports by medical men on the efficacy of this new drug, combined with the novel form in which it has appeared, and the difficulty of discovering its origin, owing to the small fragments into which it is broken, which appears to be done purposely to prevent its discovery, all tend to make this remedy one of considerable interest. It is not improbable that the composition includes parts of more than one plant. Mr. E. M. Holmes, of the Pharmaceutical Society, who has carefully examined the substance, thinks that the stem of a species of Rhaphidophora, probably Rhaphidophora vitiensis, Seem., plays an important part in the mixture. Judging from the trials that Tonga has had, it seems not unlikely that it may play an important part in the druggist's repertory.

The American people are much more fertile in their imagination as to the properties of plants likely to prove advantageous for medicinal or economic purposes than we are, therefore it is not surprising that America should send us many novelties in this line, which are indeed being constantly added to. *J. R. J.*

PLANT PORTRAITS.

Acanthorhiza aculeata, *Illust. Hort.*, t. 367.—A noble Mexican Palm, the trunk of which is covered with a network of branching spines; petioles slender, leaves orbicular, palmately slit into numerous linear-lanceolate, glabrous segments, deep green above, silvery beneath. A greenhouse Palm, introduced by M. Linden.

Amaryllis Mrs. Baker, *Florist*, t. 509.—A splendid variety, with very large well-shaped flowers of a blood-red or crimson colour, of good substance. Raised by Mr. Baker. Messrs. Veitch & Sons.

Azalea indica, Madame L. van Houtte, *Flore des Serres*, t. 2383.—Salmon-pink edged with white.

Barkeria elegans, *Floral Mag.*, t. 394.—A representation of the plant shown under the erroneous name of B. cyclotella. See *Gard. Chron.*, Jan. 17. Mr. Bull.

Begonia Brilliant, *Floral Mag.*, t. 393.—A compact-growing variety, with pendulous flower-stalks and brilliant scarlet flowers of moderate size. It is well adapted for pot culture. Mr. B. S. Williams.

Begonias, tuberous varieties, *Flore des Serres*, t. 2390.—Six fine varieties.

Bertolonia Hrubyana ×, *Flore des Serres*, t. 2381.—A superb hybrid, the leaves of which have a ground colour of dark green spotted with small white spots, the nerves and secondary veins green edged with white. Van Houtte.

Bertolonia Rodeckiana ×, *Flore des Serres*, t. 2382.—In this variety the ground colour is bronze speckled with white spots, the nerves fine green edged with creamy white. Van Houtte.

Bowenia spectabilis var. serrulata, *Illust. Hort.*, t. 366.—Segments of leaves obliquely ovate, tapering to both ends, dentate.

Chevalliera Veitchii, *Illust. Hort.*, t. 362; also known as Æchmea Veitchii (see *Bot. Mag.*, t. 6329).—A Bromeliad of tufted habit, producing dense spikes of brilliant red bracts; flowers whitish. New Grenada.

Cœlogyne lagenaria, *Flore des Serres*, t. 2386.—The Pleione lagenaria of *Bot. Mag.*, t. 5370.

Colchicum speciosum, *Flore des Serres*, t. 2385.—See *Bot. Mag.*, t. 6078.

Conandron ramondioides, Sieb. et Zucc., *Bot. Mag.*, t. 6484. — A very remarkable Japanese Gesnerad, described in *Gard. Chron.* 1879, p. 232.

Crinum podophyllum, Linn., *Bot. Mag.*, t. 6483.—A dwarf species with wavy leaves, tapering at the base into a long stalk; scape lateral, erect, bearing a small number (two) of sessile flowers, each about 8 to 9 inches long, with a slender curved tube and funnel-shaped six-parted linile segments, lanceolate, white. Old Calabar; stove bulb.

Croton Baroness de Rothschild, *Illust. Hort.*, t. 365.—A seedling from C. Veitchii as seed parent, and C. maximus as pollen parent. A vigorous variety with oblong-obovate shortly-stalked leaves, the ground colour of which is green or purplish, the nerves being picked out with shades of carmine-rose and yellow.

Cycas media, R. Br., *Illust. Hort.*, t. 368.—This noble species has been introduced to the gardens at Monte Carlo, near Monaco, by M. André.

Cypripedium Lawrenceanum, Rchb. f., *Flore des Serres*, t. 2372.—See *Gard. Chron.* 1878, Dec. 14, p. 748.

Dendrobium Lowii, *Flore des Serres*, t. 2395.—See *Bot. Mag.*, t. 5303.

Dracæna (Cordyline) Princess Margaret, *Flore des Serres*, t. 2375-76.—A variety introduced direct from the South Sea Islands by Mr. Peter Veitch.

Dracæna regia, *Illust. Hort.*, t. 360.—A seedling between D. Moooreana as pollen parent, and D. regina as seed parent. The leaves are broadly ovate-lanceolate, stalked; petiole and midrib cherry-red, limb of leaves rosy-purple with paler edges. A very beautiful variety, raised by MM. Chantrier, of Mortefontaine.

Drosera lineata, *Illust. Hort.*, t. 361.—Leaves long-stalked, blades divided pedately into linear segments studded with stalked glands. Australia and New Zealand.

Erythrina (?) marmorata, *Flore des Serres*, t. 2379.—A beautiful yellow variegated plant, in which the green colouring matter of the leaves is broken up into squarish masses of varying shades of green dispersed over a yellow groundwork.

Fuchsia Lye's Favourite, *Floral Mag.*, t. 396.—Habit good, flowers long, well formed, white tube, reflexed sepals, rosy-crimson petals. An excellent variety for decorative purposes.

Gooseberries, *Florist*, t. 511.—1, Telegraph; 2, London; 3, Snowdrop; 4, Fascination.

Gustavia insignis, Hook., *Flore des Serres*, t. 2392.—See *Bot. Mag.*, t. 5069.

Hæmanthus Kalbreyeri, *Flore des Serres*, t. 2377-78.—See *Gard. Chron.* 1878, August 17, p. 202.

Himantophyllum (Imantophyllum) miniatum var. Marie Reiniers, *Flore des Serres*, t. 2373-74.—A fine variety, raised by Mr. T. Reiners, of Ottensen, near Hamburgh.

Hypericum ægyptiacum, Linn., *Bot. Mag.*, t. 6481.—A low growing shrub with minute leaves, and small yellow flowers. Flowers in late autumn; half-hardy.

Masdevallia infracta, Lindley, *Flore des Serres*, t. 2389; *Gard. Chron.* 1871, p. 1422.

Masdevallia tovarensis, Rchb. f., *Illust. Hort.*, t. 363.—A charming white-flowered species, figured in the *Bot. Mag.*, t. 5505, and in *Gard. Chron.* 1874, p. 715.

Peach Early Silver, *Florist*, t. 510.—A handsome freestone Peach, with the brisk taste of the white Nectarine combined with the "noyau" of the Peach.

Pelargoniums (Show), *Florist*, t. 511.—The varieties figured are:—1, The Pope; 2, Alice; 3, Emperor William: all very fine sorts.

Pitcairnia Andreana, Lind., *Bot. Mag.*, t. 6480.—Dwarf habit, leaves broad, entire, mealy; flowers in close racemes, scarlet, paling off into pure yellow. New Grenada. Kew; stove.

Pompon Dahlias, *Floral Mag.*, t. 395.—1, Karl Goldenberg, yellow tipped with white; 2, Little Bobby, rich magenta; 3, Pure Love, soft lilac.

Rhododendron Comte Michel Corinaldi, *Flore des Serres*, t. 2387-88.—A dark flowered full-trussed variety, richly spotted with brown.

Rose La Reine, *Journal des Roses*, March, 1880.—A fine H.P. Rose, with large well-shaped flowers of a fine lilac-rose.

Rose, Tea, Mdlle. Marie van Houtte, *Journal des Roses*.—Raised by M. Claude Ducher. A cross between Madame Falcot and Madame de Tartas; petals yellowish-white shaded with bright rose. A lovely Rose.

Rubus phænicolasius, Maxim., *Bot. Mag.*, t. 6479.—A Japanese Bramble with inconspicuous flowers and scarlet berries. Kew; cool greenhouse.

Strelitzia reginæ var. Lemoinieri, *Flore des Serres*, t. 2370-71.—A yellow-flowered variety of this gorgeous plant, said to have originated from seed, in the possession of M. Lemoinier of Lille. The plant is unique, but we cannot say it is any improvement on the original, rather the reverse.

Trichinium Manglesii, *Flore des Serres*, t. 2396.—See *Bot. Mag.*, t. 5448.

Wahlenbergia tenuifolia, *Bot. Mag.*, t. 6482.—A very peculiar Campanula-like plant, with tufts of linear grassy ciliolate leaves, from the axils of which proceed slender decumbent flower-stalks with close heads of purplish flowers intermixed with leafy bracts broad at the base, and prolonged into a long acumen; also called Edraianthus. Southern Austria. Kew; hardy.

Yucca gloriosa var. medio-striata, *Flore des Serres*, t. 2393-94.—A rare variety with the leaves variegated, with a central paler stripe. Van Houtte.

Forestry.

Of all the various kinds and forms of disease to which forest trees are liable, none are so general or so fatal as those affecting their roots. In many, perhaps most cases, it is extremely difficult to say precisely wherein disease originates and how it is produced; and it is only when we see it in some of its intense forms of development that we are aware of its existence. As when we see a running stream we are aware that it is connected with a source, although that source may be far distant from us, so in like manner, when we see external evidences of disease we know it had its origin somewhere, but the precise source may be distant, obscure, and difficult to discover. We shall not attempt to define disease, but simply assume that the tree so affected is in an abnormal condition, and the

condition such as to result in frustrating the object in view by the grower of the tree. If a tree is planted with the object of growing sixty years, and attaining 30 cubic feet of timber, and any circumstance of interruption of growth arises to frustrate that object by terminating its existence at forty years and arresting its development at 10 feet, that circumstance of frustration and arrestment we shall, for convenience, term disease, and speak of it as such.

In order to the existence and presence of disease there must be the roots themselves, and there must also be the ingredients or agency that injuriously affect them. Plants, unlike animals, take what is bad as well as what is good for them. The ox or the ass in the field only eats such herbs as he relishes and are good for him, but the root of the plant is otherwise endowed, and therefore absorbs alike what is and what is not good for it; and, more than that, before the discovery can be made that the plant has absorbed food, or rather poison, that has injured it, the disease is too far established to be curable, even were the means and the knowledge of doing so at command. Diseased roots emphatically imply diseased branches, and indeed a diseased tree in every part; and it is probably by this circuitous operation that fatal results are so often produced. The roots affect the stem, branches, and leaves, and the leaves when diseased imperfectly elaborate the sap which should descend to nourish the roots; therefore it is that when one member suffers all suffer with it. To maintain and preserve a tree in perfect health and soundness we must not only see to it, that the roots are in every way healthy, but that they are in the most favoured condition to remain healthy to the time at which the whole structure of the tree attains its highest possible state of perfection. The cure of root diseases, like that of all others, is very precarious and difficult, and therefore all preventive means should be diligently and thoughtfully used. If the stomach of the animal is truly healthy it is scarcely possible it can be ill; but if, on the other hand, the stomach is diseased, no part of the subject can possibly be well for a single day. What the stomach is to the animal the roots in an important sense are to the tree; in both they constitute the entrance-gate through which the food is admitted both in kind and quantity.

From these considerations the following inferences may be drawn, viz.—1. That the temperature of the soil should be always such that the plant delights in at all seasonss, not too cold, too hot, or unduly variable. 2. That the soil should be sufficiently free and open to admit of the requisite amount of air entering it, and that light and moisture be also freely and properly admitted to it. 3. That the requisite food for the tree, whatever that may be, should be within reach of the fibres, so that at all times they can avail themselves of what they require: and these conditions apply not only to the newly-planted or young trees, but to the condition of trees of all ages and dimensions. 4. That the general state of health of the tree should be always such that it can absorb moisture and assimilate its food, for it matters little how much food there is within reach of the roots if they have not the power and capacity of receiving it. In point of fact, the tree must, in order to full health, have that requisite capacity known in animal life as appetite. The structure of the roots and their sensibility is much more delicate and acute than is commonly thought of. So much is this the case, that when a tree of considerable size is transplanted from a clayey or strong loamy soil to one of any other extreme, the roots may frequently decay altogether; and before they can recover, or the tree can make new roots, a small young plant taken from the nursery will have become a large tree. As another proof of the delicacy and sensitiveness of tree roots we have only to witness those situated near the surface of the ground, and compare their favourable growth with those situated deep in the ground; even on bare ground trees generally grow better than on rich and deep soils, and in many cases nothing contributes more to the successful growth of trees than paring and removing the surface turf, thereby allowing the roots to enjoy the elements from which they were excluded. *C. Y. Michie, Cullen House, Banff, May 31.*

FIG. 122.—CHYSIS CHELSONI. (SEE P. 722.)

Florists' Flowers.

GREENHOUSE FLORISTS' FLOWERS.—AZALEAS.—The plants that flowered early in the season may still be subjected to a high temperature, the object being to promote a strong and vigorous development of the young wood. The leaves should be thoroughly syringed twice daily—in the morning before opening the ventilators, and at night at the time of shutting up. Other plants as they go out of flower should have the seed-pods removed, and be treated in the same manner. The main collection that has not been subjected to a higher temperature than that of the greenhouse will now be in flower, and serve to make a most brilliant display. It ought to be stated that, although the plants make the best growth in a warm house, they will continue in good health, and flower well every year, even if they are not placed outside the greenhouse at all, except out-of-doors for six weeks or so in August and September.

AMARYLLIS.

During the last thirteen weeks or more these showy flowers have been a distinct feature in our greenhouse. We place them in batches in a house with a moist atmosphere, and a temperature of from 50° to 55° at night; the first lot is placed on shelves near the glass in January; the first flowers open in March, the latest will not be over until the middle of this month. After the flowering period is over the plants are again placed in heat until the leaves begin to turn yellow, when water is gradually withheld, but not altogether until November, when they receive none until they are started into growth next season.

BOUVARDIAS.

If these are to flower satisfactorily in the late

autumn months they must now have careful attention. Our plants up to this time have been in a house where they have had a little heat; they have now been taken out and placed in cold frames, the glass-lights kept rather close at first, but gradually, as the season advances and the nights are warmer, we remove them night and day. I do not care to use very large pots, those about 4½ inches in diameter are large enough for the plants raised from cuttings this year; we use 6 and 7-inch pots for the larger cut-down plants. See that the leaves are kept free from insect pests, the shoots trained into shape with the use of slender sticks, and the long growths are to be stopped in time to form good bushes.

Calceolarias.

Those who have to keep large conservatories gay with flowering plants at this season know the value of these showy plants. They are now in full bloom, and if they were kept free from greenfly up to the time the first flowers open they will get through the flowering period without any injury from the pest; the flowering shoots must be supported with neat sticks. The choicest varieties, those with a good habit combined with rich and decided colours, should be set aside from which to save seeds. The pouch should be rounded and free from corrugations.

Chinese Primulas.

At p. 590 it was stated that the young seedling plants would be pricked out about six in a 3-inch pot; when these have grown sufficiently so that the leaves meet together they are repotted again in the same sized pots, one plant only in each. There is no better place for the plants than placing them on a bed of ashes in a frame partially shaded. The plants are rather particular as to the amount of water they receive; it is a mistake to give too much, and I prefer to apply it without watering the leaves. Cuttings may be put in of the double varieties or of any choice sorts. Before taking off the cuttings the plants should be stinted for water until the moisture in the leaves and stems has been reduced and the stems are hard. Pot each cutting singly in fine sandy soil, and place them in a close hand-glass for a few weeks, and when roots are formed gradually admit air, and treat the same as for established plants.

Cinerarias.

Treatment of the seedling plants is very much the same as that required for Chinese Primulas. The same frame will do for both, the potting material for each being good loam, a little leaf-mould and rotten manure added to it. Offsets from named varieties or selected seedlings should be put in now. Use light soil, and put in about three small offsets round the sides of a 60-sized pot. Place them in a close hand-light on the north side of a low wall.

Cyclamens.

The plants are quite at rest, and a good deal depends upon their treatment now whether or not they will flower satisfactorily next season. I know one ardent cultivator of the Cyclamen who quite failed to produce a good specimen last season, owing to no other cause than punishing the plants at this season by allowing them to be too dry both at root and top. I allow the soil to become rather dry before applying water to the roots, but never to the extent of drying the soil too much that it will not readily take water again. The young plants raised from seed in the spring are now growing on nicely. Up to this time they have been in the same house with the Bouvardias, and have been removed to the cold frame with them. By shutting up the frame about 5 o'clock in the afternoon and syringing the plants at the same time we obtain a nice moist atmosphere and a sufficiently high temperature.

Fuchsias.

Young specimens growing on to flower in the autumn require plenty of ventilation. The lights of the house wherein the plants are placed should be kept open night and day to their full extent, unless when high winds are blowing; in that case it will be necessary to close them a little on the side from which the wind blows. Pot on the plants as they require it in good compost. I have had the best results by using the potting soil that was mixed up for Auriculas. Stop back the shoots in good time; if they are allowed to run out too much before stopping it is so much of the vital forces wasted. Do not give manure-water until the plants are in their flowering pots and have well filled them with roots.

Large-Flowered Pelargoniums.

If the plants have been kept free from greenfly up to this time there is no probability of its doing any harm now that they are in flower, or very nearly so. Large supplies of water are now required. Most of our plants are in 6-inch pots, each plant producing a dozen trusses more or less; and in hot dry weather they require water twice every day. The large exhibition specimens in 8-inch pots require similar attention—manure water is applied at each alternate watering. I used the "Flor-vitæ" last year because it is easily applied—a teaspoonful of the white powder in a gallon of water; it gave so much satisfaction that we are using it again this year. A small bottle, costing half-a-crown, lasted a whole season for about eighty plants. A concentrated manure of this kind is most useful to amateurs who cannot get manure to mix up in tubs or barrels, and who do not like the smell and mess that it makes if they could. Fancy Pelargoniums require very similar treatment to the others, but we are rather more sparing with the manure-water for them. The trusses of flowers are light and supported on short stems, so that very few sticks are required.

Zonal Pelargoniums.

All the different sections may be placed together in regard to the treatment they require. This class of Pelargoniums is most useful to flower in the autumn and winter, and for that purpose the plants are now grown on in suitable sized pots. Autumn-struck cuttings should be potted into 7 or even 8-inch pots if large specimens are required, but for ordinary purposes neat short-jointed specimens, managed so that they will flower in 6-inch pots, are perhaps the most useful, and are best adapted for small houses. It is not difficult to over-grow them, rich soil causes too much foliage with a small proportion of flowers. *J. Douglas, Loxford.*

Garden Operations.

KITCHEN GARDEN.

Beet.—There are cogent reasons which occur in connection with some vegetable products that plainly reveal that the proceeding we adopt in some instances, and aforetime were won't to practise, was quite unnecessary. This fact may clearly be demonstrated in the case of an early crop of Beet, which in times gone by was considered to be indispensably necessary in order to have a supply of it in good condition all the year round; but since the demand for it has largely increased, and in the summer months especially, for salad purposes, we have ascertaiaed it to be of such a durable character as to enable us to dispense altogether with the trouble and disappointment connected with growing an advanced crop of it, and to satisfy any doubts concerning the roots not keeping in good condition until such time as those of the subsequent year's crop are available for use or even for a longer period—that is, if it were required. These conclusive facts show unmistakably that a general crop of it sown at the right time—the end of April—is all that is absolutely required to meet every emergency or want. Beet is easily cultivated, and will thrive in some degree under almost any conditions; still, preference should be given to a sunny place openly situated, and soil of a light and friable description, enriched the preceding year with a good dressing of stable manure. The most convenient way is to cultivate it in drills; these should be made 2 inches deep to receive the seed, at from 15 to 18 inches apart, in which the plants when finally thinned out should stand at from 9 to 15 inches from each other. In the event of having a scanty crop, or even when a short supply of it is imminent, recourse can be had to transplanting; it will not, however, under such circumstances succeed so well as when left as a seedling plant unmolested in a natural way. Large and gross growing kinds are not so commonly to be met with in gardens now-a-days, neither should their growth be encouraged for household needs because of the coarse and colourless nature of the flesh after they are dressed for use. I would rather choose from among those improved kinds which we now possess in Henderson's Pine-apple, Sutton's Dark Red, Veitch's Improved, and Carters' Perfection, or other esteemed and well known pure sorts. The cultivation of Beet-root itself is so simple in detail as scarcely to require any further comment than to impress the importance of having it lifted before frost injures it, and in such a manner as not to break the principal root, nor in the process of topping it to cut off the leaves too closely. There is another matter of the utmost moment, and that is its preservation after being lifted; in my opinion this matter does not in some cases have adequate consideration, for occasionally I have observed stacks of these roots placed where an abundant circulation of air is proceeding, the drying effects of which may not probably be disadvantageous in the case of large, coarse kinds, in helping forward the elaboration of the juices in the roots, and thereby making them more palatable, but in the case of such choice kinds as those I have enumerated, it would have a contrary effect, and materially contribute towards shrivelling and impairing them. Our storehouse is of rather a primitive character; it is formed in the angle of two walls which run due north and west respectively, and is made by removing the soil from 2 to 3 feet deep, 6 feet wide, and in length parallel with the wall to the west in proportion to the stock of roots it is expected to hold. The roots are stacked round the sides and end of this space closely together, 2 feet wide, leaving 2 feet open space in the centre to get to them whenever necessary. In the process of stacking no soil whatever is used; the roots are simply laid in regular order, one upon another. After this is done they are covered up with straw or old mats; afterwards a rough roof is constructed at an angle sharp enough to throw off rain, &c., and to prevent the hole being filled with water and protect the roots from saturation before intense frost sets in. As a preventive against damage from frost, an external covering of straw or long manure should be applied. This material further regulates and keeps the temperature within cool and moist—conditions which prevent the roots from starting into premature growth, by which the quality is in some measure deteriorated.

Ordinary Work.—The plants from sowings which were made towards the end of last April of Beet, Salsafy, Scorzonera, and Chicory will be large enough by this time to be singled out, the former in the way recommended above. Salsafy and Scorzonera should have a space left between the plants of from 4 to 6 inches; and Chicory, grown for the sake of its roots to produce blanched leaves for winter salads, requires at least a foot from plant to plant; and all thinning of former sown crops of Onions, Parsnips, &c., which are not completed should be so without further delay. Such operations can be more readily performed after a shower, and the genial rain now falling (May 31) will materially assist to advance these operations and start the plants remaining into a vigorous growth forthwith. Whenever necessity compels the doing of this work under arid sunshine, the plants which are retained should be watered shortly afterwards, to re-establish any which might be upset thereby. The sowings demanding attention will now include Lettuce, Endive, and Radishes among salading subjects, also late Peas, Carrots to be used in a young state during the autumn months, French Beans for the same purpose, and a good sized seed-bed of Rosette Colewort for winter work.

As the plants of former sowings of Celery now pricked out into beds become fit, let them be got into the trenches at once, and be well saturated at the roots after planting. If the general crop of plants is not already pricked out this should likewise be done. Take advantage of the state of the soil after a rain to earth-up Potatos that require it.

Proceed as ground falls vacant with the further planting of all kinds of winter stuff, including Leeks, which are in great demand at some places for making soup. Globe Artichokes. — The growth in these plants with us is somewhat later than is usual; the dividing and planting out of these have, therefore, necessarily been delayed and deferred. Let this be attended to, and give from 4 to 6 feet every way between the plants. Go over plantations of Seakale, and reduce the shoots on these plants to single growths.

Forcing Department.—As frames and pots become vacant let them be filled again with Cucumbers, Melons, Basil, Gherkins, Knotted Marjoram, &c. Early crops of Potatos from those places have turned out well this season, and are entirely free from disease. French Beans coming into bearing will require ample supplies of water, and so also will the latest crop of frame Carrots, which should now be ready for use. Mushroom beds in bearing will need attention occasionally to watering, &c. *G. T. Miles, Wycombe Abbey.*

FRUIT HOUSES.

Orchard House.—In the compartment or house that was started early the fruit will be ripe, or nearly so. In that case syringing must be discontinued, although it is still desirable to sprinkle the paths and borders of the house. If the trees are in pots they will still require a goodly supply of water, but do not water a tree until it is really wanted; should the roots be kept constantly soaked with water the fruits cannot be of good flavour. The question as to the best early Peaches still crops up. I have not sufficiently proved the new American varieties, but

hope that they will be of good flavour even if the fruit should be small. Early Beatrice and Early Rivers we cling to as long as there is any hope of their being really useful. The only point is their earliness. No one cares to eat the fruit even if it does not spoil before it is ripe, which it mostly does. Hale's Early and Early York are two really good Peaches, after them Early Grosse Mignonne, Royal George, Noblesse, Bellegarde, and Barrington; the last, by the way, does not set its fruit very well in the orchard-house. In the late house thinning of the fruits must be attended to, and this should be final. The stoning period presses heavily on the vital forces of the trees, and it is therefore the more necessary that only as many fruits as may be intended to come to maturity should be allowed to remain at the time of stoning. See previous instructions as to stopping the growing shoots. I like to have this done when the points can be readily stopped with the finger and thumb. They very soon break again, and it may be necessary to stop the strongest a second or even a third time if the growth is very vigorous. Pear, Plum, Cherry, and Apple trees may be removed outside to make more room for the Peaches and Nectarines. Some growers have said that a portion of the two latter may be placed outside to ripen off the fruit after it has arrived at this stage. I have done it on one or two occasions, but the result was not such as to permit me to recommend it to others. The hardier fruit trees succeed very well indeed, in some cases produce fruit quite as good as that protected with glass until it ripens. In most cases the fruit is more highly coloured. Get ready the compost to surface-dress the trees in the late house; it ought to be done about the middle of this month. I find a preparation of equal parts good clayey loam, malt or kiln dust, and stable manure thrown together into a heap to ferment is the best I have ever used. A good handful of this spread evenly over the surface of the soil in the pot at intervals of ten days or a fortnight is the best way to apply it. *J. Douglas.*

ORANGE-HOUSE.

It would almost be a repetition of what was stated at p. 591 to go into the details of the daily operations required. The culture of this fruit is very simple indeed, especially if the trees can be kept clean. The insect pests that usually attack the leaves and cling to the wood cannot readily be removed by syringing; if they get bad with scale and mealy-bug, only patient hand-washing with strong soapy water will get rid of them. At the same time if the leaves and wood are thoroughly syringed once daily—twice on hot dry days — these pests do not increase much if the trees are well hand-washed to start with. I have found that Orange trees will fruit themselves into a state of exhaustion, when they have borne a load of fruit three years in succession, and the blossoms of one crop open before the previous year's fruit has been removed. Some of the trees have been rested for a season after this, and with good treatment they soon recoup themselves. *J. Douglas.*

CHERRY HOUSE.

Immediately the fruit is gathered from the trees let the customary plan of washing them at morning and evening by means of a syringe or engine be resumed and continued onwards until growth ceases. In the event of any insects having established themselves about the trees during the time the fruit remained unplucked, when it is gone let the usual remedial applications of quassia-water or fumigation at eventide be at once applied, and repeated if necessary until the pests are destroyed. The main point to which attention in this compartment will now be required is that which is necessary to ensure a proper development of the buds, &c., for another season's work. In the case of trees which have been forced year after year consecutively this process should not by any means be hurried on, but left to natural agencies to finish it, because the growth in trees which have been treated thus will sometimes take place at a premature period, and is a source of much mischief, and, therefore, as far as possible, it should be counteracted. In the intervening period between now and the time when the growth is completed it is very important to have the borders about the roots in a proper state as regards moisture; and in the case of trees which are not over-vigorous, or those which have carried a heavy crop of fruit, it will be advisable to help them by means of weak manure-water or some other compound: we elect for this purpose guano-water. All the ventilators should now be fully opened and left so until the trees have become fit to admit of the sashes being taken off. *G. T. Miles, Wycombe Abbey.*

PEACHES AND NECTARINES.

Early forced trees from which full crops of fruit are gathered through the latter part of May onwards require very careful management to keep them in health and vigour for a number of years, as Peaches that are forced through the winter months have to mature their growth and rest through the latter part of the summer, when, to avoid getting the wood over-ripe, it will be necessary to keep the house as cool as possible after the fruit is gathered by ventilating to the fullest possible extent, exposing the trees entirely by the removal of the sashes in showery weather, and by the frequent application of cold water to the paths and floors. As the trees are cleared, all shoots that have supported fruit and are no longer wanted may be removed, to make room for the free admission of light and air, and full exposure of the foliage to the influence of water through the syringe, otherwise red-spider will speedily attack and destroy it. Any gross laterals will be the better for being stopped, but a very close system of stopping is not advisable, as anything approaching a check has a tendency to hasten the ripening of the young wood and leaves, and as this is the reverse of that which is wanted, a steady and continuous growth is of the greatest importance. Houses in which Peaches are now ripening will no longer require fire-heat unless the weather continues wet and much colder than it was through May; but changes come on so rapidly, and sudden depressions being unfavourable to flavour, the command of gentle warmth through the night and on dull days, with free ventilation, will favour the swelling and finishing of the later kinds. In late houses the tying-in of the young shoots intended for carrying the next year's crop, as well as all extension growths, must have attention. Pinch all intermediate shoots that are not wanted for the proper furnishing of the trees, and afterwards allow a free-and-easy kind of growth until the fruit is ready to commence its last swelling. The internal borders may still be mulched with good rotten dung, lime-rubble, and turfy loam, and in the event of their being well drained water may be given until it passes through into the drains. Young trees in course of training for filling a given space should be properly disbudded and stopped to the exact number of shoots required, and these should be allowed to extend to their full length provided they are equally balanced. This system of training is perhaps better adapted to houses than walls unless the situation is very good and favourable to the ripening of the wood. One of the finest walls of trees in this part of England—Madresfield Court, Malvern—was clothed in about three years, laterals and sub-laterals being laid in, and the fruit is all that can be wished as regards size and flavour. *W. Coleman, Eastnor Castle Gardens, Hereford.*

PLANT HOUSES.

ORCHIDS.—Such Dendrobiums as D. Wardianum, D. crassinode, D. Boxallii, D. primulinum, D. cretaceum, D. lituiflorum, D. nobile, and D. moniliforme will now have got half-way through their growing season, and in many cases the young growing shoots will be making from their swollen base numbers of young roots. It is not only necessary to prevent such roots being devoured by insects, but they should one and all have a certain quantity of fresh open compost to grow in. Where any of the above plants have crammed their baskets or pots with roots, the present will be found a good time to give them more root-room. In doing this there must be no shaking out the plants from their old compost, as every root has now its full share of work to do, and which it would fail to do if the least injured. Let those growing in baskets be put just as they are into larger ones, filling up the space between the two baskets with crocks, fibry peat, and sphagnum. The pot plants should be very carefully knocked out, so as to upset the roots as little as possible. If the roots have taken possession of the drainage, do not disturb them, but place crocks and all into a larger pot, and fill up round with the same compost as used in the baskets. Not one of the Dendrobiums mentioned should, even after they have been repotted, be allowed to get the least dry, or they might get a check that would cause them to finish up the young growth abruptly, and then to start a fresh batch of young breaks, which would of necessity have to be ripened up during the shortest days of winter. D. Bensoniæ and its variety xanthina will now be going out of flower, and attention must be paid to the young breaks. These commence to push roots when only a few inches high, so if the plants require fresh potting or fresh baskets let them at once be seen to, for in a great measure the strength of the next year's bulb depends upon the care and attention now given to the young break and its roots. This Dendrobium requires but a very thin layer of fibry peat and sphagnum to root in. Keep it hot and moist while growing, with its foliage near to the roof-glass. Its two great enemies are bug and red-spider, which must be held in check by frequent brushing and sponging. The autumn flowering D. formosum may also now be safely potted or fresh blocked; it does equally well either way, but when grown on a block it requires a little sphagnum wired over the wood for its large roots to ramble in. Grow this plant under the same conditions as D. Bensoniæ. The moment the spikes of flower show on the bulbs of the strong growing D. Dalhousianum, D. moschatum and D. Calceolaria, give the plants a thorough soaking of water, and from henceforth keep them hot and moist. An excellent place to grow them in is the centre bed of the East Indian-house. Such plants as Saccolabium guttatum, S. retusum, S. Blumei Dayi, S. curvifolium, S. ampullaceum, Aerides virens, A. Fieldingii and A. Larpentæ will now have passed through the flowering stage, and should at once be placed in their growing quarters. If any require more root-room, give it at once, for although in the operation the points of a few roots may be broken this class of plants suffers less from repotting at this time of the year than any other. Those plants shifted in the early spring will now be all the better for a top-dressing of living sphagnum. Saccolabium ampullaceum should in every case be grown suspended near the glass. Two other dwarf growing plants, Vanda cœrulescens and V. cœrulescens Boxallii, should be grown in the same manner. All three are charming plants when in flower, and retain their beauty for several weeks. Where grown strong enough, the Cattleya-like growths of Brassavola Digbyana will be pushing up its large and interesting flowers. At this trying period give this plant very generous treatment. The heat and humidity of the East Indian-house will not be too much for it until the flowers have expanded. These remarks will apply equally as well to Cattleya Dowiana —both flowering and unflowering plants of this species must for the present be kept under a growing treatment; anything like a resting treatment would finish the growth up too soon, and consequently render the plant liable to start away weak unseasonable breaks. This year's spring has been an excellent one for the flowering of that grand Orchid, C. gigas. Where the plants have been handled as advised in a former Calendar, plenty of bloom-buds will now be showing. To assist these plants while developing their flowers, let them be placed in a more shady position in the Cattleya-house, and be kept more than ordinarily moist. Even those plants of this species not flowering must now receive generous treatment, or strong bulbs need not be looked for. Leave the ripening process till after the bulbs are made up. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

BEDDING-OUT.—Now that the principal part of the hardier kinds of bedding plants should have been planted, I would draw attention to the more tender subjects. Alternantheras grown in pots or otherwise should have the lights off and exposed to the full air and sun, and if the weather is favourable they may be consigned to their summer quarters in the coming week. Coleus and Iresine should also be gradually hardened off by free ventilation, and if the weather is favourable fully exposed to the open air during the day. Coleus and Iresine should be good plants when planted out in town, for they will not make much growth after being put out; for, what with the dulness of the weather generally, and dust, they will require but very little pinching to keep them in bounds.

SUBTROPICAL PLANTS.—The planting of all subtropical plants, if the weather should prove favourable, may be proceeded with without delay. The Brugmansia Knightii is perhaps one of the grandest plants for subtropical gardening; not only is it a fine ornamental foliage plant, but its large white trumpet-like flowers are very showy, and moreover their fine odour adds a great charm to that part of the garden in which they abound. For these plants it is necessary that the soil should be of as rich a texture as possible, for they are very gross feeders, and require to be deluged with water, which always tends to impoverish the soil. They should, if possible, have a bed specially allotted to them, and provided with a carpet of some shallow-rooted plant, such as Amaranthus tricolor, or other light-leaved plant, to brighten up their dark green foliage. Wigandia caracasana should have a prominent place where subtropical gardening is practised; the soil should be rich, and good space should be allowed them—5 to 6 feet will not be too great a distance for them to expand their large leaves in. A bed planted with these, edged with Salvia argentea, and a band of pink Pelargonium, with a carpet of variegated Pelargonium underneath, is one of the finest of beds, seldom seen. Polymnia grandis is also a noble plant; this should either have a bed to itself or be planted at some prominent point of a shrubbery. The plants should be planted 4 to 5 feet apart, with a carpeting of some light-leaved plant—Amaranthus, Coleus, or variegated Pelargoniums.

FUCHSIA BEDS.—A Fuchsia bed in a garden, if the summer is favourable, is one of its gems. If possible it should have partial shade, that is to say, it should not be exposed to the full mid-day sun; but if it can get the morning or afternoon sun, that will benefit them. Perhaps one of the best for bedding purposes is Rose of Castile; not only is it a good grower but it is a free bloomer, and tells better on account of its flowers being of a lighter colour than the generality of Fuchsias used for bedding. *W. Gibson, Hospital Gardens, Chelsea, S.W.*

APPOINTMENTS FOR THE ENSUING WEEK.

Monday,	June 7	Sale of Imported Orchids from Borneo, at Stevens' Rooms. Sale at the Mart, by Protheroe & Morris, of the Lease, Goodwill, Stock, &c., of the Floral Hall, Kingsland. Sale of Established and Imported Orchids, at the Mart, by Protheroe & Morris.
Tuesday,	June 8	Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.; Great Summer Show opens at 1 P.M., and closes on Friday night.

To speak of the Sun as a Plant Killer may probably startle some cultivators. It is meant to do so, to startle them out of cruelty to plants into wise care and culture of them. But is not the sun the great source of plant life? Undoubtedly. How then can it kill plants? Easily; for the sun is not merely the source of light, but the centre of heat. The latter is as essential as light to the health and strength of plants, yet, nevertheless, heat in the wrong place, at the wrong time, or in excess, speedily kills plants; and in practical horticulture plants are often exposed to one or more, and sometimes to all, of these evils, either in succession or together.

For example, the leaves or stems of Vines or other plants crowded up against the glass receive the heat and light of the sun in the wrong place, and are scorched or semi-scalded in consequence. The theory that the nearer the glass the more intense the light, and consequently the better for the plants, is not unfrequently carried too far in practice. It hardly holds good as a fact with our modern glass, which is so transparent as to transmit almost every ray of light unimpaired in brilliancy. The intense heat of the sun often renders it desirable to allow a considerable space between the glass and the leaves or stems. This allows the air to move freely, for it is found in practice that a free motion of the air is one of the best and most potent preventatives of leaf-scorching or scalding.

Again, heat is in the wrong place when it is permitted to concentrate its energy on the surface or sides of the pots. In some cases the leaves shield the roots from the scorching heat of the sun; this purpose is frustrated entirely when, under artificial conditions, the sides or surface of the pots are allowed to become unduly heated. Plants in pots on balconies, in windows, or on conservatory stages and shelves, are often half, and not seldom altogether, killed from the root-roasting to which they are subjected. We have felt flower-pots so warm that we could hardly bear our hands on them without being burned. The poor roots, that generally hug the sides of the pots closely, must indeed have a sorry time of it under such conditions; the best of them, too, are always in the worst place—that is, on the outside of the balls, and in closest proximity to the hottest portion of the pots.

Of course good cultivators adopt means to prevent the heat of the sun from crippling or killing their plants. Double potting, the rendering opaque the lowermost squares in greenhouses and conservatories, tend to keep the roots cool; but lady gardeners and amateurs, as a rule, seldom take such precautions, and the consequence is an enormous annual death-rate from the sun's heat in the wrong place. Some plants, too, are much more susceptible to injury from this cause than others. Camellias, for example, suffer perhaps more than any other plants from the heat of the sun on the sides of thin pots. Cape Heaths, Azaleas, Epacris, and all such plants also suffer severely; and, doubtless, one great reason why Camellias do so much better, as a rule, planted out than in pots, is that the planted-out ones enjoy a more uniform root temperature, and escape the killing ordeal of root scorching.

Standard plants—including standard Roses—are often also severely injured from the exposure of the surface-roots to the sun. The top is too high and too formal, or too much of both, to give them the amount of shade provided by Nature, and disease and death follow as a matter of course the violation of natural laws. Many years' experience has convinced us that

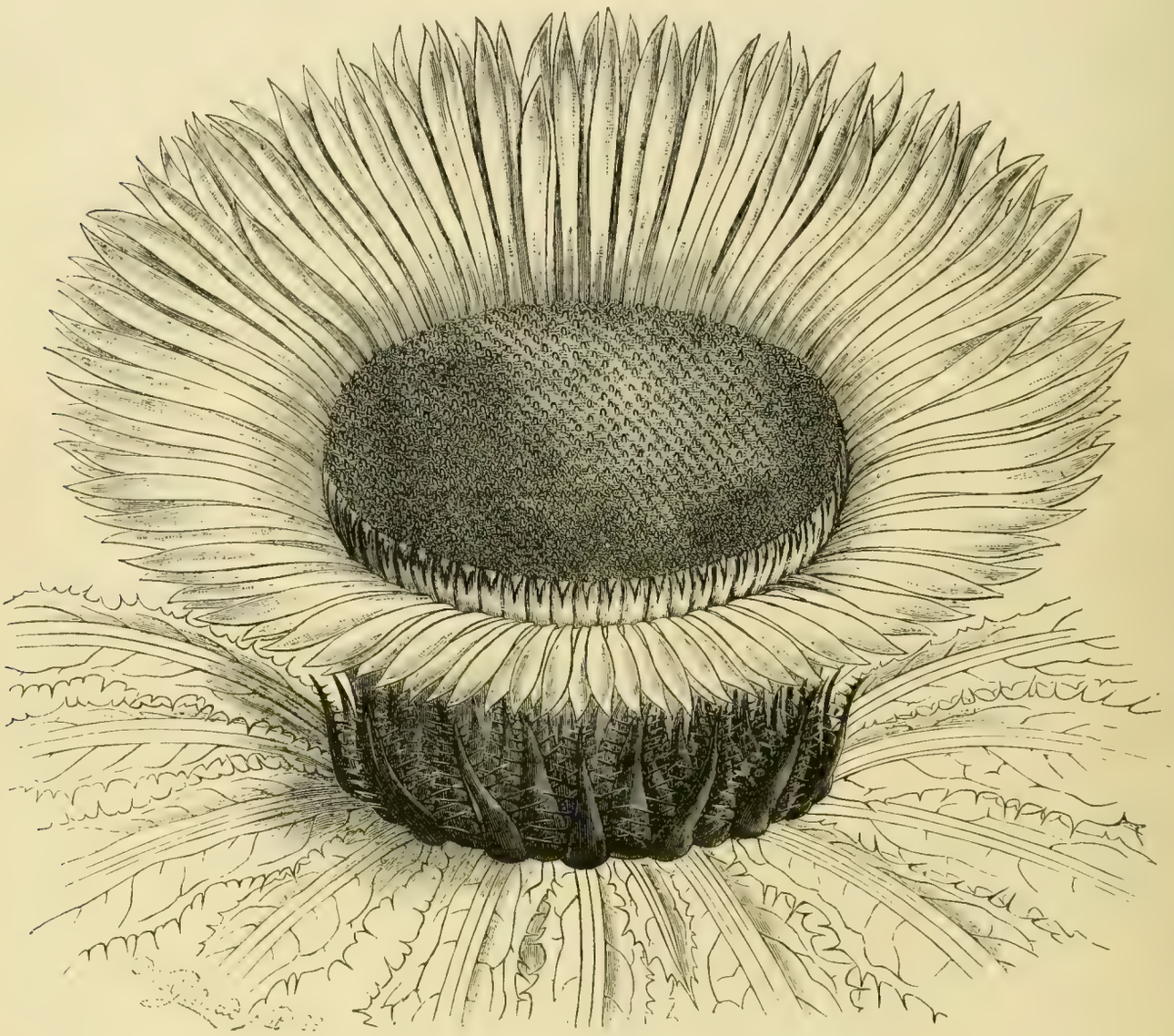

Fig. 123.—Carlina acaulis, nat. size. (see p. 722.)

the sun in the wrong place—that is, beating fiercely on their surface-roots—is one of the first causes of their destruction, and the same holds good of the trunks of Apricot or Peach trees at the base of a wall.

Heat at the wrong time is almost as fatal as heat in the wrong place. For example, who has not observed the serious mischief wrought in plant and fruit houses by any excess of heat in the early morning before the houses are ventilated? Allow the temperature to run up 10° or 20° before the ventilators are opened, and scorched and scalded leaves and colourless semi-flavourless Grapes or other fruit will be the natural result. So certainly do these results follow that a low temperature in the morning and early ventilation are two laws strictly enforced by all skilful cultivators. But if these conditions be reversed, either through accident or ignorance, the penalties of injury or even death assuredly follow, and yet the selfsame plants will bear, not only with impunity, but with positive benefit, a higher temperature at 4 P.M., than that which would have scalded or injured them at 9 A.M. Of course it will be said the sun is losing its power in the afternoon, and so it is. But that depends a good deal on the aspect and angle of the house, and the latter being such as to command more sun in the afternoon than in the morning; it is, nevertheless, true that the plants will bear more heat at the later than at the earlier period of the day. The point may be difficult of scientific explanation, but few men of long practice will challenge that the facts are as here stated.

It may seem too far fetched to blame the sun for the evil effects of high temperatures at night, though we all know that the sun is really the prime and only source of all our artificial heat. But, most cultivators have found that any excess of heat at night is heat at the wrong time with such a vengeance that it sends plants backwards rather than forwards to any good purpose.

But plants have their times and seasons of growth, and each of these needs a different degree of heat. For example, take the Camellia, once more, as an illustration. In its resting and through its flowering stages a temperature of 40° to 45° suits it well; apply 10° or 15° more heat to it then and its flowers fall off in showers till not one is left, and it starts into growth out of season, to its destruction and the ruin of all hopes of any or many flowers next season. But as soon as its last flowers drop, and its wood-buds begin to burst into growth, it will thrive well in a semitropical atmosphere of 65° to 70° in a semi-saturated condition, and should have every direct heating ray of the sun shut out from its tender leaves for a month or six weeks. No sooner is its young wood partially matured, and its embryo blooms formed, than it may be safely inured to the open air, and will bear the full sun without injury through September and October.

Our last point—that solar heat in excess may, nay, does kill plants—is too well known to need elaborate explanation or proof. Cultivators are too familiar with cases of sunstroke in which sometimes the entire plant, oftener a portion of it, is destroyed almost in a moment. But these obvious cases of speedy destruction convey no adequate idea of the full amount of injury or destruction brought about by an access of solar heat. The sudden flux of the sap, the softening and partial rupture and derangement of the tissues, the dissipation and waste of the juices, and consequent partial paralysis from exhaustion of vital fluids and force—these leave traces of weakness behind, which render the plants a ready prey to disease and insect pests of all kinds. For it is as true in vegetable as in animal life, that the weak invite disease while the strong resist it. And as to insect pests, the very excess of heat that lowers or exhausts the vital forces of plants is often most favourable for the increase and strengthening of the pests that prey upon, devour, and destroy plants. Of course it is well nigh impossible for the cultivator to protect himself from the evils of excessive solar heat in the open air, but under glass we can moderate the energy of the sun's heat by shading and

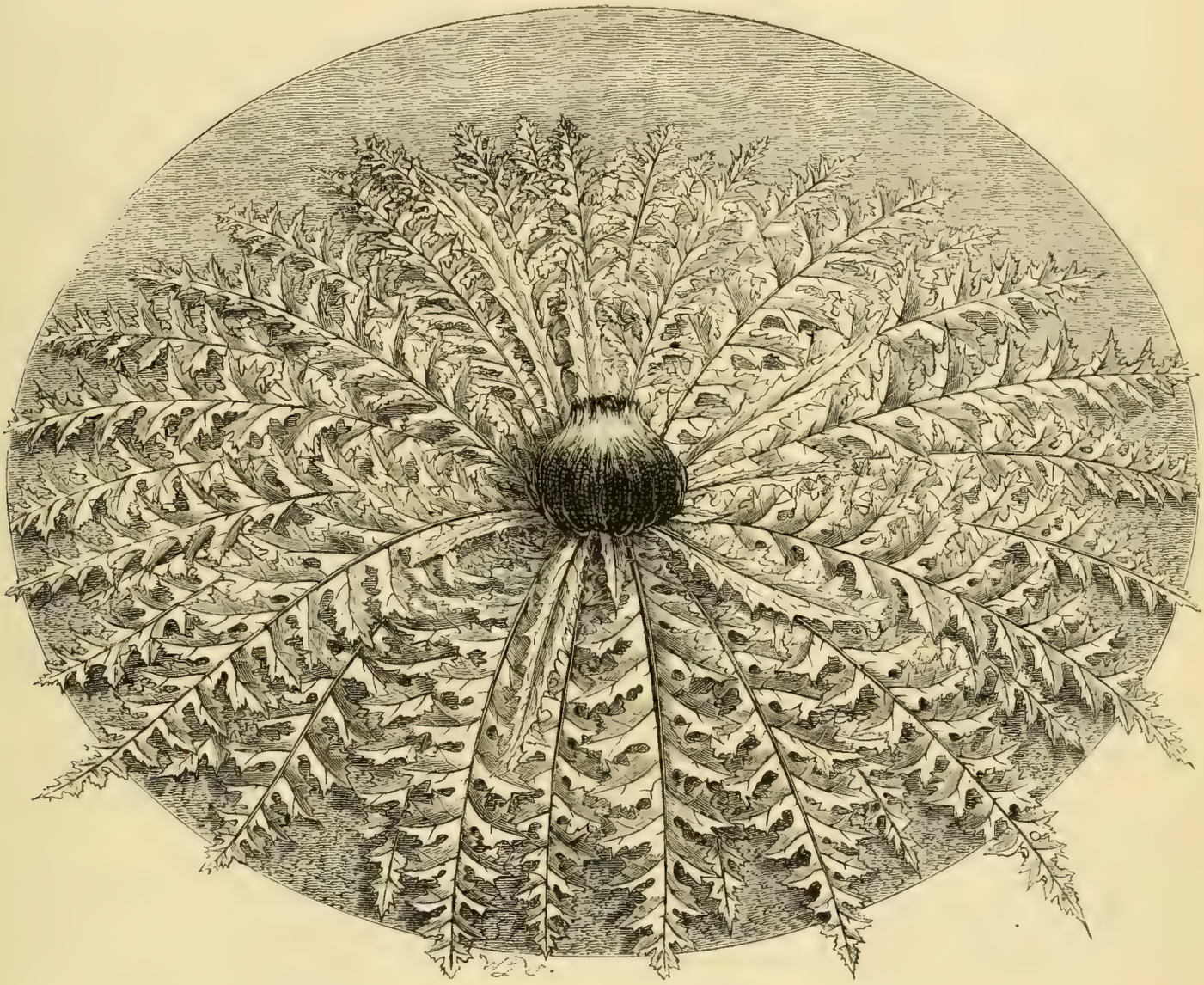

FIG. 124.—CARLINA ACAULIS. REDUCED TO SHOW HABIT. (SEE P. 722.)

ventilation; and one of the first conditions of cultural success consists in seeing that no plant has either less or more heat than suits its character and constitution, and that this heat should be given to it at the proper time in the right place.

—— Carlina acaulis.—The illustrations of the very striking plant represented in figs. 123, 124, were taken from a plant in Mr. Ware's nursery at Tottenham. As will be seen it has the habiit of Carduus acaulis, but in colour and texture of flower it more nearly resembles another of our wild plants, Carlina vulgaris. It may be said also to resemble a Sunflower nestling on the ground in a tuft of pinnately lobed glabrous spiny leaves. It is a common South and Central European plant, but not nearly so much known in our gardens as its very striking appearance would justify. It is probably a biennial, reproduced from seeds sown by preference in heat and afterwards transplanted.

—— Hybrids.—Time was when hybrids were looked at askance. Some thought they were not quite proper, botanists objected to them as confusing the limits of so-called species and upsetting their nicely planned arrangements. Horticulturists thought differently; they saw their way to new combinations, further developments, progress. Then came the immense impetus given to natural science by Mr. Darwin. Physiologists, instead of looking askance at hybrids, recognised their great intrinsic interest, studied out natural hybrids, and sought in them the solution of some of their knotty problems; and so it has come to pass that, instead of being looked on as questionable beings, they are now invested with special interest. Messrs. Veitch have been among the foremost in this work of crossing, and no one who has seen the results obtained in their establishment by Mr. Dominy, Mr. Seden, and others, will venture to deny the fact that great advance has been made from a decorative point of view, while from a scientific standpoint the gain is yet greater. The two plants we figure to-day, and for the opportunity of doing which we are indebted to Messrs. Veitch, are Sarracenia Chelsoni × (fig. 125, p. 725), a hybrid between S. purpurea and S. rubra, and Chysis Chelsoni × (fig. 122, p. 717), a hybrid raised between C. Limminghei, as the female parent, and C. bractescens. The flowers are in racemes, each about 2½ inches in diameter, of a buff-yellow colour, the segments blotched with pink. The lip is striped with red.

—— The Great Show of the Royal Horticultural Society.—We beg to remind intending exhibitors at the great summer exhibition of the Royal Horticultural Society, which opens on Tuesday next, the 8th inst., that entries must be sent in this week. We are glad to learn that the show promises to be one of considerable magnitude and importance, the entries in the plant classes being very good. The display of implements, garden appliances, and other objects of a miscellaneous character, is likely to be very interesting, many of the exhibits being already in position. Many interesting novelties will be submitted to the Floral Committee, including a collection of new Crotons, from the establishment of Messrs. Chantrier Frères, Mortefontaine, near Paris. We sincerely hope the weather may prove favourable.

—— Wall Creepers.—Some of the finest and most showy of greenhouse wall creepers are Rose of Castile and Madame Cornelissen Fuchsia, and a well-known Trachelospermum (Rhyncospermum) jasminoides. Fuchsias are very graceful in habit, and perhaps there are no pillar plants in existence so useful, so easily cultivated, and so showy as Fuchsias if they are chosen of free habit. Once furnish a trellis with flowering wood, keep the plant free from insects, and supply it generously at the root with rich open soil and an abundance of water in the growing season, and there need be no fear of a display of flowers extending over several months. Few persons who have seen the Fuchsias on the roof of one of the greenhouses at Chatsworth will readily forget the display. The Trachelospermum, although it does not last so long in flower, is also a lovely wall plant. Its white clusters of flowers, so chaste and charming to look at, and drooping over its rich green leaves, are very effective. It is one of those plants which is spoiled by over-training, and as a balloon specimen it looks, in a way, bald, even under careful training; but given one tie to the young wood on a trellis, and let Nature do the rest, and the effect is not easily excelled.

—— The Pelargonium Society.—The Pelargonium Society's Exhibition, which will be held at South Kensington on Tuesday, June 29, promises to be an interesting affair. We are desired by the Executive Committee to intimate to intending competitors that the staging of plants should be completed as early as possible on the morning of the 29th in order to allow time for the judging in classes, and the subsequent awarding of certificates to new varieties before the public are admitted. In the case of seedling Pelargoniums not likely to be in condition for judging on the 29th special arrangements will be made for adjudicating on their merits at the floral meetings of June 22 and July 13; but intending exhibitors must give notice on forms which may be obtained from the Honorary Secretary. In connection with the exhibition on the 29th Mr. Shirley Hibberd will give a brief lecture on Pelargoniums in the Council chamber of the Royal Horticultural Society, at 3 P.M.

—— Grubs and the Frost.—How little likely the frost is to hurt some insect pests is shown by the fact that the larvæ of the Crane Fly (Daddy Long-legs), so prevalent this year, were exposed lately by Miss Ormerod to —10° Fahr., or 42° of frost, without injury.

—— Narcissus canariensis. — Messrs. Krelage, of Haarlem, offer this rare species. It is one of the umbellate, small-crowned species, with white flowers. It is figured in Burbidge's *Monograph*, t. 48.

—— Pinnate Leaves in Trifolium minus. —A correspondent sends us leaves of this plant with two pairs of lateral leaflets and one terminal. The lengthening of the axis, and the production of two supplementary leaflets, has sufficed to convert a palmate into a pinnate leaf.

—— The Auricula Bloom of 1880. — In a budget of Auricula gossip contributed by the Rev. F. D. Horner to this month's *Florist*, that gentleman—than whom few are more competent to form an opinion—remarks that "the usual repotting of these plants after the bloom has revealed one—perhaps the —cause why the flowers of 1880 have not, on the whole, been equal to an average of correctness, beauty, and vigour. Many of the plants did not root well from the neck during March and April, and in some cases had bloomed entirely upon last year's roots. Where this was so, the winter foliage did not stand well, and I think, with Benj. Simonite, that the cause has lain in imperfect maturity of the autumnal growth. The lamentable autumn of 1879 has had many floral failures laid to its cold and rainy memory, and there is the Carnation bloom yet to witness against it. The Auricula, indeed, does not need the direct brightness of the harvest-tide sun, but still an untimely sunlessness is felt, even into the very depths of shade, and there is an unripeness in the gloomy light that strikes everywhere. Up to the time of the Auricula bloom the spring had not been genial in the North."

—— The Origin of the Florists' Pink.—As this is the season of the year when the Pink is in perfection, it may be interesting to record the fact, published in an old number of the *Floricultural Cabinet*, that the first Pink worthy of notice was raised in the year 1772, by Mr. James Major, who was then gardener to the Duchess of Lancaster; previous to that there were but four sorts, and those of very little note, being cultivated only as common border flowers. Mr. Major having saved some seed in 1771, he reared several plants, which, blooming the next season, one out of the number proved to be a double flower with laced petals, at which he was agreeably surprised, although he considered it as being only in embryo, and the prelude to still further advance, to be developed at some future period, which is now verified by the rapid strides this beautiful flower made in size and quality during the years which followed. Mr. Major informed the writer of the foregoing remarks that he made his discovery known to a nurseryman or florist, and was offered the sum of ten guineas for the stock of his new Pink; but, acting on the advice of his friends, he declined to sell, and set to work instead and increased the stock with a view to offering it in sale to the public. It was sent out to the public at half-a-guinea a pair (for it has long been a custom to offer Pinks in pairs, a custom which is continued to this day), under the name of Major's Duchess of Lancaster, the orders for which amounted to the sum of £80. It is recorded that one individual ordered as many as twenty pairs, which was considered in those days an unusually large number. It would be interesting to have a bloom of Duchess of Lancaster to compare with the fine double varieties of the present day. We appear to have come to something like a pause in the matter of Pink production, as the flowers are now very large and full, and the lacing is as perfect as can well be conceived. But we never can forecast the time of a new departure in Nature, and some day there may be produced types largely in advance of our most flattering anticipations.

—— Herbaceous Calceolarias at Reading. —It is only when Calceolarias are grown on a large scale that a house full of them is presented to view; and when, in addition to the number of plants, they are well grown, with that balance between foliage and flowers that constitutes perfect plants, and the blossoms are large, finely formed, varied, and handsomely marked, one can appreciate the value of this showy subject for greenhouse decoration. Such a house of Calceolarias is to be seen at the florists' flower seed grounds of Messrs. Sutton & Sons, in the London Road. What particularly strikes the visitor is the strong, vigorous, and healthily clean character of the leaves, destitute of any insect life. And this suggests the point at which many collections, otherwise meritorious, fall away into shabbiness. The great art in growing Calceolarias is to have the foliage healthy and clean up to the blooming time, and then the balance will be maintained during the time of decorative use. Requisite shading, plenty of air, and attention to watering, will then maintain a collection in rude health. Messrs. Sutton & Sons have attained a strain remarkable for the strength of habit the plants possess; perhaps it may be only a characteristic of good cultivation, but it is quite certain that a weakly strain will not exhibit the vigour that is found in a strong one. Those who are taking up the culture of the Calceolaria should commence with a good strain, and improve it to the best of their ability as time rolls on.

—— Double Flower of Rhododendron Dalhousiæ.—Mr. Knight, of Floors Castle Gardens, sends us a flower of this superb plant, with a hose-in-hose corolla and several of the stamens replaced more or less perfectly by petals. The delicious perfume of the plant was in no wise impaired.

—— Double Lapageria.—Messrs. Veitch send us a double flower of Lapageria rosea, in which the number of petals is increased partly by actual increase, partly by substitution of petals for stamens.

—— Linnæus' "Species Plantarum."—Baron Ferdinand von Mueller has had the happy idea of publishing a complete index to the first edition of this work, in which the now universally received binomial nomenclature was first practically acted on in 1753. This edition has become so scarce that authors generally quote the second edition. To ensure conformity to the law of priority this Index, first compiled for the author's private use, will be found very serviceable.

—— Description of Plants.—Under the title of *La Phytographie, ou l'art de décrire les végétaux*, M. de Candolle has published a suggestive work on the method of drawing up descriptive botanical works which demands more than a mere cursory notice. We must confine ourselves, therefore, for the present to a mere mention of its publication, and reserve further comment till the pressure on our space is somewhat less.

—— The Primrose, the Oxlip, and the Cowslip.—A confession of faith, even when not demanded, is often a help to the reader in understanding an author. We may then take as our standpoint the opinion—we hardly dare to call it fact—that in gardens there are the following types of Primroses:—1. The common Primrose, of various shades of colour, single as well as double, but always with a single flower at the end of a slender stalk coming

straight from the stock. 2. The Polyanthus or umbellate Primrose, also of every shade of colour, but bearing an umbel or truss of characteristic Primrose flowers on the top of a stalk sent up from the stock. When the flowers of this kind are yellow, we have an Oxlip but not *the* Oxlip. 3. The Cowslip, in which the flowers are borne in a stalked umbel, as in the Polyanthus, but often, not always, turned to one side; very variable in colour, but always Cowslip-shaped, the lip being cupped. 4. The Oxlip proper, a rare plant, so rare, indeed, that it need not be more than mentioned in this connection. We have now to call attention to a mark of distinction—if it be so—which we have only recently noticed, and do not remember to have seen recorded. If the reader will take a withered Primrose or a Polyanthus he will find, if his experience be like ours, that the corolla withers and dries up in irregular fashion, but in the Cowslip the lobes of the corolla dry up and lap over one another regularly, just as they did in the young unexpanded flower. The flower in its decay assumes the position it had in childhood. The French call this arrangement of the flower as it dies off the *post-floraison*, in contrast to the "æstivation," or arrangement of the parts of the flower in the unopened bud. Will some reader suggest a good English epithet for this "*post-floraison*," which affords useful distinguishing marks in many cases, though often overlooked?

—— THE ROYAL SOCIETY.—At the election of Fellows on the 3d inst., Mr. W. T. THISELTON DYER, Assistant Director, Royal Gardens, Kew, was elected a Fellow *nem. con.*

—— FLORA OF SPAIN. — The last part of the admirable *Prodromus Floræ Hispanicæ* of WILLKOMM and LANGE has just been issued. It may be obtained of Messrs. WILLIAMS & NORGATE. Five thousand and eighty-nine species are described in Latin, with analytical tables, synonyms, references to plates, localities, and observations. It is a model Flora, and one which we are glad to see is to be supplemented by a series of illustrations, to be published in parts, each containing ten coloured plates, and costing 12*s*.

—— ETOILE D'OR CHRYSANTHEMUM.—We can give this plant (figured at p. 560) a high character, not only for effectiveness, but for duration of bloom and hardiness. A plant has been on an outside balcony in bloom for four or five weeks, and is scarcely the worse for the exposure even now. It is interesting to note that the flower goes to sleep, not by infolding its rays over the centre, but by bending them down against the stem, and leaving the dome-shaped "disc" fully exposed.

—— HORTICULTURAL CLUB. — There will be a special dinner of the Club on June 8, the opening day of the great summer show of the Royal Horticultural Society. Those wishing to be present should communicate with the Secretary, at the Club, Arundel Street, Strand.

—— SIR JOHN LUBBOCK.—We are glad to see that this eminent man, representative of so many departments of knowledge, has been elected as member for the University of London. We say this without the remotest party bias, which is out of plac in these columns, and almost as much so in the University. We may, we hope, look to good work being done by the new member in educational matters, and in the improvement of agricultural prospects, by promoting, amongst other things, education in those branches of science upon which all successful culture more or less directly depends. We shall advert to the subject on a future occasion.

—— ELECTRIC LIGHT.—We hear that experiments on the effect of this mode of lighting for the growth of plants are to be carried out at the Alexandra Palace.

—— GRAPES AT ELVASTON CASTLE. — Those who have seen the excellent collections of fruit often shown by Mr. GOODACRE will not fail to have noticed that his Muscat Grapes, especially the Canon Hall variety, are generally very fine in both bunch and berry, with an absence of the defects in setting which this Grape is so liable to. This season it and the Muscat of Alexandria are unusually promising, and notwithstanding the continued cold ungenial weather at the time the Vines were in flower, the bunches have set as fully as Hamburghs ordinarily do. The Canon Hall Vine which produces the Grapes in question is placed right at the end of a lean-to house exposed to the east wind, and affords substantial evidence in favour of the views of those who maintain the advisability of a low night temperature during the blooming season, as Mr. GOODACRE does not keep up a heat of more than 55° to 60° whilst the Vines are in flower, and does not assist the fertilisation in any way, not even so much as by shaking the canes, simply raising the temperature in the day sufficiently to admit of enough air being given to fully dry the atmosphere. We saw them in the middle of May, when just ready for thinning, and some of the bunches were then 14 inches long. The other Vines—Muscat of Alexandria—which occupy the rest of the house gave equal promise of a crop. There is no early forcing carried out here; the first house (Hamburghs) were just about stoning, and were a very fine crop. Following these is a house containing a mixed lot, amongst which are Madresfield Court and Venn's Seedling, that look remarkably well. In the latest house are Lady Downe's, Gros Colmar, Golden Queen, Mrs. Pince, Mrs. Pearson, and Black Alicante. Some of the bunches of this latter variety last year reached 8 lb. each, and look like being as big this season.

—— HARDY PERENNIALS. — A correspondent sends us the following list of those in bloom at Southwood, Bickley:—

Achillæa aurea
,, subumbellata
Armeria maritima rosea
,, juncea
Asphodelus subalpinus
,, tauricus
Anemone narcissiflora
,, sylvestris
,, sulphurea
Anthyllis montana
Astragalus monspessulanus
,, hypoglottis
Androsace coronopifolia
,, sarmentosa
,, lanuginosa
Aquilegia grata
,, glandulosa
,, cœrulea hybrida
,, Bürgeriana
Ajuga alpina
Aubrietia croatica
,, græca
,, Campbellii
,, Columnæ
,, Hendersoni
Alyssum spinosum
,, montanum
Arenaria balearica
,, purpurascens
,, triflora
,, verna
,, norvegica
Bellis rotundifolia
,, cœrulescens
Camassia esculenta
Cynoglossum apenninum
Claytonia sibirica
Coronilla iberica
,, montana
Cyclobothra pulchella
Campanula Warneri
,, Portenschlagiana
,, muralis
,, fragilis
,, aggregata
Centaurea stricta
,, montana
Cheiranthus alpinus
Dianthus cæsius
,, suavis
,, Fischeri
,, neglectus
,, corsicus
,, atrorubens
Dodecatheon Meadia var.
,, Jeffreyi
Dryas octopetala
,, Drummondii
Dielytra eximia
,, spectabilis
Delphinium tricorne
,, nudicaule
Erinus albus
,, alpinus
,, hirsutus
,, hispanicus
Eritrichium nanum
Erodium petræum
,, cheilanthifolium
,, macradenium
,, romanum
Geum montanum
,, triflorum
Genista prostrata
Geranium lancastriense
,, sanguineum
,, Endresii
,, cinereum
,, nodosum
Gypsophila cerastioides
,, repens
Houstonia cœrulea
Horminum pyrenaicum
Hutchinsia alpina
Hippocrepis comosa
,, helvetica
Iris olbiensis vera
Iberis corifolia
Lychnis Lagascæ
,, alpina
,, Viscaria splendens
Lamium longiflorum
Linaria pilosa
,, alpina
,, origanifolia
Lithospermum prostratum
,, purpureo-cœruleum
Lupinus Douglasii
Mertensia alpina
,, paniculata
Myosotis rupicola
Nepeta Reichenbachiana
Ourisia coccinea
Omphalodes Luciliæ
Onosma taurica
Potentilla aurea
,, lupinoides
Polygala Chamæbuxus atropurpurea
Primula farinosa
,, sikkimensis
Phyteuma Sieberi
Phlox setacea var. Carolina
Polemonium reptans Richardsoniana
Pentstemon procerus
Papaver umbrosum
,, armenaceum
,, alpinum
Ramondia pyrenaica
Rubus arcticus
Rosa spinosissima
,, pimpinellifolia
,, pyrenaica
Ranunculus gramineus
Rhodiola rosea
Saxifraga nervosa
,, muscoides atropurpurea
,, hypnoides lætevirens
,, hirta
,, Tazettæ
,, geranoides
,, Schröderi
,, tenella
,, Cotyledon gracilis pyramidalis
,, capillaris
,, cæsia
,, incrustata
,, crustata hybrida
Saponaria ocymoides splendens
Silene quadrifida
,, alpestris
,, maritima rosea
,, pennsylvanica
Tulipa stellata
,, persica
Thalictrum tuberosum
Scilla verna
Veronica saxatilis Grievei
,, officinalis rosea
,, Chamædrys alba
,, pulchella
,, prostrata
,, rupestris major
,, orientalis
Xerophyllum asphodeloides

—— ENTOMOLOGICAL SOCIETY OF LONDON.—The Council of the above Society has been authorised by Miss G. ORMEROD to offer the two following prizes:—£5 for the best essay on the "Early Stages of the Life-history of Sitona lineata, S. crinitus, or other Injurious Species commonly known by the name of Pea Weevil." This essay to give information respecting the season of the year and the locality of oviposition, food of the larva, with locality and duration of larval and pupal stages, and best methods of prevention. £5 for the best essay on "Methods of Prevention or Remedy for Insect Attacks upon Pine or Fir Plantations, with special reference to Weevils or Sawflies." A short life-history of the insect or insects selected for observation will be required. The essays to be accompanied by specimens and any practical information bearing on the subject, such as increase of the insects through neglect, the presence of weeds, the state of the weather, the non-removal of infested timber, &c. The prizes to be awarded according to the practical utility of the essay. The same observer may compete for both prizes. Papers and specimens to be sent to the Secretary of the Entomological Society, 11, Chandos Street, Cavendish Square, W., on or before November 1, 1881.

—— A GARDENER IN OPERA.—Mr. T. SMITH, the gardener at Papworth Hall, St. Ives, took a prominent part in a new opera produced recently, which although performed privately, obtained crowded audiences for several nights in succession. The composer, Mr. S. H. WILLIAMS, brought it out under the patronage of Miss CHEERE, of the Hall, and it is entitled "The Village Heroes." The music, as we are informed, was very taking and melodious, was chiefly sustained by the author, but Mr. SMITH took the part of the old man, and in that capacity sung one or two songs in excellent style. It shows that cultivation and ability in this department are quite compatible with excellence in a purely horticultural training, as Mr. SMITH was equally successful in the prize list at the Cambridge flower show last week.

—— PUBLICATIONS RECEIVED.—We have received from the Botanic Garden, Coimbra, the following brochures:—*Contributiones ad Floram Mycologicam Lusitanicam.* Series 2. F. DE THUEMEN.—*Catalogue raisonné des graminées du Portugal.* Par E. HACKEL.

—— THE WEATHER. — General remarks on the weather during the week ending May 31, issued by the Meteorological Office, London: — The weather during this period has been of a rather changeable character. On the 25th, 26th, 28th, and 29th the sky was moderately clear, but on the other days the weather was generally cloudy or dull. Thunderstorms, accompanied by heavy rain, occurred at some stations on the 26th, and again on the 28th. The temperature has varied very considerably, but has been on the whole a few degrees below the mean for the time of year in all districts. At the commencement of the period readings were rather high in all parts of the kingdom, and in London and at Cambridge 86° and 82° were recorded respectively on the 26th. During the last few days the thermometer stood much lower, and the nights were very cold, the lowest reading of all being 30° in the shade at Shrewsbury during the early morning of the 28th. On this occasion sharp ground frosts occurred in many parts of England. Rainfall was less than the mean in "Engand, S.," and over Scotland, but more than the mean in all other districts; over the greater part of England the excess was rather large. Bright sunshine shows a slight increase over the south and east of England, and in the north of Ireland, but elsewhere a decrease is reported. The number of hours shows considerable uniformity in all parts of the kingdom, but was rather greater (fifty-one hours) in "England, S.," and less (thirty-two hours) in "Scotland, W.," than elsewhere. The wind was generally south-westerly during the first two days, very variable on the 27th, westerly on the 28th, between S.W. and N.W. in most places on the 29th, and southerly to south-easterly on the 30th and 31st. In force it was generally moderate in the east and south, but fresh in the west and north, and on the 30th blew with the force of a gale at some of the most exposed stations on our western and northern coasts.

—— GARDEN APPOINTMENTS. — Mr. GEORGE MALCOLM, late Foreman at Eridge Castle, has been appointed Head Gardener to J. TOMKINSON, Esq., Willington Hall, Cheshire.—Mr. CHARLES BENNETT, late of Mentmore Gardens, has been appointed Gardener to E. PIKE, Esq., Bessborough, Cork.

Home Correspondence.

The Falling of Peach Leaves.—Will Mr. Keel, of Newton Park, Bristol, be good enough to explain his method of curing this? At p. 629 he describes the symptoms or remedies applied which failed, but leaves us in the dark as to what succeeded. This is rather too bad. I read my *Gardeners' Chronicle* hurriedly, I admit. When I got to the end of the half-column I thought I must have over-read something, so I read it again, and found symptoms and remedies with which we were all familiar, but not a word about the curative processes which have proved permanently effectual. Mr. Keel will see that by an oversight he left the jam out of the pie. Perhaps he will be good enough to put it in, and oblige myself and many readers. The frost of the 19th has produced the symptoms described on many trees, and it may be added that very few of us have yet found any sure and certain remedy for these disfiguring and destructive phenomena. I think the Rev. Mr. Radycliffe propounded a paint or dressing cure some years since in your pages, possibly he also would be good enough to favour us with his experience in the *Gardeners' Chronicle*. *D. T. Fish.*

Dying Apple Trees. — Instances of established Apple trees dead and dying, as described by Mr. Alex. Dean in last week's *Gardeners' Chronicle*, may be seen in many orchards; but after looking carefully into the matter I have come to the conclusion that the severe frost is not to blame, but the extreme wet of last summer, which caused the limbs to canker and the roots to rot. An examination of the roots will, I believe, confirm this statement. Plums and Cherries are not such a heavy crop as they promised to be a fortnight ago. *C. L., Hounslow, May* 31.

Odontoglossum vexillarium.—In Mr. Smith's fine collection of Orchids at Brentham Park, is a nearly white variety of Odontoglossum vexillarium, which I think is most beautiful, and distinct from anything I have hitherto seen. *Henry Knight, Floors.*

Substitutes for Box Edgings.—Your correspondent who wishes for a substitute for Box would find the new rose-coloured Thrift (Armeria rosea) a pretty edging, if the soil is dry. It is in bloom nearly the whole summer, and soon covers the edging-tiles, if they are used, and they are certainly an improvement. If for a damp soil, the minor Periwinkles are beautiful hardy evergreens. The shoots should be pegged down after planting and 7 inches allowed between the plants. The edging tiles ought to be used for these also. If for broad walks or drives two rows of Vinca are used, variegated and green alternating in zigzag; the effect is good, as they soon become a thick mass of lovely shading in tender greens, and give no farther trouble. Gentiana acaulis is pretty for the purpose if the soil is damp or peaty, but in a dry loam it is unsatisfactory. *H. M. E., May* 31.

The Cuckoo.—In describing the beauties of Loughton your correspondent, "The Rambler," alludes to the "friendly cuckoo." I once kept a cuckoo for six months, and of all the disagreeable, spiteful, unamiable, and, I may add, unfriendly and untameable creatures I ever met with, it surpassed them all. What would the birds whose nests he spoils say of the cuckoo's friendliness? *C. L., Hounslow, May* 31.

Venerable Yew Trees.—To those interested in such matters, I may say that there is (or was a few years back) a magnificent Yew in the churchyard of Darley Dale, Derbyshire. It was said to be "nearly a thousand years old," and had lost several limbs in its long life, but was a most picturesque subject for the pencil. About three miles from Brecon, South Wales, there is a grand group of Yew trees in their prime, thirteen or fourteen in number. A correct spelling and pronunciation of the name of this village would be hopeless to any Saxon, male or female; but it is close to the beautiful river Usk, and will repay a visit to those who want a ramble on a long summer day. *H. M. E.*

Epimedium Perralderianum.—This is a species in which I have taken a special interest for some years, and observing that under the description in Mr. Baker's synopsis (p. 683) a plant contributed to Kew by Dr. Reichenbach is acknowledged, it may be of interest for me to state that as far back as 1871 there was a strong and well established clump in the old dell by the flagstaff. Its size at that time would indicate its being planted a considerable time before, and being only discovered in 1867 it must, if contributed soon after, have made fast progress. I clearly remember its recognition at Kew by Dr. Reichenbach, who knew it by sight, and that was the first botanical recognition the plant could obtain, previous reference having been unsuccessful, though the name was with it from the first of my notice. It always appeared to me that this species had a particular beauty and distinctive feature in the undulation of the leaf-margins; from this it is always elegant, and at any time the half of a leaflet could be picked out from among all the other cultivated species. *R. I. L.*

The Orchids at the Late Manchester Show.—In reply to your correspondent, "An Exhibitor," who seems to assume a kind of "I am Sir Oracle" tone, I, as an exhibitor, have to say that if his idea were carried out at exhibitions the Orchid display would be very poor indeed; and if a collection is to be disqualified owing to the making up system, nearly any collection of Orchids I have seen staged both at the London and Manchester shows would have to be struck out of the competition. Cypripediums, Odontoglossums, Masdevallias, Phalænopsis, and other kinds are, as a rule, made up, that is, several plants put into one pot. Your correspondent says: "If making up is admissible, let it be done in such a manner that an appearance of naturalness is evident in the plants staged;" but "strange that any difference should be 'twixt Tweedledum and Tweedledee." Again, we are told that "the judges should have thought seriously before doing so and so." How does your correspondent know but that the judges did "think seriously"? The judges engaged at the Manchester exhibitions are, as a rule, the best men to be had in the kingdom; therefore, I do think it somewhat egotistical on the part of your correspondent to tell the judges what they should do. But his advice does not stop here. The compilers of the schedule are advised to "be a little more careful." And what is this advice based upon? Simply because they have (wisely, I think) left out the word "distinct." Surely the judges take into account the element of variety in a collection, and this I am sure has an influence upon them in making their awards. Finally, the show managers are told "that they should have a thought to the advancing and furthering of the objects for which shows were intended—to increase and extend the love and interest of the public in all that pertains to horticulture." Whether the "show managers" have this in view or not I cannot tell; but one thing I know, that no society in the kingdom has done more during the last fourteen years "to increase and extend the love and interest of the public in all that pertains to horticulture" than the Botanical and Horticultural Society of Manchester. The last bit of advice is to the exhibitors to "observe a watchful attitude." At some exhibitions we exhibitors have to observe a painfully watchful attitude, inasmuch as we have to watch for our prize-money for a very long time before we get it. Not so at Manchester; the money is there for all exhibitors on the last day of the show. In conclusion, permit me to say that I have not the slightest objection to any one making a complaint, but what I do object to is for any one to assume the "superior person." First, there is advice to the "compilers of schedules;" next there is advice to the judges; then advice to the show managers; and finally exhibitors are told what to do. *Spectator.*

—— I quite agree with "An Exhibitor" of Orchids in his complaints in last week's *Gardeners' Chronicle*, regarding the judging at the Manchester Whit-week Show. It is a well known fact amongst Orchid growers in this district, that practical Orchid growers are seldom invited to judge at Manchester, and there was no exception to the rule this year. It was quite visible to any one with the least knowledge of Orchids, that the prizes were awarded to large masses of colour at first sight; the plants could not have been examined point for point, as neither high-class cultivation nor value counted for anything. *Another Exhibitor.*

May Blossom in May.—Singularly enough, though so many plants seem late this year, the Thorns are not. Many of them have been in flower for a week or ten days, and the whole will be out in a week or so, which is early for this neighbourhood. I have often been unable to get a sufficiency of May in May to give a May dinner—one, that is, at which the dinner-table is wholly dressed with Hawthorn bloom; this year a few solitary trees were in flower by the 30th, and the whole are well advanced for the time of year. The crop of blossom, like so many others this year, is capricious, some trees being white as a sheet, and others as green as if the flowering season had not come—as to such it has not—there being no buds to expand. *D. T. Fish.*

Ornithogalum arabicum, &c.—I enclose some flowers of Ornithogalum arabicum, which a friend who sent them from Algiers tells me is to be found growing in the fields in the greatest profusion. If hardy it will be a welcome addition to the herbaceous border, where the Trilliums, yellow and orange Trollius, Cypripediums, Aquilegia cœrulea and its hybrids, &c., make so lovely a display at this season. Talking of hardy border plants, with some novel introductions it seems a case of *le jeu ne vaut pas la chandelle*, notably with Polemonium confertum, the flower of which must be very beautiful, judging from the plate, but it has never survived three months with me. Nor has a friend of mine, a past mistress in hardy gardening, succeeded any better, as it seemed to be making its last dying speech and confession when I had the pleasure of visiting her garden a short time since. *W. M.*

Passiflora racemosa.—One reason why this beautiful climber—I had almost written finest of all the Passion-flowers—is not more generally grown is that in the hands of many cultivators it proves a shy bloomer; but this arises chiefly through errors of judgment in the treatment. The old flowering stems should never be cut off, as they flower again and again, and year after year. The same stems can hardly be termed continuous, but rather intermittent bloomers, and if left intact they will seldom be long flowerless. When they become too long it is an easy matter to tuck them up with a tie. The mode of growth and flowering of this splendid Passion-flower are so peculiar that if the same exhausted flower racemes are removed it must needs prove a shy bloomer. Again, this Passion-flower should receive little or no pruning. The shoots become flower racemes, as it were, and the more of them the better. The further and the looser the shoots run the better also they seem to flower. By attending to these hints, which have been picked up from many years' experience with this plant, it will generally reward the cultivator with a brilliant display of its most brilliant and graceful blossoms. *D. T. Fish.*

Schizanthus pinnatus.—Few things are more gay and useful for the conservatory during the present season of the year than Schizanthus pinnatus and its several pretty varieties. They are easy to cultivate and inexpensive. A 6*d.* packet of seed will produce 100 plants. We have a number of plants flowering at the present time in 6 and 8-inch pots which have upwards of 300 flowers on each plant. They have been much admired, and are certainly very beautiful—almost, if not quite, equal to many of the small-flowered Orchids, the flowers of which they much resemble. For flowering in April and May we sow the seed in August in rich light soil, consisting of light loam, leaf-mould, and silver-sand. When the seedlings are 2 inches high they are potted singly into 3-inch pots, and placed on a shelf in the greenhouse close to the glass, where they are kept through the winter, during which time they require but little water. As soon as active growth commences in the spring they require frequent pinching back to induce a busy habit, which also greatly increases the number of flowers. To any one who may not have already grown these pretty plants I strongly recommend them to do so, and I feel sure they will be pleased with the result. *H. Ellis, Summer Hill, Pendleton.*

Bougainvillea glabra.—I can fully testify as to the hardy character of Bougainvillea glabra, as stated at p. 653, as I have it planted out with Stephanotis floribunda, and both have lived through the past winter in a night temperature seldom above 40°. From December 21 to 26, 38° was the highest point. The Bougainvillea is now growing freely, and showing flower at every point. *Thomas Weaver, Oakley Hall Gardens, Basingstoke.*

Verbascum phœniceum.—This hardy herbaceous perennial is now coming into flower, and deserves a recommendation. It grows anywhere and in any soil, is never obtrusive, as the leaves lie on the soil and never look shabby. The flower-spikes are from 1 foot to 18 inches high. When the principal spike is over the laterals continue the flowering season into August or September, especially if not allowed to bear seed. Seedlings of the year flower from July till stopped by hard frost. The colour varies from every shade of purple to pink and white. The plants may be moved with a trowel without injury at any time, even when in flower. I wonder it is not more generally grown. I have several hundred now in flower, and move them about to fill up gaps just as I please. *C. Wolley Dod, Edge Hall, Malpas, May* 28.

Effects of the Weather on Vegetation.—I send you a few specimens of various trees, to show you the effect of the recent cutting N.E. winds. The month of April was very mild till the last week, when the wind suddenly changed to N.E., from which point, with very slight variations, it blew hard for a month, completely shrivelling the young growth of all trees exposed to it. Indeed, the hedges and trees are scorched as though by fire. We are situated about 1½ mile from the sea, and the trees on the north side of the park, Elms, Poplars, &c., are as devoid of foliage as they were in November. I enclose specimens. In the garden we are sheltered, and so have in a measure escaped; but I fear there will be but little fruit. Plum trees were covered with blossom, but now the leaves are all curled and full of aphides. Apples and Pears bloomed well, but few are setting. Vegetables are suffering fearfully from

drought; we have not had a good rain since October 3. I never saw the ground so dry at this season. Onions, Carrots, Turnips, &c., are going back, and until we get rain, planting Savoys, &c., is out of the question; grass is brown as a berry, and, as I heard a person say the other day, smells in the fields like hay now, but it is only a few inches high. In brief, the prospects for the coming summer are gloomy indeed, and to assist the drought we have almost every day a cloudless sun and strong wind. *Thos. Woodford, Quex Park, Thanet, Kent.*

Setting Peaches.—In answer to your correspondent, Mr. Williams, as to the nature of the soil in which our Peach and Nectarine trees are growing and fruiting so successfully, I may say that the gardens here are old; and the original soil has got mixed with other soils, and manures have been constantly carted on to it. I may also say we grow good vegetables from the same borders, viz., Potatos, Cauliflowers, Brussels Sprouts, and salads, all together with the fruit trees, but not cropped close up to the walls. My recommendation is, Soil not too stiff nor too light but heavily manured, and keep the growing crops clean, not omitting the fruit trees. *Robert Smith, Kenward Gardens, Spalding, Kent, June 1.*

The Weather.—June has come in with a biting north-east wind—more like December than June. In the shade and shelter the thermometer is barely 50°, but in exposed positions and in the teeth of the wind, one might take it to be at freezing-point. I see by the morning papers you had a quarter of an inch of rain in London: we had none, and to-day we have scarcely had any, though it has threatened and even tried to rain several times. The two things desiderated now are thorough soaking rains and genial warm weather afterwards. Unless favoured with these soon, the cold and the drought threaten to prove as disastrous to horticulture as the sunless sappy summer of last year: but surely June will bring some seasonable weather. The garden and the farm pine and languish for a warm dripping June, to put all things in tune. A good hay crop is already out of the question, and seldom has the yield of Asparagus in the open been so scanty and poor. The early Peas are already stunted beyond recovery, still much may be done with vegetables after this time of year. The fruit, already severely hit by Whit Tuesday's and other frost will, it is feared, prove but a scant crop once more. Apples are already dropping: the Court pendu-plat, however, is not yet in flower—only a few blossoms expanded on June 1. Surely no blight, nor frost, nor stinging East winds can now rob us of good basketfuls of this useful variety. The Besspool is also late, but not nearly so late as the Court pendu-plat. Potatos have sprung up rapidly on the heels of the frost, and are looking well on the whole. Some of the smaller-topped Ash-leaved strains are already fit to eat in the open, where they escaped the frost, and our provincial markets are full of new Potatos from Naples and Portugal, at from 2*d.* to 4*d.* per pound. New Potatos, however, travel badly unless in baskets, and most of these seem to have come in bags, and are badly bruised, which gives them a strong flavour. With rain and genial weather the Strawberry crop will prove plentiful and good, though with such weather it will be late. I can endorse all the praise that has recently been lavished on the President, either for forcing or indoors. *D. T. Fish.*

FIG. 125.—SARRACENIA CHELSONI. (SEE P. 722.)

Sempervivum Disease.—In reference to the hitherto rare occurrence of the fungus of this disease in Britain, the Rev. J. E. Vize, of Welshpool, who has long made a special study of microscopic fungi, writes us that he has for years searched in vain for it. It was found at Banbury in 1870, and at Birmingham in 1879, and Mr. Berkeley has recorded its occurrence in Warwickshire. If any of our readers can give us further information as to its presence elsewhere, we shall feel obliged. The original name for Endophyllum sempervivi is Uredo sempervivi, A. and S., found in June in Sempervivum globiferum; Léveillé terms the plant Endophyllum Persoonii. *W. G. S.*

Reports of Societies.

Crystal Palace Great Flower Show.—This was held on Saturday, May 29. As usual, the plants and flowers were arranged in the centre transept, and it is only just to the Superintendent to say that he made an effective use of his material. As an exhibition it was certainly inferior to what we have been accustomed to, owing principally to the lack of quality of the exhibits in some of the principal classes. Azaleas, for instance, which help so much to give effect to an early summer exhibition, were poor, with the exception of those sent from Mr. C. Turner, of Slough. The Pelargoniums in the amateurs' glasses were very poor indeed, and the stove and greenhouse flowering plants were far below what we had become accustomed to see. On the other hand, there were many plants of first-class merit. The collections and groups of Roses from Slough and Cheshunt were deserving of all praise, and Mr. B. S. Williams, of Holloway, fully maintained his well-earned reputation.

Stove and Greenhouse Flowering Plants.—Messrs. Jackson & Son, Kingston, gained the 1st prize in the nurserymen's class for nine. The Darwinia fuchsioides was a well-trained and finely-flowered specimen; Pimelea Hendersoni, a fine plant, well flowered; the centre plant, of Darwinia tulipifera, was also good and well flowered. The remaining plants were Dracophyllum gracile, Azalea Roi de Hollande, Clerodendron Balfourianum, Aphelexis macrantha purpurea, a very good Anthurium Scherzerianum and Azalea Extranei. Messrs. B. Peed & Sons, Norbury Nurseries, Lower Streatham, were 2d; they had a splendid Anthurium Scherzerianum, an immense specimen of Pimelea mirabilis, and two good Heaths. Mr. B. Peed, gr. to Mrs. Treadwell, St. John's Lodge, Lower Norwood, had a good group of nine, and gained the 1st prize in the amateurs' class. He was very closely followed by Mr. Child, gr. to Mrs. Torr, Garbrand Hall, Ewell. The 1st prize lot contained good Heaths and a fine plant of Imantophyllum miniatum, with seventeen trusses. Mr. Child was almost overdone with Azaleas. Mr. B. Peed was again 1st for six, and Mr. J. Weston, gr. to D. Martineau, Esq., Clapton Park, was 2d.

Heaths were very poorly represented for a great exhibition: Messrs. Jackson had the best, and Mr. B. Peed the 2d best, none of the plants calling for any special remark.

Azaleas.—Mr. Child was the principal exhibitor in the amateurs' class, but the plants were not so good as we have usually seen them come from Garbrand Hall. In the trade classes, Mr. Chas. Turner, of

Slough, exhibited a good group of nine plants; they were not very large, but well flowered and nicely arranged as to colour. The varieties were Cedo Nulli, Reine des Fleurs, Chelsoni, Duchesse Adelaide de Nassau, Souvenir du Prince Albert, Madame Cannar, d'Hamale, Ferdinand Kegeljan, Etendard de Flandret and Mons. Thibaut. The same exhibitor showed a splendid group of eighteen plants in 9-inch pots, comprising the best varieties in cultivation. They were Grandis, Duc de Nassau, Jean Vervaene, Charmer, Reine des Fleurs, Mdlle. Marie Lefebvre, Mrs. Turner, Mons. Thibaut, and one or two others.

Orchids.—These were very well shown. Four exhibitors came forward in the amateurs' class. Mr. Child was 1st. He had a very fine Aerides Fieldingii, with five spikes; a Saccolabium retusum, with three; Lælia purpurata, a fine form; and a good Cypripedium barbatum superbum. Mr. A. Cove, gr. to D. G. Straight, The Limes, Lower Tulse Hill, was 2d. He had a very good Odontoglossum citrosmum and a nice Vanda suavis. Mr. B. S. Williams, of Holloway, exhibited a very fine group of nine. It comprised Cattleya Warneri, Epidendrum vitellinum majus, C. vexillarium, C. Alexandræ, Cypripedium barbatum superbum, a Lælia purpurata, with eight spikes; Cattleya Mossiæ, Masdevallia Lindeni, and Cypripedium niveum. Mr. James, Castle Nursery, Lower Norwood, was 2d. He had a good Dendrobium suavissimum.

Roses.—The large specimens exhibited in the class for nine by Mr. Turner, were very grand, and gained the 1st prize. They were Charles Lawson, Juno, Céline Forestier, Madame Lacharme, Duke of Edinburgh, La France, &c. Messrs. Paul & Son, of Cheshunt, were very little behind; their plant of Céline Forestier was well flowered and of immense size; Juno, Charles Lawson, Beauty of Waltham, &c., were all very fine specimens. Mr. Turner also exhibited a good collection of eighteen plants in 9-inch pots, comprising a select assortment of the best Roses, all in good health and with superb blooms.

Foliage Plants.—This was a principal feature in the exhibition. Mr. Rann, gr. to S. Warren, Esq., Handcross Park, Sussex, showed splendid specimens far in advance of the other exhibitors: he gained 1st prizes in a collection of nine, for six Crotons splendidly grown, and also for nine Dracænas. Mr. B. S. Williams had the best foliage plants in the nurserymen's class, the best specimens in his collection being Croton Hendersoni, Andreanus, Youngii, angustifolius, majesticus and Williamsii; Dracæna Goldieana, vivicans, superba, amabilis, &c.; Encephalartos Frederici Guilielmi, Casuarina sumatrana, &c.

Mr. B. S. Williams was 1st for a good group of Ferns; Mr. C. Horton, gr. to H. Moser, Esq., Beulah Hill, holding a similar position in the amateurs' class. Mr. Williams had handsome Gleichenias, and the other exhibitor a grand plant of Adiantum cardiochlæna. Mr. Turner gained 1st prizes for stage and Fancy Pelargoniums; Mr. Laing, of Stanstead Park, Forest Hill, for flowering Begonias. Mr. Dobson, of Isleworth, gained a 1st prize for a group of nine Calceolarias, an equal award being given to Mr. Bird, gr. to J. A. Causton, Esq., West Dulwich. Mr. Dobson's was the best strain, and Mr. Bird had the best plants. Messrs. Laing, Messrs. B. Peed & Sons, and Mr. Bird exhibited groups of plants. In Mr. Laing's collection was a good plant of Anthurium Warocquianum, to which a First-class Certificate was awarded as a new foliage plant. Messrs. Laing & Hooper, of Bath, exhibited cut blooms of Pansies. The General Horticultural Company exhibited a noble group of Dracænas, comprising many fine forms, also a fine lot of well-marked Gloxinias. Mr. B. S. Williams had also a very fine group of new and other plants, four of which received First-class Certificates, viz., Anthurium Warocquianum, Pteris internata, Croton Warrenii, and Nepenthes Williamsii. Messrs. Laing received First-class Certificates for tuberous Begonias Mrs. Laing and J. S. Law; Mr. Miles, of Brighton, for a dwarf bedding scarlet Pelargonium, West Brighton Gem; Messrs. Jackson for Decorative Pelargoniums Captain Beattie and Rosy Morn; and Mr. J. Peed, Lower Norwood, for Fancy Pelargonium Duchess of Connaught. In the miscellaneous classes Mr. Cannell, of Swanley, showed a group of handsome Coleuses and baskets of bedding Violas covered with bloom.

Edinburgh Botanical: *May* 13.—The Society met in the class-room, Royal Botanic Garden; Mr. Gorrie, President, in the chair. The deaths of Miss Frances Hope, a Lady Associate, and of Professor N. I. Andersson, of Stockholm, a Foreign Member of the Society, were noted. The following communications were read:—

I. Microscopic Demonstration of the Fungus (Saprolegnia ferax) of the Salmon Disease, by Mr. A. B. Stirling, Assistant-Curator of the Anatomical Museum, University of Edinburgh: communicated by Professor Dickson. Several of the suite of specimens lately presented by Mr. Stirling to the museum of the Royal Botanic Garden were exhibited under the microscope, and the mode of propagation of this fungus and the way in which Mr. Stirling holds that it destroys salmon and other fresh-water fish in our rivers demonstrated. Professor Dickson, in explanation, said that the Saprolegniæ were closely allied in their general structure to such algæ as Vaucheria. They consisted, like Vaucheria, of branching filaments, which, however, were continuously tubular, differing in that respect from the articulated filaments which occurred usually in fungi. Like Vaucheria, Saprolegnia was reproduced both sexually and non-sexually—in the latter process by zoospores, which, when set free, were capable of moving in the surrounding water. These zoospores were produced in enormous numbers, and must tend widely to disseminate the species.

II. Mr. Taylor exhibited about thirty specimens of dried plants from Mount Zombra, Central Africa. They had been collected there, as well as on the banks of streams and on altitudes of 7000 feet in the Shire highlands, by Mr. John Buchanan of the Church of Scotland Mission there. Professors Balfour and Dickson both complimented the zeal and perseverance of this solitary collector.

III. Note on a new method of drying plants on paraffinised paper. By Mr. John Galletly, chemist, Addiewell: communicated by Mr. Taylor.

IV. Report on temperatures, and on the progress of open-air vegetation at the Royal Botanic Garden. By Mr. Sadler.

V. Miscellaneous communications.

Amongst the exhibits was the shrub of Aristotelia racemosa, twigs of which were shown by Dr. Cleghorn at last meeting, grown in the greenhouse of C. Cowan, Esq., Westerlea, Murrayfield: also a magnificent double-spathed Anthurium Scherzerianum, sent by Mr. Hugh Johnstone, of Messrs Dickson & Sons; and a double-spathed Richardia æthiopica, sent by the Rev. Hugh Taylor, Humsheugh, Northumberland. Mr. J. Campbell, of Ledaig, Argyllshire, sent a number of flower sprays from his garden, two of which, Eurybia argophylla and Escallonia macrantha, though flourishing with him, had been killed by the severer weather of the east coast. Mr. Dunn, Dalkeith, showed a magnificent specimen of Morchella esculenta, gathered in his locality. Mr. S. Grieve sent fungi, taken two days previously, growing in darkness, in a cave 90 feet from the surface in the island of Colonsay. A donation to the museum from Mr. Thomson of Travancore was placed on the table, consisting of a handsome box made of Cocoa-nut Palm wood with a Jack-wood lid; on the table also were numerous hardy and herbaceous plants, many alpine, from the propagating department of the Royal Botanic Garden, including Saxifraga MacNabiana, Darlingtonia californica, Primula sikkimensis, Primula pedemontana, Daphne striata, and Meconopsis aculeata.

Bath and West of England Agricultural: *Worcester, June* 2—7.—The horticultural department of this great exhibition is as usual under the management of the Hon. and Rev. J. T. Boscawen, who, as heretofore, has succeeded in making up an effective exhibition, with the materials, good, bad, and indifferent, which he has been able to collect in the district. The most extensive contributors are Messrs. R. Smith & Co., who have sent from their world-famous nurseries at St. John's a large and varied assortment of plants and cut flowers. The former comprises a quantity of small pot Roses and Rhododendrons, well-flowered; some handsome specimen Conifers and Japanese Maples, as well as representatives of many other pictorial trees; and a great variety of herbaceous and alpine plants. These latter adorn a rockery arranged at one end of the tent. The next largest contributor is Earl Somers, Eastnor Castle (Mr. Coleman, gr.), to whom Mr. Boscawen is indebted for many large and well-grown fine-foliaged plants, which contribute most materially to the general effect. Mr. Coleman also shows a grand pair of plants of the white Paris Daisy, which measure a yard or more in diameter, and are a mass of blossoms. A capital collection of between fifty and sixty Orchids is shown by W. E. Brymer, Esq., Ilsington House, Dorchester (Mr. Powell, gr.). In this group are to be seen Epidendrum prismatocarpum, with nine fine spikes; E. vitellinum, also fine; Dendrobium Dalhousianum, with a dozen or more spikes; a capital piece of Masdevallia Harryana, Odontoglossum vexillarium, with eight spikes, five to six flowers on each, &c. Sir William Marriott, Down House, Blandford (Mr. Denny, gr.), also contributes a choice collection of Orchids, which includes several good varieties of Odontoglossum Alexandræ, a fine specimen of Oncidium macranthum, Cattleya labiata, &c. With this group is also shown one of the finest flowered masses that we have seen of the Orchid-like Utricularia montana. A number of Orchids of an interesting character are also shown by H. C. Miles, Esq., Shirehampton (Mr. W. Perry, gr.); and Captain Dymond, Brooklands, Dorchester (Mr. Lye, gr.), exhibits Odontoglossum citrosmum roseum, with six magnificent spikes of flowers; also a finely grown Aerides, not named. A couple of large and well flowered Brugmansias and a few well grown Alocasias are, with other things, shown by T. K. Hill, Esq. (Mr. B. Hughes, gr.); and some large masses of ornamental-leaved Begonias come with other objects from the gardens of E. Humphreys, Esq., Mount Pleasant, Pershore (Mr. E. Lott, gr.); and from H. Bramwell, Esq., Crown East Court (Mr. Helman, gr.), come Zonal Pelargoniums and Mignonette. Messrs. John Laing & Co., Forest Hill, contribute a group of one dozen varieties of their new tuberous-rooted Begonias, also cut blooms of a number of the best sorts. The finest stand of cut blooms of the old Fortune's Yellow Rose that we have seen for years is exhibited by J. H. Arkwright, Esq., Hampton Court, Leominster (Mr. Bye, gr.); and a stand of highly-coloured Tea Roses comes from W. J. Grant, Esq., Ledbury.

Variorum.

THE BEÄN VIELD.

'Twer where the zun did warm the lewth,
An' win' did whiver in the sheäde,
The sweet-aïr'd beäns were out in blooth,
Down there 'ithin the Elem gleäde;
A yollow-banded bee did come,
An' softly pitch, wi' hushèn hum,
Upon a Beän, an' there did sip,
Upon a swayèn blossom's lip:
An' there cried he, "Aye, I can zee
This blossom's all a-zent vor me."

A-jilted up an' down, astride
Upon a lofty ho'se a-trot,
The meäster then come by wi' pride,
To zee the Beäns that he'd a-got;
An' as he zot upon his ho'se,
The ho'se ageän did snort an' toss
His high-ear'd head, an' at the zight
Ov all the blossom, black an' white:
"Ah! ah!" thought he, the seäme's the bee,
"Theäse Beäns be all a-zent vor me."

Barnes' Poems.

Tree Ferns in Victoria.—A highly creditable display of Tree Ferns, says the *Melbourne Leader*, may be seen in the nursery of Mr. John C. Cole, of Richmond, and to this attaches all the more interest as the collection has existed there for a sufficient length of time to admit of comparisons of the rate of growth. Cyathea Cunninghami, of New Zealand, proved one of the quickest in growth, it having added about 4 feet to its stem in four years. The stem of Cyathea Smithii grew only about 1 foot during four years in Mr. Cole's collection; nor proved the growth of the stem of C. dealbata any faster. The stem of Alsophila excelsa added 2 feet to its length within the same period. Alsophila Cooperi was raised from spores four years ago, and its stem is now 1 foot over the ground. This rate of growth of different Fern trees would, of course, be subject to much variation in the ranges, according to soil and perhaps climate and situation. A very slender Cyathea of the Cape Otway ranges and Dandenong, to which Baron von Mueller has given the name Cyathea Boylei, in commemoration of Mr. David Boyle's discovery of this Fern tree in the Dandenong Ranges, grew also nearly 4 feet in four years. This rare species was formerly regarded as identical with Cyathea affinis, of the South Sea Islands, but a comparison of the fruiting fronds (which were obtained at last by Mr. Gesner) with original specimens of the genuine C. affinis and the Dandenong species, proves it specifically distinct. Indeed, it is very similar to Cyathea Cunninghami of New Zealand, in the slenderness of its stem, the colour of and persistency of the frond-stalks, scales, and some other respects, but Baron von Mueller, as well as Professor Kirk, of Wellington, regard the Victorian Cyathea distinct from C. Cunninghami, and the former gentleman intends to give early a fuller account of C. Boylei. It is easier still separated from Cyathea Smithii (which is really a Hemitelia) by its fruits, that of C. Boylei being much like C. medullaris, under which latter name this Tree Fern occurs in the *Flora Australiensis*.

Hardy Herbaceous Plants at Kew.—Hesperis violacea, a very free-flowering dwarf Rocket, of neat pyramidal habit, is a showy and desirable border plant; its flowers are rather large, and of a pleasing pale violet colour. Ionopsidium acaule, a lovely miniature Crucifer, has dense cushions of small-stalked roundish leaves, studded with white blossoms; the genus is peculiar to the Mediterranean region, and this species, at least, is decidedly attractive, and well worth growing. Amongst the

Comfreys the handsomest at present are Symphytum caucasicum, a dwarf free-flowering species, with blossoms red in their young stage, changing to a pleasing blue as they get older. S. bohemicum, a plant only about a foot in height, with long narrow leaves and deep red flowers; and S. ibericum, a distinct-looking dwarf species, with glossy ovate-acuminate, long-stalked leaves and white blossoms. Polygonum alpinum, an old-fashioned perennial not frequently met with now, is attractive by reason of its branched lax panicles of white flowers. Euphorbia palustris, too, with its Willow-like, soft, light-green foliage and golden-yellow bracts, is a splendid plant for margins of shrubberies, &c.; it grows about 2 feet high. Veronica pectinata, an oriental species, forms a dense carpet of softly hairy, small-toothed leaves and racemes of ultramarine white-centred blossoms. Valeriana tuberosa, nearly a foot in height, bears compact heads of flesh-coloured flowers. A charming little perennial is the South European Coronilla vaginalis, with its profusion of yellow flowers; it does best on rockwork. Genista prostrata, a companion plant to the last, has flowers of the same colour, and thrives under the same conditions. Potentilla heptaphylla, about a foot in height, has a profusion of bright golden-yellow blossoms. A very floriferous plant, of easy culture, is Claytonia sibirica, which now is one mass of pale rose-coloured flowers. Polemonium cœruleum var. grandiflorum is, from a horticultural point of view, a much better plant than the common Jacob's Ladder; it attains a height of about 2 feet, and bears much larger blue flowers than the type. Senecio spathulifolius, about 6 inches high, has long woolly leaves and umbels of golden-yellow flower-heads. It would hardly be fair to pass over the lovely little Arenaria balearica, which on damp stones and well-drained soil forms a compact carpet of tiny leaves studded with innumerable starry white blossoms.

GERMAN GARDENERS IN ENGLAND.—We have heard from the fraternity in various quarters that the German element is becoming unpleasantly strong in English gardens and nurseries. To our knowledge the number of German gardeners who come to this country increases from year to year; but comparatively few of them take permanent situations, and those who obtain posts sufficiently good to induce them to remain in the country do so by their special qualifications. As a writer in our contemporary, the *Deutsche Gärtner-Zeitung*, observes, German gardeners travel more than those of any other country, and they make great sacrifices and undergo no little hardship to see what is to be seen abroad. Many of them are content to do labourer's work for a time in order to earn sufficient to keep body and soul together, and give them an opportunity of seeing something. But if there is any truth in the complaint that British gardeners are suffering from German competition, we have not far to seek the cause. Employers would not engage foreigners by preference without some corresponding advantage—this is certain. This advantage can only be more, or a higher class of work for less money than he would get from an Englishman. The remedy is clear. Nobody who knows anything of the subject will deny that the education of the average German gardener is far in advance of that of his English colleagues; and when he combines thorough practical knowledge with it, he naturally stands a good chance in competition. But in practical matters alone the English have no cause to fear competition. Frequently it is ignorance of foreign languages, especially of French and German, that defeats an Englishman in competition with a German for a post in a commercial house. From our insular position and the ever increasing spread of the English language only a very small portion of the English people are likely to become linguists. It is force of circumstance to a great extent that leads to the acquirement of a speaking knowledge of foreign languages. To learn a language without learning to speak it is very dry work, except perhaps to those who already understand two or three other languages. But, it may be asked, why do English gardeners not go to Germany and France and there learn the languages and what is new to them in practical gardening? The answer to this is—because it is very difficult for them to obtain employment in a country overflowing with labour. It is not a thirst after knowledge alone that impels many Germans to leave their home; it is oftener to find a better market for their talent. Now with regard to the Indian Forest Department, many of the best posts are held by Germans, simply because qualified English foresters could not be found. It is true that some provision has been made to remedy this defect, but the Germans will always continue to be formidable rivals. In spite of the difficulties English gardeners, except a favoured few, have to encounter in acquiring a speaking knowledge of foreign languages, it is gratifying to be able to state that the number is increasing. Finally, we can only say, that so long as Englishmen do not qualify themselves for certain posts, they will fall to the lot of foreigners.

LORD BACON ON FORCING.—The learned author of the *Silva Sylvarum* has the following quaint account of "Experiments in consort touching the Acceleration of Germination:"—"There were sown in a bed Turnip-seed, Radish-seed, Wheat, Cucumber-seed and Peas. The bed we call a hot-bed, and the manner of it is this—there was taken horse-dung, old and well-rotted; this was laid upon a bank half a foot high, and supported round with planks, and upon the top was cast sifted earth some two fingers deep, and then the seed sprinkled upon it, having been steeped all night in water mixed with cow-dung. The Turnip-seed and the Wheat came up half an inch above-ground within two days after without any watering: the rest the third day. The experiment was made in October, and (it may be) in the spring the acceleration would have been speedier. This is a noble experiment; for without this help they would have been four times as long in coming up. But there doth not occurre to me, at this present, any use thereof, for profit; except it should be for sowing of Pease, which have their price very much increased by the early coming. It may be tried also with Cherries, Strawberries, and other fruit, which are dearest when they come early." The author goes on to explain in detail experiments on plants with various manures and other means of accelerating and retarding growth, concluding:—"The housing of plants (I conceive) will both accelerate germination and bring forth flowers and plants in the colder season. And as we house hot-country plants, as Lemons, Oranges, Myrtles, to save them, so we may house our own country plants to forward them and make them come in the cold season; in such sort that you may have Violets, Strawberries, Pease all winter; so that you sow or remove them at fit times."

Obituary.

WE greatly regret to have to announce the death of A. B. STEWART, Esq., of Ascog Hall, Bute. In him horticulture has lost one of its most enlightened and liberal patrons. Mr. Stewart, as we learn from the *Glasgow Herald*, though at the head of one of the most extensive mercantile concerns in the kingdom—that of Messrs. Stewart & M'Donald, Buchanan Street, Glasgow—the interests of which would have proved more than equal for the energies of the average business man, managed to seize ample opportunity to share in nearly all good and benevolent undertakings, and not only to share, but to initiate and carry to a successful issue others which aimed at the elevation of the habits and tastes of the community. And this noble work he applied himself to in no ostentatious manner, but in a quiet, and, as circumstances demanded, considerate but firm spirit, whose sole ambition was the achievement of the end in view, and whose only reward was the thought that something had been attempted, something done which would tend to make men—and women, too—better and happier than he had found them. Mr. Stewart always contended that there was no better way of getting at the heart of man than through flowers—which speak a language that the meanest understanding can comprehend—and he would frequently add that there was hope for the most depraved if once he could be induced to take an interest in even the tiniest and the least lovely of Nature's floral products. To make the exhibitions, therefore, which are regularly held under the auspices of the Glasgow Horticultural Society attractive and entertaining, the gardens of Rawcliffe Lodge were laid under constant contribution, and that with unstinted hand. Mr. Stewart was for many years President of the Society, and gave assistance and aid, which will be greatly missed by the directors and friends of the association. Closely allied with his love for horticulture was that for the advancement of the Fine Arts in all their varied branches. There was no warmer friend and patron of all that was good in art. His picture gallery at Rawcliffe Lodge, one of the finest and largest in Scotland, bears testimony to this fact. Generally, it may be said that all philanthropic, educational, literary, and scientific projects met with his heartiest sympathy, and his interest was expressed, not in words merely, but in the kindliest and most substantial, and therefore most appreciable manner.

—— JEAN NUYTENS VERSCHAFFELT.—The announcement of the death of this distinguished and amiable horticulturist will be received with very great regret by his many friends and acquaintances in England. M. Nuytens Verschaffelt was the adopted son of the late Jean Verschaffelt, of whose nursery, near Ghent, he was the manager, and to which he succeeded on the death of the proprietor. M. Nuytens Verschaffelt was deservedly a favourite for his genial straightforward character, while his nursery was one of the most remarkable, even in that town of nurseries, Ghent. The English visitor, go when he might, was sure to meet with a most kindly reception on the part of the proprietor, while the collections of plants under his care were unusually interesting and important. M. Nuytens Verschaffelt died on the 30th ult., after a short but painful illness in the forty-fourth year of his age. M. Nuytens Verschaffelt was an active member of the Royal Agricultural and Botanical Society of Ghent, a Chevalier of the Order of Philip the Magnanimous; but his best title to remembrance will be his own character.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
FOR THE WEEK ENDING WEDNESDAY, JUNE 2, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity: Sat. = 100.	Wind: Average Direction.	Rainfall.
May	In.	In.	°	°	°	°	°	°	°		In.
27	29.70	−0.07	71.5	50.6	20.9	59.7	+ 4.3	52.2	77	WSW: N.W.	0.03
28	30.13	+0.35	64.1	44.1	20.0	52.5	− 3.1	42.1	68	WNW	0.00
29	30.27	+0.49	64.3	40.2	24.1	50.8	− 5.3	39.9	67	WSW: S.W.	0.00
30	30.14	+0.35	65.8	39.0	26.8	52.0	− 4.0	44.7	76	S.W.	0.00
31	29.93	+0.14	54.5	45.0	9.5	48.8	− 7.5	45.2	88	E.N.E.	0.38
June											
1	29.94	+0.15	61.9	41.4	20.5	50.2	− 6.3	46.5	88	E.S.E.: E.N.E.	0.08
2	29.83	+0.03	64.2	45.2	19.0	52.7	− 4.0	50.9	94	E.: E.N.E.	0.02
Mean	29.99	+0.21	63.8	43.6	22.2	52.3	− 3.7	45.9	80	variable	sum 0.51

May 27.—Generally fine, though very cloudy and dull at times. Showery 4 to 5 P.M. Very cool at night.
— 28.—A fine day, though dull at times. Strong wind. Cool. Cloudless at night.
— 29.—A fine bright day, but frequently dull. Cool, Windy. Cloudless at night.
— 30.—Fine, with occasional sunshine, but generally dull. Overcast at night. Cool.
— 31.—Overcast, dull and wet till 5 P.M. Fine and bright at night. Cold day.
June 1.—Fine and bright till noon. Dull and showery after till 9 P.M., then fine. Windy. Cold.
— 2.—Generally dull, though fine at intervals during afternoon. Slight showers in morning. Cool.

LONDON: *Barometer.*—During the week ending Saturday, May 29, in the vicinity of London the reading of the barometer at the level of the sea increased from 29.86 inches at the beginning of the week to 30.10 inches by the morning of the 25th, decreased to 29.74 inches by the morning of the 27th, increased to 30.47 inches by the morning of the 29th, and was 30.44 inches at the end of the week. The mean value for the week at sea level was 30.06 inches, being 0.13 inch above the average, and 0.09 inch below that of the preceding week.

Temperature.—The highest temperatures of the air observed by day varied from 87½° on the 26th, 75° on the 25th, and 71½° on the 27th, to 60¾° on the 23d; the mean value for the week was 69¾°. The lowest temperatures of the air observed by night

varied from 40¼° on the 29th to 51° on the 24th; the mean value for the week was 47°. The mean daily range of temperature in the week was 22¾°, the greatest range in the day being 37¼°, on the 26th, and the least, 14°, on the 24th.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—23d, 52°.5, − 1°.8; 24th, 56°.5, + 1°.9; 25th, 59°, + 4°; 26th, 66°.7, + 11°.5; 27th, 59°.7, + 4°.3; 28th, 52°.5, − 3°.1; 29th, 50°.5, − 5°.3. The mean temperature of the air for the week was 56°.8, being 1°.6 above the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 169½° on the 26th, 153° on the 25th, and 146¼° on the 27th; on the 23d the reading did not rise above 110°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 32¼° on the 19th, and 38½° both on the 26th and 28th; the mean of the seven lowest readings was 40°.

Wind.—The direction of the wind was S.W., and its strength strong throughout.

The weather during the week was fine and bright, and very dry. On Wednesday the 26th the weather was exceptionally hot, and the maximum reading, 87°.2, was the highest recorded in the month of May during the forty years, 1841—1880.

Rain.—A little rain fell on the 27th, the amount measured was 0.03 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, May 29, the highest temperatures of the air observed by day were 87¼° at Blackheath, 85° at Cambridge, 81° at Norwich, and 77¾° at Nottingham, and below 62° at both Liverpool and Bradford; the mean value from all stations was 71¼°. The lowest temperatures of the air observed by night were below 40° at Plymouth, Cambridge, Wolverhampton, Nottingham, and Sheffield; and above 44° at Bradford and Sunderland; the mean from all places was 40¾°. The extreme range of temperature in the week was above 41° at Blackheath, Cambridge, and Nottingham, and below 21° at Liverpool and Bradford; the mean range from all stations was 30½°

The mean of the seven high day temperatures was above 67° at Blackheath, Cambridge, Norwich and Nottingham, and below 60° at Wolverhampton, Sheffield, Liverpool and Bradford; the general mean from all stations was 63¼°. The mean of the seven low night temperatures was below 44½° at Wolverhampton, Nottingham and Hull, and above 49° at Truro, Brighton and Sunderland; the mean value from all places was 47°. The mean daily range of temperature in the week was above 22½° at Blackheath, Cambridge and Nottingham, and below 11½° at Liverpool and Bradford; the mean daily range from all places was 16¼°.

The mean temperature of the air for the week from all stations was 53½°, being 3° higher than the value for the corresponding week in 1879. The mean temperature was above 56° at Blackheath, Cambridge, and Norwich, and below 50½° at both Wolverhampton and Liverpool.

Rain.—The amounts of rain measured during the week were large everywhere, except in the South of England. At Wolverhampton, Sheffield, Liverpool, Bradford, and Leeds 1½ inch fell, whilst at Brighton, London, Cambridge, and Norwich less than a quarter of an inch was measured; the average fall over the country was eight-tenths of an inch.

The weather during the week was generally fine and bright, with showers at times.

Slight thunderstorms occurred at some places on the 25th and 27th.

SCOTLAND: *Temperature.*—During the week ending Saturday, May 29, the highest temperatures of the air observed by day varied from 64¼° at Aberdeen to 58° at Greenock; the mean value from all places was 61¼°. The lowest temperatures of the air observed by night varied from 34¼° at Greenock to 41° at Leith; the general mean from all stations was 38⅛°. The mean range of temperature in the week from all stations was 22¾°.

The mean temperature of the air for the week from all stations was 51°, being 2½° higher than the value for the corresponding week in 1879. The highest was 52°, at Dundee, and the lowest 49¼°, at Greenock.

Rain.—The amounts of rain varied from 0.70 inch at Greenock, 0.63 inch at Aberdeen, and 0.59 inch at Paisley, to 0.05 inch at Dundee. The average fall over the country was 0.36 inch.

DUBLIN.—The highest temperature of the air was 61½°, the lowest was 38¼°, the extreme range 23¼°, the mean 51¼°, and the fall of rain 0.23 inch.]

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

SHADE TEMPERATURE.—What is the highest outdoor shade temperature recorded in England?

Answers to Correspondents.

A CORRECTION.—In our report of the last meeting of the Fruit Committee of the Royal Horticultural Society, it was stated that Ledsham's White Broccoli was considered by the Committee to be the same as Cattell's Eclipse. Subsequently an opportunity for comparison having been afforded, the two were found to be quite distinct. Ledsham's Late White is much whiter and closer in the head, with the leaves more closely protecting, than in Cattell's Eclipse.

APRICOTS: *Constant Reader.* These fruits may be successfully grown in a cool orchard-house, either in pots or trained after the manner of Peach trees.

ASH: *X. Y. Z.* We could only see the traces left by the grub, not the grub itself.

CAPE EVERLASTING FLOWER: *A. W. F.* Helichrysum vestitum. See *Gardeners' Chronicle*, April 15, 1876, for an article on the subject.

ONIONS: *S. B.* Your plants are attacked by the grub of the Onion Fly (Anthomya ceparum, fig. 126), as

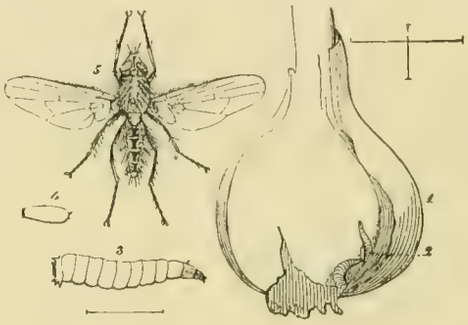

FIG. 126.—THE ONION FLY.

well as by that of the Brassy Onion Fly (Eumerus æneus, fig. 127). Pull up the plants, and burn them;

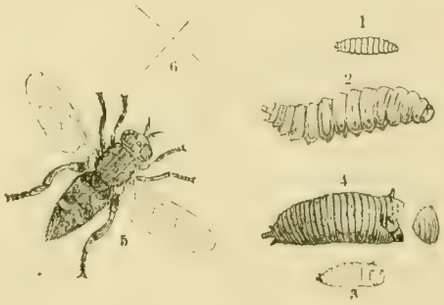

FIG. 127.—THE BRASSY ONION FLY.

or, if you do not care to adopt so radical a measure, scatter soot thickly over the bed.

DISEASED POT VINES: *C.* We have received specimens from various quarters, all presenting the same general character. The young growth is checked, the leaves shrivelling up and dying. In one case before us the roots are in good health. There is no trace either of fungus or insect. We do not know fully the circumstances under which the plants have been grown, but the appearance is compatible with the idea that too strong a dose of manure has been applied, or at too early a period. The scorching sun we had some week or two since may also have caused the mischief.—*H. J. C.* Can you send us some roots? We see no trace of insect or fungus.

GLOXINIA: *H. E. G.* A fine strain, remarkable for size and substance. There is nothing very novel in the colour of the one sent.—*Constant Subscriber.* A very good strain of flowers, but not at all novel in colour or marking.—*H. J. C.* Two or three of the larger flowers are fine, and appear to us distinct, especially one with a rich plum-coloured throat, but the others are nothing beyond the average flowers of a good strain, which yours evidently is.

HARDY AZALEAS: *R. P. Kerr.* A batch of large-flowered and showy kinds, but too much alike in colour—shades of pink and salmon-pink varying in intensity. They are good in their particular way, but lack variety, which is a very marked character of the Knap Hill strain we have once or twice alluded to.

INSECTS: *H. C.* Otiorhynchus sulcatus. Spread a sheet under the Vines at night, give the canes a sharp tap, and you will capture them easily.

NAMES OF PLANTS: *Dr. Morton.* Cotoneaster microphylla, Veronica gentianoides, probably; but you send no leaves.—*W. P.* Saxifraga chrysosplenifolia, round leaf; S. geranioides, Erigeron philadelphicum, purple; E. bellidifolium, white. Another time number your specimens.—*D. P.* 1, Veronica gentianoides; 2, V. prostrata; 3, Nepeta Mussinii; 5, send fruit as well as flowers; 6, Geranium reflexum; 7, Polystichum angulare var.—*Norman Cookson.* Dendrobium secundum.—*W. B.* Brassia verrucosa.—*J. P.* Erinus alpinus.—*Camjce.* The Aquilegia, which had fallen to pieces, appears to be A. leptoceras.—*R. L.* 1, Lastrea quinquangularis; 2, Pteris straminea; 3, Polystichum angulare, var. cristatum; 4, Gymnogramma tartarea; 5, Athyrium Filix-fœmina rhæticum; 6, Polystichum angulare, var. proliferum.—*G. W. B.* Adiantum decorum.—*H. H. D.* Apparently a white-flowered variety of Verbascum Blattaria, but the blossoms were much faded.—*Francis C.* We cannot undertake to name more than six:—1, Sedum Stoloniferum; 5, Sanguisorba officinalis; 6, Sedum asiaticum; 7, Sedum Rhodiola; 8, Alchemilla vulgaris; 11, Sedum anacampseros; 12, Alchemilla alpina. The Saxifrages next week.—*Correspondent* (no name sent). Coronilla Emerus.

RARE PLANTS AT LLANDUDNO.—Mr. George Simpson writes in reply to Mr. Wolley Dod, whom he accuses of inaccuracies and misrepresentation, that he has lived at or near Llandudno for the last eighteen years. Mr. Simpson, moreover, asserts that the plant called Claytonia sibirica is wrongly so called, and that he himself in 1870 dug up on the Little Orme's Head an Orchis hircina, which he has also found in Kent and in Wiltshire. Mr. Simpson must be aware that mere assertion, however correct it may be, will not suffice to convince those conversant with British botany that Orchis hircina grows or grew wild on the Orme's Head.

VINE BORDER: *H. Clerk.* We would put in 9 inches in depth of loose stones. They will answer as well as bricks. It is not necessary to break them up small, like road metal. If you can cut some turf, lay it on the stones with the grass side underneath.

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CATALOGUES RECEIVED:—Osborn & Sons (Fulham London, S.W.), Alpine and Herbaceous Plants.

COMMUNICATIONS RECEIVED:—F. W. B., Bessborough.—R. B.—R. B. F.—J. D. L.—A. V.—C. W. D.—E. P.—H. T. S.—L. G.—J. H.—C. W. N.—J. A.—W. O.—H. Low & Co.—J. V. & S.—W. H.—S. & S.—H. H. D.

Markets.

COVENT GARDEN, June 3.

Business remains much about the same, Strawberries being in demand, and Grapes meeting with a good sale, but at lower quotations. *James Webber, Wholesale Apple Market.*

FRUIT.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Grapes, per lb.	1 6– 6 0
— American, barrl.	18 0–30 0	Lemons, per 100	6 0–10 0
Apricots, per box	1 0– 3 0	Melons, each	3 6– 7 0
Cherries, per box	1 6– 2 6	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– 1 6	Peaches, per doz.	12 0–18 0
Gooseberries, green, per ½-sieve	6 0– 7 0	Pine-apples, per lb.	1 0– 3 0
		Strawberries, per lb.	3 0– 9 0

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, per bundle	1 0– ..	Horse Radish, p. bun.	4 0– ..
— English, p. 100	5 0– 6 0	Lettuces, Cabbage, per doz.	1 0– 2 0
— French, per bun.	3 0– 6 0	Mint, green, bunch	0 4– ..
Beans, French, p. lb.	1 6– ..	Mushrooms, p. baskt.	1 6– 2 0
Beet, per doz.	2 0– 4 0	Onions, per bushel	10 0–12 0
Cabbages, per doz.	1 0– 2 0	— Spring, per bun.	0 6– ..
Carrots, per bunch	0 8– ..	Parsley, per lb.	0 9– ..
— French, per lb.	0 6– ..	Peas, English, per qt.	4 0– ..
— New, per bunch	1 6– ..	— French, per qt.	2 6– ..
Cauliflors., new, each	0 9– ..	Potatos (new), per lb.	0 2– 0 6
— English, each	1 0– ..	Radishes, per bun.	0 2– ..
Celery, per bundle	1 6– 2 0	Rhubarb (Leeds), per bundle	0 4– 0 9
Chilis, per 100	3 0– ..	Small salading, pun.	0 4– ..
Cucumbers, per doz.	8 0–12 0	Spinach, per bushel	2 6– ..
Endive, per 2 doz.	1 6– 3 0	Tomatos, per dozen	4 0– 6 0
Garlic, per lb.	1 0– ..	Turnips, new, bunch	1 0– 1 6
Herbs, per bunch	0 2– 0 4		

Old Potatos are now nearly finished, many being very bad, and prices lower. New samp'es:—Jersey Kidney, 16s. to 18s. per cwt.; Round, 11s. to 12s.; French Round, 11s. to 12s.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Hydrangea, per doz.	12 0–24 0
Bedding Plants, various, per doz.	1 6– 2 6	Lilium eximium, doz.	30 0–60 0
Begonias, per doz.	6 0–18 0	Lobelia, per dozen	6 0– 9 0
Bouvardias, per doz.	12 0–24 0	Mignonette, per doz.	5 0– 9 0
Calceolaria, per doz.	6 0–12 0	Musk, per dozen	2 6– 6 0
— Herbaceous, doz.	6 0– 9 0	Myrtles, per doz.	6 0–12 0
Cinerarias, per doz.	6 0–12 0	Nasturtiums, dozen	4 0– 6 0
Cyperus, per dozen	4 0– 9 0	Palms in variety, each	2 6–21 0
Dracæna terminalis	30 0–60 0	Pelargoniums, dozen	9 0–24 0
— viridis, per doz.	12 0–24 0	— Ivy-leaved, doz.	4 0– 8 0
Erica various, per dozen	12 0–30 0	— Tricolor	4 0–12 0
Euonymus, various, per dozen	6 0–18 0	— scarlet, per doz.	4 0– 9 0
Ferns, in var., doz.	4 0–18 0	Roses, Hybrid Perpetual, per doz.	18 0–36 0
Ficus elasticus, each	1 6– 7 6	— Fairy, per dozen	6 0–10 0
Foliage Plants, various each	2 0–10 6	Spiræa, per dozen	6 0–18 0
Fuchsias, per dozen	9 0–15 0	— palmata, doz.	18 0–30 0
		Stocks, per dozen	4 0– 8 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Pansies, 12 bunches	2 0– 6 0
Anemone, 12 bun. ..	3 0– 6 0	Pelargoniums, 12 sprays	0 6– 1 0
Arum Lilies, per dozen	3 0– 6 0	— zonal, 12 sprays	0 3– 0 9
Azalea, 12 sprays ..	0 6– 1 0	Pinks, white, 12 bun.	3 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Polyanthus, 12 bun.	1 6– 4 0
Calceolaria, p. bunch	0 9– 1 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	Ranunculus, p. doz.	4 0– 8 0
Cornflower, per doz.	6 0– 9 0	Roses (indoor), doz.	1 0– 9 0
Eucharis, per doz. ..	4 0– 6 0	— Roses, Fr., doz.	2 0– 6 0
Forget-me-not, 12 bunches	3 0– 9 0	Spiræa, 12 sprays ..	0 6– 1 0
Gardenias, 12 blms..	2 0– 8 0	Stephanotis, 12 spr...	2 6– 4 0
Heliotropes, 12 sp. ..	0 6– 1 0	Tropæolum, 12 bun.	1 0– 3 0
Lily of the Valley, 12 bunches ..	6 0–18 0	Tuberoses, per dozen	2 0– 4 0
Mignonette, 12 bun.	6 0– 9 0	Wallflowers	4 0– 9 0
Narcissus, various, 12 bunches ..	6 0–12 0	White Lilac, Fr., per bundle	4 0– 8 0

SEEDS.

LONDON: *June* 2.—The seed market to-day, as usual at this time of year, was thinly attended, and the amount of business doing extremely meagre. In fact the agricultural situation generally shows this week no alteration. An abundant and continuous downfall of warm genial rain is still greatly needed in all parts of the country. The crops of Tares, Trifolium, and Rye are described as almost total failures. Clovers and Trefoils are also very unpromising. In the absence of transactions, values on Mark Lane are without variation. Canary and Hemp seed are still exceedingly cheap. The trade for Mustard and Rape seed keeps firm. Blue boiling Peas are rapidly advancing in price; sound samples have now become exceedingly scarce, and the demand daily gets stronger. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CORN.

There was not much life in the trade at Mark Lane on Monday. English Wheat was about the same in price as at the previous market, and quotations in the case of foreign showed no material variation from Monday se'nnight; the tendency was in favour of the consumer. Barley was quiet, on former terms; malt remained without change in price. Oats showed an improvement of about 3*d.* per quarter on the week, and Maize was slightly lower in price. Beans and Peas were steady at about late rates. In flour quotations had a drooping tendency all round.—On Wednesday trade was very quiet. Wheat, both English and foreign, was held for Monday's prices, but the tone was anything but strong. Barley moved off slowly on former terms, and malt was neglected. The Oat trade was not very good, and an easy tone prevailed as regards Maize. Beans and Peas were steady, and flour was dull and weak.—Average prices of corn for the week ending May 29:—Wheat, 44*s.* 11*d.*; Barley, 30*s.* 4*d.*; Oats, 25*s.* 1*d.* For the corresponding period last year:—Wheat, 41*s.* 5*d.*; Barley, 28*s.* 6*d.*; Oats, 21*s.* 11*d.*

CATTLE.

At Copenhagen Fields on Monday there was a shorter supply of beasts than on Monday se'nnight, and choice English, being scarce, made higher rates. For some very choice Canadians trade was good. The sheep trade opened brisk, at fully late rates, but slackened towards the close. Choice lambs and calves sold about as of late, but middling qualities were difficult to dispose of. Quotations:—Beasts, 4*s.* 6*d.* to 5*s.* 2*d.*, and 5*s.* 8*d.* to 6*s.* 4*d.*; calves, 5*s.* 6*d.* to 6*s.* 8*d.*; sheep, 5*s.* 2*d.* to 5*s.* 6*d.*, and 6*s.* 4*d.* to 7*s.*; lambs, 7*s.* to 8*s.*; pigs, 4*s.* 6*d.* to 5*s.* 6*d.*—On Thursday the cattle trade, though quiet, was steady. Both beasts and sheep commanded full prices for choice descriptions, and lambs were rather better. Calves sold at the above rates.

HAY.

Tuesday's Whitechapel Market report states that there was a large supply, and dull trade at the following rates:—Prime Clover, 100*s.* to 132*s.*; inferior, 65*s.* to 95*s.*; prime meadow hay, 80*s.* to 105*s.*; inferior, 38*s.* to 70*s.*; and straw, 30*s.* to 39*s.* per load.—On Thursday there was a short supply of fodder on sale, and trade was very dull; prices were unaltered.—Cumberland Market quotations:—Superior meadow hay, 100*s.* to 110*s.*; inferior, 48*s.* to 76*s.*; superior Clover, 126*s.* to 132*s.*; inferior, 90*s.* to 105*s.*; and straw, 36*s.* to 40*s.* per load.

POTATOS.

The Borough and Spitalfields Markets reports state that supplies continue moderate, the demand steady, and prices are as follows:—Scotch Champions, 150*s.* to 160*s.* per ton; Lincolnshire ditto, 140*s.* to 160*s.*; Victorias, 150*s.* to 155*s.*; German reds, 4*s.* to 7*s.* per bag; and French whites, 4*s.* to 4*s.* 6*d.*—During last week 803 bags were received from Hamburg, 764 Stettin, 7666 packages Malta, 2443 packages 200 boxes Lisbon, and 5614 barrels from Cornwallis.

COALS.

The prices current at market during the week were as follows:—East Wylam, 15*s.*; Ryhope Hartley, 13*s.* 9*d.*; Wallsend—Hetton, 14*s.* 6*d.*; Hetton Lyons, 13*s.*; Hawthorns, 13*s.* 3*d.*; Lambton, 13*s.* 6*d.* and 14*s.*; Original Hartlepool, 14*s.* 6*d.*; Wear, 13*s.*; South Hetton, 14*s.* 6*d.*; Tunstall, 13*s.*; Tees, 14*s.* 3*d.*

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JAMES VEITCH & SONS, Royal Exotic Nursery, Chelsea
E. G. HENDERSON & SON, Pine-apple Nursery, Maida Vale [loway
B. S. WILLIAMS, Victoria and Paradise Nurseries, Hol-
HUGH LOW & CO., Clapton Nursery, Clapton
CHARLES TURNER, Royal Nurseries, Slough
CHARLES LEE & SON, Royal Vineyard Nursery, Ham-
CRANSTON & CO., Nurserymen, Hereford [mersmith
JOHN FRASER, Lea Bridge Road Nurseries, Leyton
OSBORN & SONS, Fulham Nurseries, Fulham
WM. CUTBUSH & SON, Highgate Nurseries, Highgate
RICHARD SMITH & CO., Nurserymen, Worcester
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CARTER, PAGE & CO., Nurserymen, London Wall
G. P. DARBY, Nurseryman, Watford
H. H. MOORE, Nurseryman, Chichester
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T. SPEED, Duke of Devonshire's, Chatsworth, Derby
J. WOODBRIDGE, Duke of Northumberland's, Syon House, Brentford
G. NORMAN, Marquis of Salisbury's, Hatfield House
W. DENNING, Lord Londesborough's, Norbiton, Surrey
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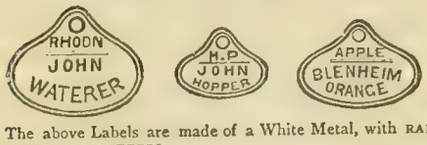

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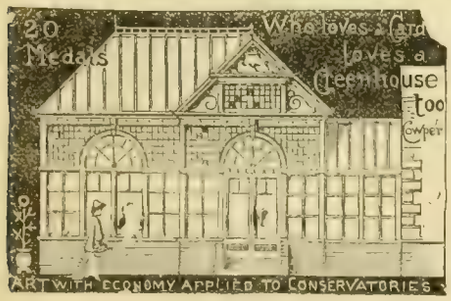

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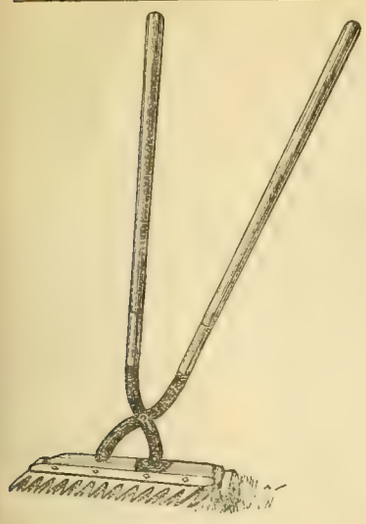

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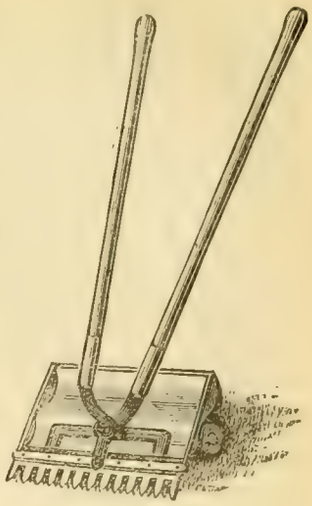

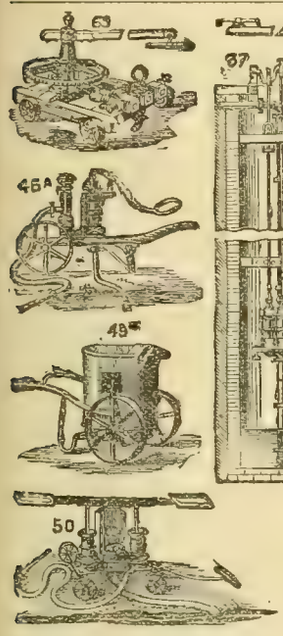

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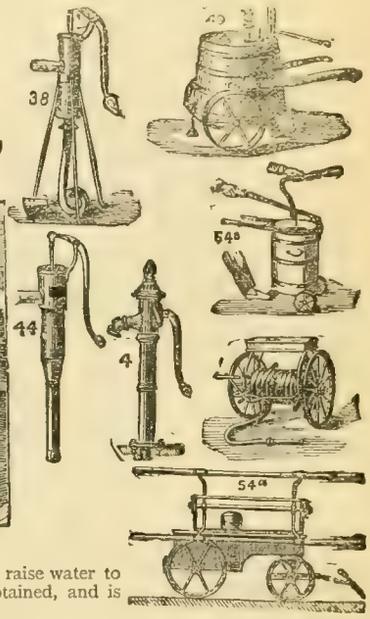

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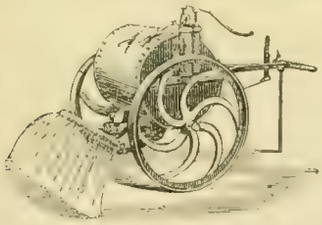

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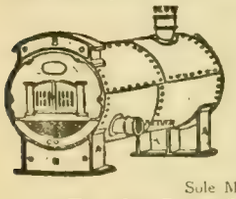

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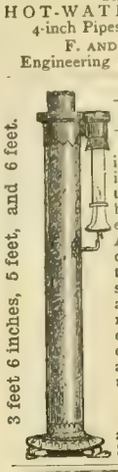

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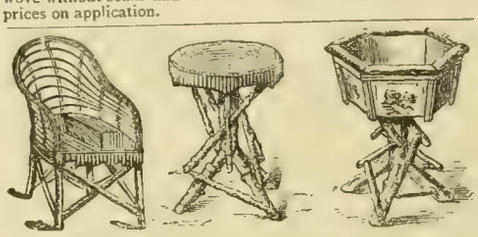

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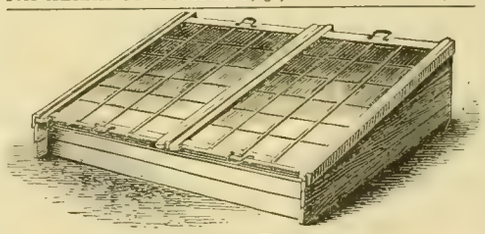

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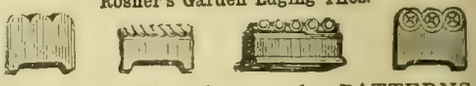

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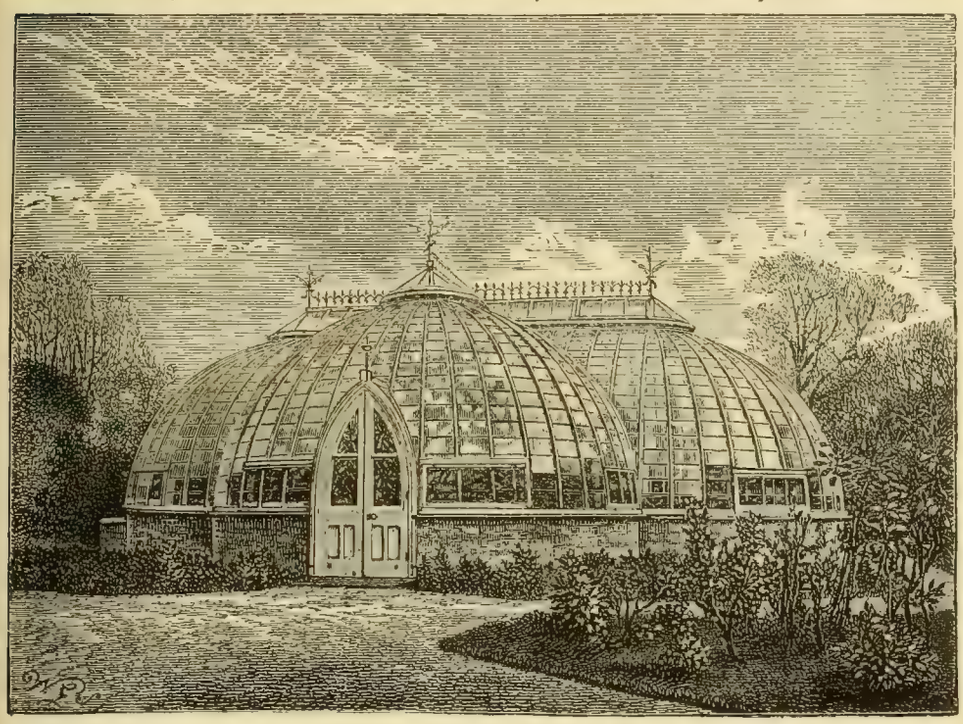

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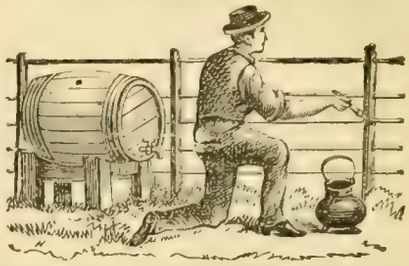

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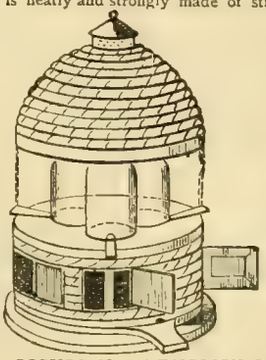

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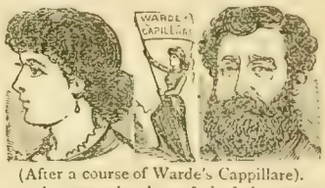

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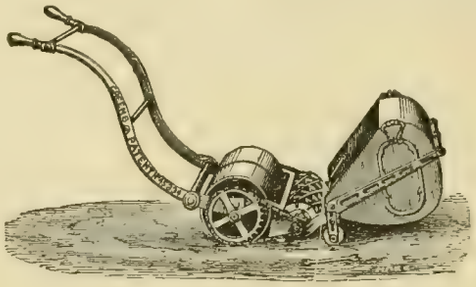

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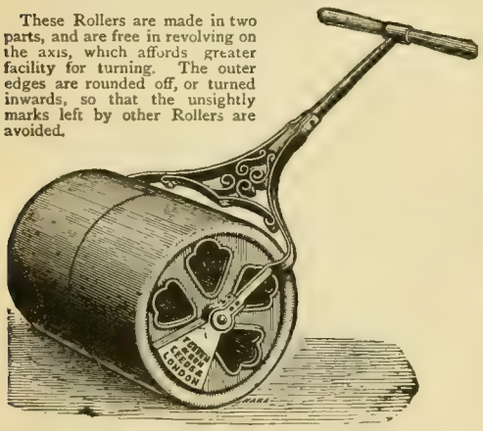

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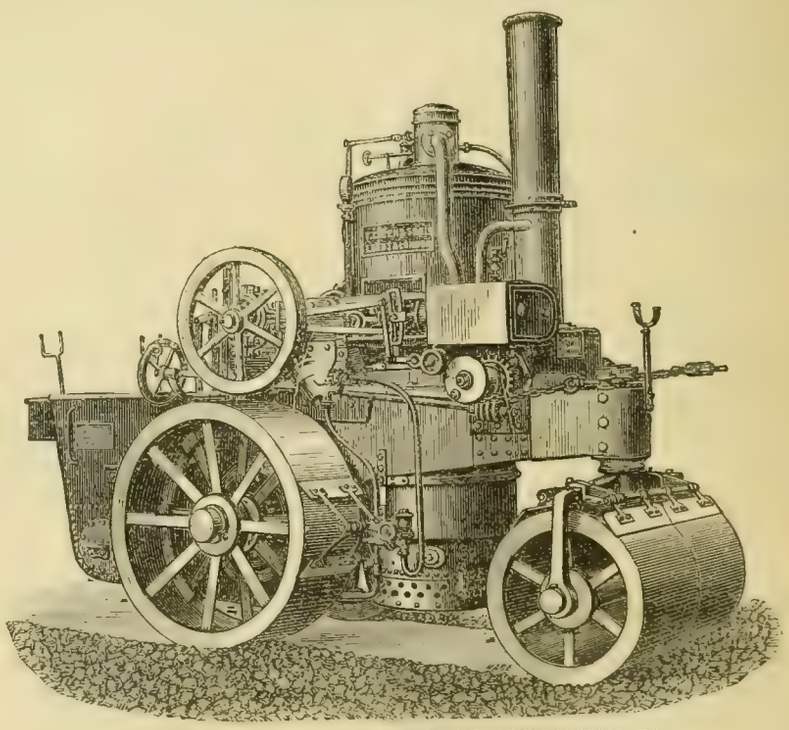

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THE

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Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

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The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 *to the end of* 1878," *to secure them at once.*

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THE GARDENERS' CHRONICLE, Volume XII., JULY to DECEMBER, 1879.

W. RICHARDS, 41, Wellington Street, Strand, W.C.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.

EXHIBITION of PLANTS, FLOWERS, and FRUITS, WEDNESDAY NEXT, June 16. Gates open at 2 o'Clock. Two Military Bands, from 2 to 7 o'Clock. Tickets to be obtained at the Gardens only, by Vouchers from Fellows of the Society, price 5s., or on the day of the exhibition, 7s. 6d. each.

The Exhibition of American Plants, by Mr. Anthony Waterer, will be on view the same day. The Fruiterers' Company Prize of £10 10s., for a Collection of Fruit, will be competed for at this Exhibition.

ALEXANDRA PALACE, Muswell Hill, N.

The GREAT ROSE SHOW will be held in the Central Hall, SATURDAY, July 10. ENTRIES CLOSE—SATURDAY, July 3. Schedule of Prizes, Rules, &c., may be had on application to

Alexandra Palace, London, N. Mr. J. S. COOKE, Sec.

FARNINGHAM ROSE and HORTICULTURAL SOCIETY.—The ANNUAL EXHIBITION will be held at Farningham, on WEDNESDAY, June 30. Entries close June 25. Schedules may be obtained on application to

Farningham. F. BURNSIDE, Esq., Hon. Sec.

TIVERTON (Devon) HORTICULTURAL SOCIETY.

TENTH EXHIBITION, JULY 1. Cut Roses (open to all England), 48 Perpetuals, £7, £4, £2; 12 Teas and Noisettes, £4, £2, £1. Liberal Prizes for Stove and Greenhouse Plants, Fruit and Vegetables. Schedules on application to

Messrs. PAINE AND MILLS, Hon. Secs.

At the same time and place the DEVON and EXETER BEE-KEEPERS' ASSOCIATION will hold an EXHIBITION of BEES and their produce. Schedules of

Alphington, Exeter. Mr. W. N. GRIFFIN, Hon. Sec.

LUDLOW ROSE SHOW—The ANNUAL EXHIBITION of ROSES will be held at the Assembly Rooms, Ludlow, on WEDNESDAY, July 14. Liberal Open Prizes will be given to Nurserymen, Amateurs and Cottagers. Schedules of Prizes and Regulations may be obtained from the

Ludlow. Rev. V. T. T. ORGILL, Hon. Sec.

SUTTON'S PAMPHLET on Laying Down and Improving LAWNS, CROQUET GROUNDS, and CRICKET GROUNDS, May be had gratis, post-free, of SUTTON AND SONS, The Queen's Seedsmen, Reading.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s. W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale. THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Vines for Present Planting.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries. CATALOGUES free. The Trade supplied.

Rhododendrons

JOHN WATERER AND SON'S Exhibition of the above Plants is NOW ON VIEW daily, in the Gardens of Cadogan Place, Sloane Street, S.W.

Stocks and Asters.

MESSRS. BIDDLES AND CO. are offering fine plants of the above, best varieties, at 6d per score, carriage paid. The PENNY PACKET SEED COMPANY, Loughborough.

THE BEST of the New GERANIUMS and the New Tuberous BEGONIAS, in cuttings, very cheap. Denny's, Postans', and Pearson's new GERANIUMS (1879), 24 varieties for 8s., older varieties, but all new recently, 50 varieties for 4s. A quantity of the New Tuberous BEGONIAS, in cuttings, cheap. All post-free. CATALOGUES on application RICHARD PANNETT, Nurseryman, Chailey, Sussex.

DOWNIE AND LAIRD, Edinburgh, are now EXHIBITING a Grand Strain of CALCEOLARIAS in their Winter Garden, West Coates. They have also, in FULL FLOWER, over 40,000 PANSIES and VIOLAS, at their Pinkhill Nursery. Inspection invited.

Seeds—Seeds—Seeds.

WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

Gardenias.

MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug. Royal Nurseries, Ascot, Berks.

ALPINES, HERBACEOUS and ROCK PLANTS, 24s. per 100, own selection. EUONYMUS JAPONICUS, Gold and Silver Variegated, suitable for bedding, 6 inches, 24s. per 100. STANSFIELD BROTHERS, Nurserymen, Southport.

Greentop Yellow Tankard Turnip.

JOHN ETHERINGTON DIXON, having grown a fine lot of this Turnip, can offer a few Bushels at a low figure. Price on application. Seed Grower and Merchant, Gainsborough.

To the Trade.

ENGLISH SOWING RAPE SEED and WHITE MUSTARD.

H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application. Seed Growing Establishment, Wisbech.

To Nurserymen, Florists, and others Cultivating MARKET PRODUCE.

SALE of SAME UNDERTAKEN, at moderate Commission, by WISE AND RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

J. GRANT AND CO., COMMISSION AGENTS, 33, Catherine Street, Covent Garden, W.C., receive all kinds of FRUIT, FLOWERS, VEGETABLES, PLANTS, BULBS, SEEDS, &c., for immediate SALE. Cash remitted same day as sold.

WANTED, MARÉCHAL NIEL and RED ROSES, GARDENIAS, STEPHANOTIS, and CARNATIONS. Letters and Consignments to W. CALE, 4, Tavistock Row, Covent Row, W.C.

Tall Specimen Palms.

WANTED, SEAFORTHIAS, ARECAS, CHAMÆDOREAS, COCOS, &c. Send description, height, and lowest price for cash, to ROBERT GREEN, Floral Establishment, Crawford Street, Bryanston Square, W.

WANTED, in November next, DECIDUOUS TREES—Horse Chestnuts, Poplars, Limes, Maples, &c. Not less than 22 feet in height, and taller plants preferred. They must be previously prepared for safe removal. Address, with prices, height, and all particulars, to GARDENER, Box 30, *Chronicle* Office, Shrewsbury.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit. CARTERS, the Queen's Seedsmen, High Holborn, London.

Hyacinths, Tulips, &c.

BUDDENBORG BROS., Bulb Growers, House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

BEDDING CLEMATIS, mixed colours.—A great bargain is offered in very fine plants—25 for 20s., 50 for 30s., 100 for 50s., package included. Cash with order. A magnificent stock of CLEMATIS LANUGINOSA on offer. CHARLES NOBLE, Bagshot.

To the Trade and Amateur Rosarians.

NEW ROSES in POTS. TEA and NOISETTE ROSES in Pots.—One of the most extensive, most select, and perhaps the most thriving stock of young plants in the country. Special LIST will be sent gratis and post-free to applicants. EWING AND CO., Eaton, near Norwich.

The Largest Rose Gardens in England.

CRANSTON'S NURSERIES, HEREFORD. (Established 1785.) Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

Now is the Best Time to Transplant Hollies.

HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d. to 31s. 6d. each. Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100. RICHARD SMITH AND CO., Nurserymen, Worcester.

Myosotis elegantissima.

The new Silver-edged, Blue-flowered Forget-me-not. RODGER, McCLELLAND AND CO. now sending out this superb Novelty for the Spring Garden. Good plants 3s 6d. each, 36s. per dozen. Can be sent by post. 64, Hill Street, Newry.

To the Trade.

DAHLIAS—40,000, in 400 varieties, now ready. CATALOGUE and Price on application to KELWAY AND SON, Langport, Somerset.

Orchids.

THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application. Lion Walk, Colchester.

To the Trade.

CALCEOLARIA and PANSY SEED, our own saving, from the finest strains. Price on application to DOWNIE AND LAIRD, 17, Frederick Street, Edinburgh.

BEDDING GERANIUMS.—Mixed, strong plants, without pots, 8s. per 100; £3 15s. per 1000. Package free. Cash with order. H. ELLIOTT, 51, High Street, Maidenhead.

VARIEGATED GERANIUMS. SILVER—Miss Kingsbury, Pearl, May Queen, Flower of Spring, Mrs. Perry, &c., extra strong plants, 4s. to 6s. per doz. TRICOLOR—W. Sanday, A. Bass, Mrs. Walter, Rose Wood, &c., 6s. to 12s. per dozen. E. COOLING, Mile Ash Nurseries, Derby

Verbenas—Verbenas—Verbenas.

NOTICE.—H. BLANDFORD has still a large stock of VERBENAS, FUCHSIAS, HELIOTROPES, IRESINES, AGERATUMS, &c., from 5s. to 8s. per 100. This Advertisement will not appear again. The Dorset Nurseries, Blandford.

TROPÆOLUM SPECIOSUM—Hardy Scarlet Climber. Now is the best time to transplant this, the best of all Climbers. Strong plants in pots, well sprung, 9s. per dozen, packing included, for cash. HOWDEN AND CO., Inverness Nurseries, N.B.

FERNS.—100 large British Ferns, named, 14 kinds, in hamper, 5s. 6d.; a clump each of Hymenophyllum, 2s.; 30 roots, smaller, free, in box, 1s. 6d. RICHARDS, Gardener, Woodbine, Lynmouth, near Devon.

East Lothian Intermediate Stocks.

THOMAS METHVEN AND SONS now offer their Choice Strains of these splendid STOCKS for present sowing—Scarlet, Purple, White, Snow-white, Wall-leaved, and Cowe's New Crimson—in packets, 1s., 2s. 6d. and 5s. each colour. 15, Princes Street, Edinburgh.

STRONG SPRING SOWN PLANTS.—Varieties for succession: Cauliflowers, Broccoli, Brussels Sprouts, Savoy, Kale, Cabbage, Red Pickling Cabbage, Lettuce, &c. Best kinds at very low prices, in any quantities. Mr. EDWARD LEIGH, Norcote Farm, near Guildford.

Veitch's Autumn Giant Cauliflower.

FOR SALE, a large quantity of Veitch's AUTUMN GIANT CAULIFLOWER, BRUSSELS SPROUTS, SAVOYS and SCOTCH KALE. Apply, JOSIAH H. BATH, 1 and 3, York Street, Borough Market, London, S.E.

SALES BY AUCTION.

Importation from Borneo, received direct.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 15, at half-past 12 o'Clock precisely, fourteen Wardian cases, as received, containing CYPRIPEDIUMS, DENDROBES, RHODODENDRON BROOKEANUM, a new variegated-leaved Orchid, a PHALÆNOPSIS, AERIDES CYLINDRICUM, ANÆCTOCHILUS SPECIES, VANDA LOWII, &c. Also an importation of about 100 good plants of PHALÆNOPSIS GRANDIFLORA, just received, direct, in fine condition, being semi-established on blocks.

May be viewed the morning of Sale, and Catalogues had.

Established and Imported Orchids.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on TUESDAY, June 15, at half-past 12 o'Clock precisely, a choice assortment of IMPORTED and ESTABLISHED ORCHIDS, among the latter many rare and beautiful Masdevallias, such as M. Wallisii, M. trochilus, M. bella, M. tovarensis, M. Backhousiana, M. psittacina, M. Veitchiania, &c., and including the following handsome and rare Orchids:—Aerides Huttoni, Dendrobium superbiens, Lælia Schilleriana, Trichosma suavis, Huntleya meleagris, Trichopilia gloxiniæflora, Dendrobium longicorne, Pescatorea Dayana, Oncidium sessile; also some good plants of the scarce DENDROBIUM JAMESIANUM, and other ORCHIDS, imported from Burmah; CATTLEYA MOSSIÆ, imported from South America; strong plants of DISA GRANDIFLORA; a small collection of INDIAN ORCHIDS; an importation of NYMPHÆA ODORATA, from America; fine plants of BRASSAVOLA DIGBYANA, ORCHID BASKETS, &c.

May be viewed the morning of Sale, and Catalogues had.

Valuable Collection of Established Orchids

MR. J. C. STEVENS has received instructions from Henry Wilson, Esq., Sheffield, to offer for SALE by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY and THURSDAY, June 16 and 17, at half-past 12 o'Clock precisely each day, a valuable collection of ESTABLISHED ORCHIDS, comprising choice specimens of most of the leading and well-known varieties.

May be viewed the morning of Sale, and Catalogues had.

The "Moat," Eltham, Kent.

MR. J. C. STEVENS has received instructions from the Executors of the late — Mills, Esq., to SELL by AUCTION, on the Premises, as above, on SATURDAY, June 26, at half-past 12 o'Clock precisely, a small Collection of ESTABLISHED ORCHIDS, including most of the known varieties, a very fine specimen of ANTHURIUM SCHERZERIANUM, STOVE and GREENHOUSE PLANTS, FERNS, &c.

May be viewed the day prior and morning of Sale. Catalogues had on the Premises, and of the Auctioneer, 38, King Street, Covent Garden, London, W.C.

Important Land Sales.

MESSRS. PROTHEROE AND MORRIS beg to announce the following SALES of LAND:—

LEYTONSTONE.—At the Working Men's Hall, Stratford, on MONDAY EVENING NEXT, June 14, 107 Freehold Plots of Building Land, comprising the first portion of the Cedars Estate, abutting on the prettiest portion of Epping Forest.

BRENTWOOD.—To Florists and Others.—At the White Hart Hotel, High Street, on THURSDAY, June 24, fifty-three Freehold Building Plots; also the detached six-roomed Residence and Shop, and the ranges of Greenhouses in the rear, with the Goodwill of the old-established Business.

ILFORD.—At the Angel Inn, High Street, on THURSDAY, July 8, ninety Lots of Freehold Building Land, being the second portion of the Clement's Estate, the whole of the lots offered at the first sale having been disposed of.

TOOTING.—At the Castle Hotel, High Street, on MONDAY, July 12, the Carrington Estate, formerly known as Rollisson's Nursery, 123 Freehold Building Plots, and a block of Land in the rear suitable for the erection of business premises, containing an area of 1 a. 1 r. 8 p.

The above Sales are worthy the attention of Builders and others interested in securing Sites for Building Purposes. Possession will be given on payment of 10 per Cent. deposit, and the balance can remain at 5 per Cent. interest, payable by instalments, extending over five and nine years.

Particulars and Plans may be had at the various places of sale; or of the Auctioneers, Estate Agents, and Surveyors, 98, Gracechurch Street, E.C., and Leytonstone, E.

Sale of Rare Killarney Ferns, New Zealand Shrubs, &c., the Collection of the late WILLIAM ANDREWS, Esq., the eminent botanist, including the most rare varieties of the Killarney Fern, splendid New Zealand and Indian Plants, grown with great care. The Sale of these rare specimens affords an excellent opportunity of acquiring veritable plants collected from their native habitats, now almost destroyed.

MR. ALEXANDER DOWNS will SELL the above, by AUCTION, at Ashton the Hill, Monkstown, on SATURDAY, June 12, at 2 o'Clock.

Auctioneer's Office: 1, Monkstown, Dublin.

City of Ely, Cambridgeshire.

MESSRS. BIDWELL will SELL by AUCTION, at the Reading Room, Ely, on WEDNESDAY, June 23, at 2 o'Clock punctually, in 22 or more Lots, by direction of the Executors of the late Mrs. Sherard, VALUABLE FREEHOLD and COPYHOLD ESTATES, situate in the parishes of Ely Trinity and Ely St. Mary, containing in all 151 a. or 23 p. of Accommodation, Pasture and Arable Land, close to the City, and the exceedingly valuable property known as "The Vineyards," in the occupation of Mr. T. Pashler, comprising 14 a. 1 r. 21 p. of most fertile and productive Garden Ground, in a high state of cultivation, planted with a choice selection of Apple, Pear, Plum and other Trees in full profit and bearing; a large portion of the ground is also well planted with Gooseberry and Currant Bushes, also about 3 acres of Asparagus Beds. Along the West and North boundaries are high Garden Walls for a distance of about 950 feet, facing East and South, well covered with Wall Fruit Trees, and a substantially built Residence, with Lawn and Pleasure Garden, which stands very pleasantly and commands "The Vineyards," with necessary Offices, Fruit House and Stable.

Particulars, with Plans and Conditions of Sale, may be had at the "Lion" Hotel, Cambridge; the "George" Hotel, Huntingdon; "Great Northern" Hotel, Peterborough; the "Estate Exchange," Tokenhouse Yard, London, E.C.; of E. C. SHERARD, Esq., Solicitor, Oundle, Northamptonshire; and of Messrs. BIDWELL, Land Agents and Surveyors, Ely, and 12, Mill Lane, Cambridge.

To Nurserymen, Florists and Others.

COMFORTABLE RESIDENCE, with GREENHOUSES, STABLING, &c., and about an acre of GARDEN GROUND, well situate in Lordship Road, Stoke Newington, N.

MESSRS. GLASIER AND SONS will SELL by AUCTION, at the Mart, on THURSDAY, June 17, the LEASE of the above, for an unexpired term of 45 years, at a moderate ground rent.

Particulars at their Offices, 41, Charing Cross, S.W.

To Nurserymen.

FOR SALE, the LEASE, of over 19 years, of Tredegar Nursery, East Dulwich Road, Peckham Rye, Surrey. It occupies One Acre of Ground, and contains two large Greenhouses and three Vineries. Good speculation.

Apply on the Premises.

Clarence Nursery, Newport, Mon.

To FLORISTS, BUILDERS, and OTHERS.

HOUSE, SHOP, GREENHOUSES, and about 3 acres of LAND, 5 minutes' walk from central station. The Lease, Fixtures, Stock, and Goodwill, of any old-established Business to be Sold on reasonable terms. Nominal rent.

Mr. HUMPHREYS DAVIES, Land Agent, 15, High Street, Newport, Mon.

BROWN'S FLORAL SHADING.—BROWN AND CO. (late Charles Brown) have REMOVED the Business of their Floral Shading from 144, Lloyd Street, Greenheys, Manchester, to 65, FAULKNER STREET, MANCHESTER.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

KOHL RABI and ROBINSON'S CHAMPION DRUMHEAD CABBAGE PLANTS.—5,000,000, selected, price 2s. per 1000, in quantities to suit purchasers, by sending Post-office Orders. Apply,

W. COLVIN, Money Bridge Gardens, Pinchbeck, Spalding.

ROBINSON'S CHAMPION OX CABBAGE.—Strong autumn sown Plants, 4s. per 1000; spring sown Plants, 2s. per 1000. Terms cash.

THOMAS PERKINS AND SONS, 34, Drapery, Northampton.

Dutch Bulbs.

To SUPPLY the TRADE.

SEGERS AND CO., BULB GROWERS, Lisse, near Haarlem, Holland, beg to announce that their crops of HYACINTHS, TULIPS, &c., look very promising.

Their WHOLESALE CATALOGUE and PRICE LIST is sent to any part in the United Kingdom, and may be had free on application.

☞ Please observe name and address.

BEDDING PLANTS, &c.

GERANIUMS, Bedding, Zonal and Nosegay, in choice sorts, our selection, 2s. 6d. and 3s. per dozen, 16s. and 20s. per 100.

GERANIUMS, Bedding, Bicolor varieties, 3s., 3s. 6d., and 4s. per dozen.

" choice, for pot culture in summer or winter, twelve fine varieties, 4s. and 6s.

Our collection is second to none, including the best sorts from all raisers, home or foreign.

AGERATUMS and LOBELIAS, strong, and well hardened off from stores, 1s. per dozen, 5s. per 100.

" " in pots, 2s. per dozen, 12s. per 100.

CALCEOLARIA, Golden Gem, 2s. per dozen.

DACTYLIS ELEGANTISSIMA, GOLDEN PYRETHRUM, SEDUMS of sorts, for Carpet Bedding, 1s. per dozen, 6s. per 100.

HELIOTROPES, COLEUS, TROPÆOLUMS, and SALVIAS, fine named sorts, 2s. per dozen, 12s. per 100.

ANTIRRHINUMS, PHLOXES, PANSIES, and PINKS, fine named sorts, 3s. per dozen; 12 of each, 48 in all, 11s.

ALTERNANTHERAS and IRESINES, of sorts, 2s. 6d. per dozen, 15s. per 100.

BEGONIAS, Tuberous, in great variety, 4s., 6s., 9s., and 12s. per dozen.

CENTAUREA RAGUSINA, 3s. 6d. per dozen.

CHRYSANTHEMUMS and FUCHSIAS in variety, 2s. 6d. per dozen, 15s. per 100.

HERBACEOUS and ALPINE PLANTS, 12 in 12 sorts, 4s.; 50 in 50 sorts, 12s.

DELPHINIUM, fine sorts, to name, 6s. per dozen.

PANSIES and VIOLAS, for bedding, in great variety, 2s. per dozen, 12s. per 100.

PLANTS, Stove, in great variety, 6s., 9s., and 12s. per dozen, our selection.

" Greenhouse, 6s., 9s., and 12s. per dozen, our selection.

FERNS, Stove or Greenhouse, 9s. and 12s. per dozen, our selection.

CATALOGUES post-free.

WM. CLIBRAN AND SON, Oldfield Nursery, Altrincham.

To the Trade.

B. L. PIERPOINT AND CO. have a large quantity of good, sound English-grown GARLIC to offer. Price per hundredweight or per stone on application.

Seed Merchants and Bulb Importers. { LIVERPOOL and WARRINGTON. } Seed Merchants and Bulb Importers.

VIOLAS, 20,000 fine strong plants:—

" cornuta, white } 5s. per 100, 45s. per 1000.
" " Queen of Blues, }

LOBELIA, Emperor William, strong autumn-struck, from stores, 2s. 6d. per 100, 20s. per 1000; from single pots, 5s. per 100, 45s. per 1000.

VERBENAS, Pink and Crimson, strong autumn-struck, 6s. per 100, from stores; 10s. per 100, from single pots.

Cash only. Carriage and package free.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

Exhibition of Rhododendrons, Royal Botanic Gardens, Regent's Park, N.W.

ANTHONY WATERER'S EXHIBITION of RHODODENDRONS in these Gardens is NOW ON VIEW daily. Admission may be obtained by Orders of Fellows, or from the Exhibitor,

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

☞ The fine Standard and other Rhododendrons and Azaleas in Rotten Row, Hyde Park, are from Anthony Waterer.

DEVIZES HORTICULTURAL SOCIETY.

By kind permission of C. E. H. A. COLSTON, Esq.,

The SUMMER SHOW of PLANTS FLOWERS, FRUIT, and VEGETABLES, will be held at Roundway Park, Devises, on FRIDAY, July 30. Good Bands will be in attendance.

Mr. C. N. MAY, Elm Lodge, Devizes, } Secretaries.
Mr. J. A. RANDELL, Devizes, }
Mr. C. N. MAY, Elm Lodge, Devizes, Treasurer.
Mr. THOMAS KING, Devizes, Superintendent.
Mr. MAX LEONHARDT, Brittox, Devizes, Collector.

LIST OF PRIZES (Open to all England):—

Classes.		1st. £	s.	d.	2d. £	s.	d.
1.	Nine Stove or Greenhouse Plants in full bloom, distinct	10	0	0	8	0	0
2.	Six ditto, ditto, ditto	4	0	0	3	0	0
3	Nine Ornamental Foliage Plants, distinct	8	0	0	5	0	0
4.	Six ditto, ditto, ditto	4	0	0	3	0	0
5.	Twelve Exotic Ferns, distinct ..	3	0	0	2	0	0
6.	Nine ditto, ditto, ditto	2	0	0	1	0	0
7.	Nine Fuchsias, distinct	6	0	0	4	0	0
8.	Six ditto, ditto	4	0	0	2	0	0
9.	Group of any number of Plants for effective arrangement, to occupy a space of 12 feet by 10 feet . ..	3	0	0	2	0	0
10.	Six Geraniums, single plants, distinct	1	0	0	0	15	0
11.	Six ditto, variegated, ditto	0	15	0	0	10	0
12.	Nine Petunias, distinct	1	0	0	0	15	0
13.	Six Gloxinias, distinct	0	15	0	0	10	0
14.	Roses, 24 single truses, distinct ..	2	0	0	1	0	0
15.	Ditto, 12 ditto, ditto, ditto	1	0	0	0	10	0
16.	Ditto, 24 varieties, 3 trusses of each	3	0	0	2	0	0
17.	Ditto, 12 ditto, ditto, ditto	1	0	0	0	15	0
18.	Cut Flowers, 24 distinct	0	15	0	0	10	0
19.	Ditto Geraniums, 24 bunches, not more than 9 in each . ..	0	15	0	0	10	0
20.	Ditto Verbenas, 12 ditto, ditto, ditto	0	10	0	0	5	0
21.	Collection of Fruit, 10 varieties (Pine-apples excepted)	5	0	0	2	10	0
22.	Grapes, black, 3 bunches	1	0	0	0	10	0
23.	Ditto, white, ditto	1	0	0	0	10	0
24.	Peaches, best dish of six	0	10	0	0	8	0
25.	Nectarines, ditto, ditto	0	10	0	0	8	0
26.	Melon, green-flesh	0	5	0	0	3	0
27.	Ditto, scarlet-flesh	0	5	0	0	3	0
28.	Vegetables, collection of 9 varieties	0	10	0	0	7	6
29.	Bouquet of Wild Flowers	0	10	0	0	5	0

TOWCESTER HORTICULTURAL SHOW (in connection with the Northamptonshire Agricultural Show), SEPTEMBER 9 and 10. The Band of the 2d Life Guards is engaged for both days. ONE HUNDRED AND FIFTY POUNDS will be given in Prizes at the Horticultural Show, of which Schedules, &c., can be obtained of the Hon. Secs., Messrs. W. WHITTON and T. M. PERCIVAL, Towcester.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION, for the Relief of Decayed Farmers, their Widows and Orphans.

Patron—HER MAJESTY THE QUEEN.

President—HIS GRACE THE DUKE OF RICHMOND AND GORDON.

ALLOWANCES to PENSIONERS.

Married .. .. £40 per annum.
Male .. .. £26 "
Widows and unmarried Orphan Daughters £20 "

Every information to be had of the Secretary, by whom Subscriptions and Donations will be thankfully received.

ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.

The ANNUAL GENERAL MEETING will be held at Willis's Rooms, St. James's, on WEDNESDAY, June 16, at 11 o'Clock precisely; and the ELECTION of PENSIONERS will take place on the same day, at half-past 11 o'Clock.

All Subscriptions shall be deemed payable on January 1 in each year; and no Contributor shall vote in respect of an Annual Subscription while the same is in arrear.

Offices of the Institution, 26, Charles Street, Haymarket, S.W.

GERANIUMS.—Wonderful, 16s. per 100, or post-free, 2s. 2d. per dozen. Madame Amelie Baltet, best double white, 20s. per 100, 4s. per dozen, 6d. each, from thumb pots, for cash.

J. L. WATSON, Manor Road Nursery, Gravesend.

FOR SALE, Two fine ALOES, about 5 feet high. Enquire of

Mr. E. COOKE, Statham Hall, Statham, Norwich.

TO THE TRADE and OTHERS.—20,000 good Bedding GERANIUMS, including many good varieties, 15s. and 20s. per 100. Special prices for large quantities. For Dahlias, Lobelias, Alternantheras, Centaureas, Chrysanthemums, Echeverias, and Fuchsias, &c., see CATALOGUE, free on application.

GEO. GUMMOW, 114, Loughborough Road, Brixton, S.W.

To the Trade.

KELWAY'S "Model" CALCEOLARIA and CINERARIA.

Vide Gardeners' Chronicle, May 24, 1879; *Journal of Horticulture*, May 22, 1879, and May 13, 1880; and *Gardeners' Magazine*, May 31, 1879, April 17, 1880, and May 15, 1880.

Price on application to

KELWAY AND SON, Langport, Somerset.

RICHARD WALKER can supply East Ham CABBAGE PLANTS, BRUSSELS SPROUTS, and DRUMHEAD SAVOYS, all at 2s. 6d per 1000. London Market CAULIFLOWER PLANTS, 5s. per 1000; terms cash.

Market Gardens, Biggleswade, Beds.

Cabbage Plants—Cabbage Plants.

W. VIRGO can now supply in any quantity good strong well rooted spring-sown plants of the following:—Robinson's Champion Drumhead Cabbage, Early Oxheart, Early Enfield Market, Wheeler's Imperial, and Drumhead Savoy. All at 4s. per 1000. Also Broccoli, Cauliflower, Brussels Sprouts, Winter Kales, Green Curled Savoy and Early Cabbage. The above in any quantity at 6s. per 1000, made up of different kinds. Cash or reference from unknown correspondents. Delivered free on rail.

Wonersh Nurseries, near Guildford, Surrey.

To the Trade.

YELLOW and WHITE BANKSIAN ROSES, good, in 4½-inch pots, 75s. per 100; MABEL MORRISON, REINE MARIE HENRIETTA, 12s. per dozen; MARÉCHAL NIEL, extra size, in 7-inch pots, 24s. per dozen.

GEORGE COOLING, The Nurseries, Bath.

HUGH LOW AND CO.

Have pleasure in informing their Friends and the Public that their

STOCK OF ORCHIDS IS VERY EXTENSIVE,

and well worth the notice of intending Purchasers, who are cordially invited to an Inspection of the Plants.

At the Clapton Nursery Orchids are grown in Eleven Houses, one of which is 155 *ft. in length and* 30 *ft. in width.*

Mr. BOXALL has recently returned, bringing with him, in cases measuring over 30 tons, the fine Collection of PHALÆNOPSIS made during his stay in the Philippine Islands.

Eleven Span-roofed Houses, of an aggregate length of 976 feet, have been added to the Glass Structures of the Nursery, to meet the increasing demand for Ornamental and Flowering Plants.

CLAPTON NURSERY, LONDON, E.

Now Ready—Good Spring-sown Cabbage and Other PLANTS, &c.

GEE'S superior Bedfordshire-grown Plants, &c., grown from his far-famed selected stocks, can again be supplied in any quantities, as follows, for cash with orders:—

CABBAGE PLANTS.—Early Enfield, Nonpareil, Large Drumhead, Thousand-head, and Red Dutch.

SAVOY.—Large Drumhead, and Dwarf Green Curled.

SCOTCH KALE, BRUSSELS SPROUTS, finest.

KOHL RABI.—Large Green.

All the foregoing at 4*s.* per 1000.

BROCCOLI. — Purple Sprouting, Adams' Early White, Knight's Protecting, and Wilcox's Large Late White, 5*s.* per 1000.

CAULIFLOWER.—Veitch's Giant, true, 7*s.* 6*d.* per 1000; Early London and Walcheren, 6*s.*

LETTUCE.—Old Brown Cos, Victoria, Drumhead, and Paris Green Cos, all at 5*s.* per 1000.

Packages 6*d.* per 1000 extra.

F. GEE, Seed and Plant Grower, Biggleswade, Beds.

Cheap Orchids.

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

Bennett's Pedigree Roses.

Should be in every Collection.

GEORGE COOLING has pleasure in offering fine plants coming into bloom of these desirable varieties, viz.:—

Beauty of Stapleford	Jean Sisley
Duke of Connaught	Michael Saunders
Duchess of Connaught	Nancy Lee
Duchess of Westminster	Pearl
Honourable George Bancroft	Viscountess Falmouth

The complete Set, 25*s.*, basket and packing free for cash with order. Usual discount to the Trade.

New LIST of Roses in pots, Clematis, &c., post-free.

The Nurseries, Bath.

HOLLYHOCKS.—HOLLYHOCKS.—HOLLYHOCKS, 25*s.* per 100, fine plants, in 3-inch pots, seedlings, from a first-class strain.

ALTERNANTHERAS, of sorts, very good, 12*s.* per 100.

CENTAUREA CANDIDISSIMA, 11*s.* per 100.

IVY-LEAVED GERANIUMS, single and double, extra strong, 18*s.* per 100.

HELIOTROPES, MESEMBRYANTHEMUM var., and many other useful Bedding Plants at equally reduced prices.

The above are wholesale prices. Packages extra, and allowed for if returned immediately.

WOOD AND INGRAM, The Nurseries, Huntingdon, and St. Neots.

J. C. SCHMIDT, Erfurt, Germany, offers:—

ARALIA SIEBOLDII, seedlings, 50*s.* per 1000.

LATANIA BORBONICA, seedlings, one year in seed-pots, 60*s.* per 1000—not less than 500 will be sent off.

SEAFORTHIA ELEGANS, two to three feather fronds, 18*s.* per dozen; four to five feather fronds, 30*s.* per dozen.

PANDANUS UTILIS, twelve to fifteen leaves, 50*s.* per 100; fifteen to twenty leaves, 75*s.* per 100.

MESSRS. THOMAS CRIPPS AND SON are now sending out the undermentioned three new CLEMATISES, all of the viticella or Jackmanni section:—

EARL BEACONSFIELD (T. Cripps & Son).—A splendid hybrid, described in the *Gardeners' Chronicle*, June 22, 1878, as "a beautiful flower of a rich royal purple colour, and splendid form. This variety belongs to the viticella type, and is remarkably richly coloured." First-class Certificate Royal Horticultural Society. Price 15*s.* each.

LILACINA FLORIBUNDA (T. Cripps & Son).—Pale grey-lilac, deeply veined: flowers the size of C. Jackmanni, but having six petals and of perfect shape. This is the lightest variety and most abundant bloomer in this section. An admirable contrast to C. Jackmanni for bedding purposes. Price 10*s.* 6*d.* each.

OTHELLO (T. Cripps & Son).—Flowers medium, a good shaped six-petalled variety. Late and very free flowering: colour dark velvety purple. Price 10*s.* 6*d.*

Discount to the Trade.

Plates of "Earl Beaconsfield" and "lilacina grandiflora," 2*s.* 6*d.* each.

The Tunbridge Wells Nurseries, Kent.

MATRICARIA INODORA PLENA (NEW DOUBLE MAY-WEED).

Figured in *Gardeners' Chronicle* of December 13, 1879.

Will bear the severest winter without protection. If grown in a rich border it will flower in the greatest profusion from June till October, and the flowers, which are pure white, are equal to those of a Pompon Chrysanthemum. It is invaluable for cutting. 1*s.* 6*d.* each, 12*s.* per dozen, 75*s.* per 100. Engraving sent with three plants. The usual discount to the Trade.—Messrs. DICKSONS AND CO., 1, Waterloo Place, Edinburgh.

Vines—Vines—Vines.

JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, has still on hand a fine Stock of Fruiting and Planting CANES of Muscat of Alexandria, Bowood Muscat, Mrs. Pince, Gros Guillaume, Burchardt's Prince, and Madresfield Court. Also Planting Canes of several other varieties. CATALOGUE free. The Trade supplied.

Illustrated Catalogue of Ferns.

W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

Primulas — Primulas — Primulas.

Eleventh Year of Distribution.

WILLIAMS' superb strain, 1*s.* 6*d.* per dozen, 10*s.* per 100; package and carriage free.

CINERARIAS, choicest assortment, same size and price.

The above are quite equal to those I have sent out in previous years. Cash with order.

JOHN STEVENS, The Nurseries, Coventry.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE,

3*d.* per bushel; 100 for 20*s.*; truck (loose, 250 bushels), 30*s.*; 4-bushel bags, 4*d.* each.

LIGHT BROWN FIBROUS PEAT, 5*s.* 6*d.* per sack; 5 sacks, 25*s.*; 12 for 45*s.*, or 36*s.* per ton.

BLACK FIBROUS PEAT, 5*s.* per sack, 5 sacks 22*s.*; 12 for 40*s.*, or 34*s.* per ton; sacks, 4*d.* each.

COARSE SILVER SAND, 1*s.* 9*d.* per bushel; 15*s.* half ton, 26*s.* per ton; in 1 cwt. bags, 4*d.* each.

YELLOW FIBROUS LOAM, PEAT MOULD, and LEAF MOULD, 1*s.* per bushel.

SPHAGNUM MOSS, 8*s.* 6*d.* per sack.

Manures, Garden Sticks, Virgin Cork, Tobacco Cloth and Paper, Russia Mats, &c. Write for Free PRICE LIST.

H. G. SMYTH.

10, Castle Street, Endell Street, Long Acre, London, W.C.

GARDEN REQUISITES.

COCOA-NUT FIBRE REFUSE, 4 bushels, 1*s.*; 120 for 20*s.*; Truck, 25*s.*

BEST BROWN ORCHID PEAT, 5*s.* per Sack, 5 for 22*s.* 6*d.*

BLACK FIBROUS PEAT 4*s.* 6*d.* per Sack, 5 for 20*s.* Sacks

COARSE SILVER SAND, 1*s.* 6*d.* per Bushel. [4*d.* each.

YELLOW FIBROUS LOAM, splendid LEAF-MOULD and PEAT-MOULD, 1*s.* per bushel. TOBACCO CLOTH and PAPER, highly effective—Cloth, 8*d.* per lb.; Paper, 7*d.*; Roll Paper, best quality, 1*s.* Write for Price List.

W. HERBERT AND CO., Broad Street Mews, Broad Street, City, E.C., (turning opposite Metropolitan Railway Station).

Fibrous Peat for Orchids, &c.

BROWN FIBROUS PEAT, best quality for Orchids, Stove Plants, &c., £6 6*s.* per truck.

BLACK FIBROUS PEAT, for Rhododendrons, Azaleas, Heaths, American Plant Beds, 15*s.* per ton.

Delivered on rail at Blackwater, S. E. R., or Farnborough, S. W. R., by the truckload. Sample bag, 4*s.*; 5 bags, 20*s.*; 10 bags, 36*s.* Bags, 4*d.* each.

Fresh SPHAGNUM, 10*s.* 6*d.* per bag.

WALKER AND CO., Farnborough Station, Hants.

COCOA-NUT FIBRE REFUSE, as supplied to all the Royal Gardens of Europe, useful at all seasons, Invaluable for Potting, Forcing, Ferneries, Strawberries, Bedding-out Plants, &c., Destroys all Slugs and insects. Bags (about 4-bushel), per bag 1*s.*, 15 bags 12*s.*, 30 bags 20*s.* (all bags included); Van-load at Works, 4*s.*; ditto delivered within 5 miles, 10*s.*; Truck-load (about 250 bushels), free on rail, 25*s.* Terms cash with order.

CHUBB, ROUND AND CO.,

Fibre Works, Westferry Road, Milwall, London, E.

COCOA-NUT FIBRE REFUSE, as supplied to the Royal Horticultural Society.—Four-bushel bag (bag included), 1*s.*; 30 bags (bags included), 20*s.*; truck free to rail, 25*s.*

T. RICH (late Finlayson & Hector), Cocoa-Nut Fibre Works, 24 and 25, Redman's Row, Mile End Road, London, E.

Weeds Eradicated from Lawns.

WATSON'S LAWN SAND both destroys Daisies, Plantains, Rib-grass, &c., and invigorates the grass. Testimonials and instructions on application. 36*s.* per cwt.; 56 lb. kegs, 19*s.*; 28 lb. tins, 10*s.*

Proprietor, W. D. BARBOUR, 3, Park Row, Leeds.

Tobacco Fibre Insecticide.

All who have a Greenhouse and love to see their Plants look clean and healthy should use

DARLINGTON BROTHERS' TOBACCO FIBRE. — Contains more Nicotine than any other Insecticide sold; purer and better than the best Tobacco Paper or Cloth; easy to use; no apparatus requisite; a common garden pot only required; will not flare, is perfectly safe, and is the best article for making Nicotine Juice for syringing purposes. Forty per Cent. saved by the use of this article. Prices, 6 lb., 5*s.*; 28 lb., 21*s.* First-class ROLL TOBACCO PAPER or CLOTH, same price as above. Best Paper and Cloth made. *Vide* Testimonials, free on application. Post-office Orders, Darlington Brothers, Chatham. Cheques crossed London and Provincial Bank.

DARLINGTON BROTHERS, Frederick Street, Chatham.

GISHURST COMPOUND.—Used by many of the leading Gardeners since 1859, against Red Spider, Mildew, Thrips, Greenfly, and other Blight, in solutions of from 1 to 2 ounces to the gallon of soft water, and of from 4 to 16 ounces as a winter dressing for Vines and Fruit Trees. Has outlived many preparations intended to supersede it.

Sold Retail by Seedsmen in Boxes, 1*s.*, 3*s.*, and 10*s.* 6*d.* Wholesale by PRICE'S PATENT CANDLE COMPANY (Limited).

FOR SALE, a Quantity of Old TOBACCO ROPE, suitable for Greenhouse Purposes. Will be sold cheaply. Apply, JAMES LAMBKIN AND CO., Limited, 9, Patrick Street, Cork.

To Strawberry Growers.

THE STRAW BOTTLE PACKINGS are being used as a thick pad, for placing under Ripening Fruit, being an effectual Preservative against Slugs and Dirt. Wheat Straw, 7*s.*; or Rye Straw, 5*s.* 6*d.* per gross.

SEYMER AND CO., 37, Eastcheap, London, E.C.

ANDERSON'S RUSSIA MATS

For COVERING, TYING, and PACKING, are highly recommended for durability and cheapness. Descriptive Catalogue sent post-free on application. SACKS and BAGS of every description. TARPAULINS, HORSE-CLOTHS, ROPES, LINES, and TWINES.—JAMES T. ANDERSON, 149, Commercial Street, Shoreditch, London, E.

WM. PETERS has still some good colour Soft ARCHANGEL MATS, very suitable for tying purposes, also ARCHANGEL and ST. PETERSBURG MATS, for covering.

JUST TO HAND, *ex Duart Castle*, a parcel of RAFFIA, fine quality, good colour, and extra strong.

SEED BAGS and SACKS. Specially prepared Sewing or Tying, White or Tarred TWINE, ROPES, LINES, &c. NETTING and SHADING CANVAS. RICK CLOTHS and WATERPROOF COVERS of all descriptions.

Prices on application to

44, Tenter Street South, Goodman's Fields, E., and Well Street Warehouses, London Docks, E.

RAFFIA FIBRE.—A parcel of the best quality, just received from our agent at Madagascar, at a special low price.

MARENDAZ AND FISHER, James Street, Covent Garden, W.C.

RAFFIA.—A small Shipment of the above having arrived, in first-rate condition, the Advertisers would be glad to receive offers for same. Small quantities at the rate of 12 lb. for 9*s.*

THOS. CHRISTY AND CO., 155, Fenchurch Street, E.C.

MATS, RAFFIA for TYING, TRAINING STICKS and LABELS,

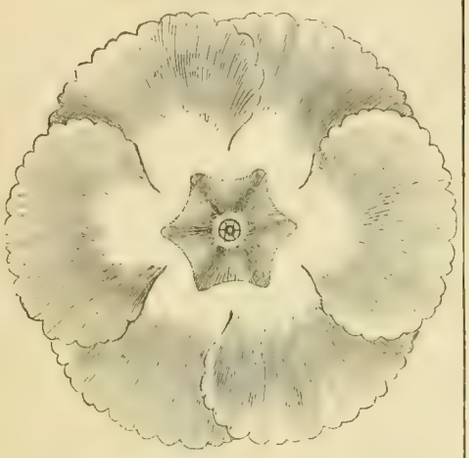
Bamboo Canes, Virgin Cork, &c.

C. J. BLACKITH AND CO.,

COX'S QUAY, LOWER THAMES STREET, LONDON.

SUTTON'S FLORISTS' FLOWER SEEDS

| ARE the BEST | *Post Free.* | ARE the BEST. |



SUTTON'S PRIZE PRIMULA.

Sutton's Superb Red
Sutton's Superb White
Sutton's Superb Mixed
5s. and 2s. 6d. per packet. *Post-free.*

"The Primulas from your seed I have never seen equalled.—Mr. A Birt, *Rodborough.*

Particulars of other Flower Seeds gratis and post-free on application.

SUTTON & SONS,
THE QUEEN'S SEEDSMEN,
And by Special Warrant to
HIS ROYAL HIGHNESS the PRINCE of WALES,
READING.

IMPORTANT NOTICE.

J. CHAMBERS, Westlake Nursery, Isleworth, W.,

Is now prepared to send out his two new Hybrid Bulbous BEGONIAS, ROYAL STANDARD and AVALANCHE, in nice healthy little plants at 15s. each. They received First-class Certificates, June, 1879, both at South Kensington and Richmond. These are undoubtedly the two grandest Hybrid Begonias ever offered: see *Gardeners' Chronicle*, June 28, 1879. Both varieties can be seen in flower at the nursery.

Also a new White LOBELIA MAGNIFICA ALBA. The habit is identical with that well-known variety magnifica. As a pot plant for general decoration with Lycopodium, Maidenhair, and other small Ferns, I know of nothing to equal it. Nice plants at 1s. 6d. each, or 12s. per dozen.

Usual allowance to the Trade. Terms cash. Post-office Orders payable at Spring Grove, Isleworth, W.

CAULIFLOWER AND CABBAGE PLANTS.

Our own selected stocks, in good strong plants Veitch's Autumn Giant Cauliflower, per 1000, 7s. 6d.; Walcheren and Early London Cauliflower, per 1000, 6s.; Brussels Sprouts, per 1000, 5s.; Daniel's Defiance Cabbage, per 100, 1s., per 1000, 7s. 6d.; Enfield Market, Early Nonpareil, and other sorts, per 1000, 5s.; Champion Drumhead or Cattle Cabbage, extra fine stock, per 1000, 4s. 6d.

Free on Rail at prices quoted. Orders of 20s. and upwards carriage free.

DANIELS BROTHERS,
The Royal Norfolk Seed Establishment, Norwich.

TEA SCENTED ROSES,

For Planting Out or Greenhouse Culture.

Upwards of 20,000 strong, well established plants, in pots.

List and Prices on application to

CRANSTON'S NURSERY & SEED COMPANY, Limited,
KING'S ACRE, near HEREFORD.

To the Trade,
HOME-GROWN TURNIP SEEDS.

H. AND F. SHARPE invite the attention of the Trade to their fine selected Stocks of TURNIP SEEDS, which comprise, amongst others, the following excellent varieties, viz:—

Sharpe's Improved Large Swede	Sutton's Mammoth Purple-top
Sharpe's West Norfolk Swede	Devonshire Grey Stone
Sutton's Champion Swede	Pomeranian White Globe
East Lothian Swede	Lincolnshire Red Round
Green-top Yellow Aberdeen	Stratton Green Round
Golden Yellow Aberdeen	White Stone or Stubble

The quality is very fine, and the prices will be found very advantageous to purchasers. For further particulars apply to Seed Growing Establishment, Wisbech.

By Permission of the Hon. Board of Customs.

(Free of Duty.)

CORRY & SOPER'S NICOTINE SOAP

(PATENT).

An effectual and speedy Eradicator of

Scale, Thrips, Green Fly, Mealy Bug, Red Spider, American Blight,
and all
Parasites affecting Plants, without Injury to Foliage.

It may be used with perfect safety and efficiency for the Destruction of Gooseberry Caterpillars.

Especially adapted for the Destruction of Blight on the Coffee Plant.

The Proprietors have great pleasure in bringing to the notice of Horticulturists generally this valuable preparation, the basis of which is *Nicotine*, or the Oil of Tobacco, with which is blended other essential ingredients, to render it available as a general Insecticide.

It has now undergone a thorough test by some of the most Practical Men in Horticulture, and it is proved beyond all doubt that no Insecticide will bear comparison to it for killing properties with Perfect Safety to Foliage.

It may be used as a Dip or Wash for any description of Out or Indoor Plants, and as a Dressing for the Bark of Fruit Trees, Vines, &c., it has no equal.

Some hundreds of Testimonials lately received from men of considerable experience throughout the Kingdom.

Sold in Jars, 8 oz., price 1s. 6d.; 20 oz., price 3s.; and in Tins, 14 lb., price 15s. 6d.; and Drums, 28 lb., price 25s.; 56 lb., price 50s.; 112 lb., 95s. Full directions for use on each package.

And 2 ounce Sample Jars, 6d. each.

Full directions for use on each package.

Manufacturers of TOBACCO POWDER, TOBACCO JUICE (duty free), TOBACCO PAPER and CLOTH, and HORTICULTURAL SUNDRIESMEN.

May be obtained from all Seedsmen and Florists.

Wholesale from the Manufacturers,

CORRY & SOPER,
BONDED TOBACCO STORES,
SHAD THAMES LONDON, S.E.

DANIELS' Unrivalled Strains of Choice FLORISTS' FLOWER SEEDS, post-free.

☞ *In the raising of Florists' Flowers from seed the first essential point is to secure carefully hybridised seed, saved from the finest flowers of the finest kinds, the chances of success in raising some really good varieties being vastly greater from a few plants from seed of the choicest quality, than from a large quantity raised from seed of an inferior description*

FOR PRESENT SOWING. *Per pkt.*—*s. d.*

AURICULA Daniels' Prize Alpine		1	0
CARNATION and PICOTEE, from stage flowers, very choice	2s. 6d. and	5	0
" " yellow varieties		2	6
CALCEOLARIA, Daniels' Superb Prize, 1s. 6d., 2s 6d.	and	5	0
CINERARIA 1s. 6d., 2s 6d.	and	5	0
GLOXINIA HYBRIDA, magnificent 1s. 6d.	and	2	6
PRIMULA, Daniels' choicest red 1s. 6d.	and	2	6
" " " white 1s. 6d.	and	2	6
" " " mixed 1s. 6d., 2s. 6d.	and	5	0
" " Fern-leaved 1s. 6d.	and	2	6
" " superb double 2s. 6d.	and	5	0
PANSY, Daniels' Show and Fancy 1s. 6d.	and	2	6
" " superb blotched magnificent 2s. 6d.	and	5	0
" " improved striped		2	6
POLYANTHUS, fine gold-laced		1	0
PRIMROSE, hardy, beautiful varieties, mixed		1	0
SWEET WILLIAM, Daniels' Prize		1	0

DANIELS BROS.,
ROYAL NORFOLK SEED ESTABLISHMENT,
NORWICH.

CABBAGE PLANTS, &c.

CABBAGE, SAVOY, CAULIFLOWER, BRUSSELS SPROUTS, BROCCOLI, CELERY.

List of sorts and prices on application, to
CRANSTON'S NURSERY and SEED COMPANY
(Limited), King's Acre, Hereford.

New Crotons.

IRELAND AND THOMSON have much pleasure in introducing the following superb additions to this splendid tribe of decorative plants:—

CROTON INTERRUPTUM AUREUM.—This is a most distinct and elegant variety. It is a seedling raised at their Craigleith Nursery, originating in a cross between C. interruptum and C. Johannis. It resembles the former most in the form of its foliage, which is interrupted, but being more slender is even more elegant, arching gracefully outwards without the spiral form which characterises that parent. The colour is the deep golden tint of Johannis on a dark olive-green ground colour, the gold predominating. It branches most freely naturally without stopping. For table decoration it is without exception the most elegant and beautiful Croton in cultivation, and is certain to become a favourite exhibition variety. It was awarded a First-class Certificate at the Liverpool Horticultural Association's Show in August, 1879, and was also awarded the same distinction by the Scottish Horticultural Association at the last meeting of its Committee on New Flowers. Price 10s. 6d. each. Terms to the Trade on application.

CROTON DUKE OF BUCCLEUCH.—Among all the trilobate forms this splendid variety stands pre-eminent for the size and the depth of colouring of its foliage. The origin of the variety is a cross between Disraeli and Johannis, the former being the seed-bearing parent. It has the form of the foliage of Disraeli, with greater size and boldness, thus adapting it admirably for bold specimen plants. The colour is that of Johannis with a deeper tint of gold in the mature leaves, the younger leaves being marbled and suffused with gold and deep olive-green. It was awarded a First-class Certificate at the Royal Horticultural Society's Show at Preston in 1878, also at Edinburgh in 1879. Price 10s. 6d. each.

Terms to the Trade on application.

Nurseries, Craigleith, Comely Bank, and Royal Exotic, Lynedoch Place; Seed Warehouse, 20, Waterloo Place, Edinburgh.

New Coleus, Petunias, and Fuchsias of 1879 and 1880.

THE EXECUTORS of H. WALTON beg to offer the following NEW COLEUS of 1880:—Duchess of Teck, Empress of Germany, James Barnshaw, Juno, Lovely, Royal Purple, and Sensation, 1s. each. New Varieties of 1879:—Aurora, Butterfly, Firefly, Glow, Magic, and Sparkler, 8d. each, strong, well rooted plants; the thirteen varieties, 10s.

New Double Fringed PETUNIAS of 1880. These have been selected with great care from an extensive collection, and can be confidently recommended as being a great advance on anything hitherto offered. Strong, well-rooted plants, 2s. 6d. each, 24s. per dozen varieties, post-free.

New Double Fringed PETUNIAS of 1879, 1s. each, 9s. per dozen varieties.

New FUCHSIAS, 1879 and 1878, very choice sorts, 9d. each, all post-free, for cash with order.

A fine collection of BEGONIAS, Tuberous-rooted and Ornamental-leaved, Half Specimen ERICAS, &c., the best exhibition varieties.

For descriptions of the above see CATALOGUE, sent post-free, on application.

Edge End Nursery, Brierfield, near Burnley.

THE PARIS EXHIBITION of 1878.

GOLD MEDAL AWARDED.

JAMES BOYD & SONS,

HORTICULTURAL BUILDERS,

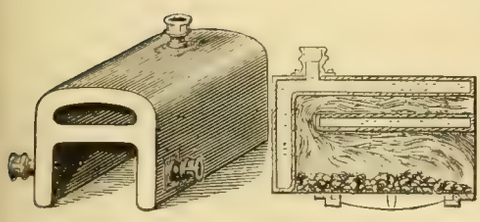
IN WOOD OR IRON, AND MANUFACTURERS OF HOT-WATER APPARATUS

For HEATING

Hothouses, Churches, Mansions, Public Buildings, Harness Rooms, &c.,

PAISLEY.

LONDON OFFICE: 6, SUFFOLK STREET, PALL MALL, S.W.



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Erected complete, or the Materials supplied at Moderate Prices.

ILLUSTRATED CIRCULARS POST-FREE.

Complete Catalogue, 3s.

B. S. WILLIAMS'

PRIZE MEDAL

FLOWER SEEDS.

POST-FREE.

	Per packet—*s.*	*d.*
AURICULA, Show, finest mixed	1	6
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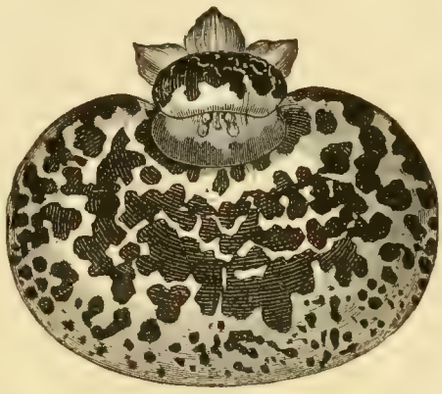
CARNATIONS, finest mixed	1	6
CALCEOLARIA, Williams' Superb Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.* and	1	6



From Mr. R. CAMPBELL, *Utica, U.S.A., July* 28, 1879.
"Sir,—I may state that the Calceolarias and Cinerarias, from seed imported from you, turned out more than what I expected of them. I may say that each flower was perfect, and not a poor or inferior one to be found."

CINERARIA, Weatherill's Extra Choice Strain, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.* and	1	6
CYCLAMEN PERSICUM, Brilliant (New) .. 5*s.* and	3	6
CYCLAMEN PERSICUM GIGANTEUM, 5*s.*, 3*s.* 6*d.* &	2	6
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CYCLAMEN PERSICUM, Williams' Superb Strain, 5*s.*, 3*s* 6*d*, 2*s.* 6*d.*, and	1	6
PANSY, English Show .. 2*s.* 6*d.* and	1	0
PANSY, Belgian or Fancy .. 2*s.* 6*d.* and	1	0

From Mr. A. ANDERSON, *Gardener to* His Grace the Duke of Grafton, *Wakefield Lodge, March* 24, 1880.
"Sir,—I have had some very fine Primulas this winter from your seed. I enclose some blooms, which are nearly 3 inches across.

PRIMULA SINENSIS FIMBRIATA COCCINEA (New) .. 5*s.*, 3*s.* 6*d.*, and	2	6
PRIMULA SINENSIS FIMBRIATA, Williams' Superb Strain, Red, White, or Mixed, 5*s.*, 3*s.* 6*d.*, 2*s.* 6*d.* &	1	6
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PICOTEES, finest Mixed ..	1	6

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UPPER HOLLOWAY, LONDON, N.

THE

Gardeners' Chronicle.

SATURDAY, JUNE 12, 1880.

MR. DAY'S ORCHIDS.

CHIEF among those Orchid collections in and around London, or indeed over the country, that have stood the test for the last twenty years, is that of John Day, Esq., at Tottenham. Many, very many, during that time have been formed, and have been dispersed. The few that rank alongside or take precedence of it could be counted on the fingers of one hand, and those few, looking to the ambition and enterprise of some of the Orchidophilists of the present day, are wanting in importance. The collection at Tottenham, however, year by year increases in interest and value, comprising as it does nearly all that is worth having, new and old. It was a grand collection when I knew and visited it first, nearly twenty years ago—about the time when Odontoglossum Pescatorei was only to be had in units instead of by thousands as now, when Alexandræ was unknown. Of course, the original species, crispum, had found its way to the Horticultural Society, and been named by the late Dr. Lindley, but to the best of my knowledge not a single plant of that importation survived. Mr. Bateman pointed out to me the residue of the importation—pseudobulbs all shrivelled and lifeless—and talked eloquently over the grandeur of the species, at that time unknown to culturists—and certainly, as the sequel has shown, not in too glowing language. These days, however—and it does not appear a very long time to look back upon—were the days when cool Orchid culture was not only at a discount, but was altogether ignored or misunderstood; hence the plants sent here from the alpine regions of tropical and semitropical climates were forced to succumb to unnatural treatment. The bringing them overland, in a hot, desiccating climate, to the seaport towns, was a severe enough punishment, and the correcting process of establishing them at home, or such of them as survived, as then practised, only ended in absolute loss. A better state of things has prevailed, and now cool Orchid culture seems to be better understood generally, looking to results, than any other kind of Orchid culture by whatever name it may be designated. To have a grand collection in these times, such as was to be seen at Mr. Day's, Mr. Rucker's, Mr. Warner's, and others which might be named, may seem to some preposterous in the light of our knowledge now; but it is not so. Attention was then given to many species of the East Indian and West Indian Orchids that are partly laid on the shelf in many modern collections—it may be because of the excessive heat and moisture in which they live and enjoy life, or because of the inability to cope with their cultural requirements; it cannot be for want of intrinsic beauty or wonderful detail in the matter of form and colouring. I know nothing modern to equal the grand arching racemes of the Saccolabiums and Aerides, the stiff and withal graceful spikes of Vandas, the marvellous branching panicles

of the white Moth Orchid (Phalænopsis), which veritably has no rival, and which I have from time to time seen grand in the collection under review; and yet I have the courage to speak in presence of the marvellous white Odontoglots that now form coveys in all collections of importance—the more modern O. vexillarium and Roezlii, &c. No doubt some species are useful for one purpose, some for another, but at best we weary of seeing the same kind of thing time after time. The great craving has been, is, and will be, for something new; but I do not know a single collection where so many species and varieties, both new and old, may be seen as at Mr. Day's.

To proceed, then, to particularise, I cannot pretend, looking to the time and space it would occupy, to do more than comment in a general way on the many plants that passed before the eye in going the round of the houses at Tottenham. Taking them in the order they were visited, the cool-house is of the usual form, placed in a north exposure, and is about 60 feet long, with path up the centre and the table platforms on either side. There was a good general display of Odontoglots, none of which shone out in the distance, and as you neared it became more enchanting, than O. nævium majus. There were several plants of this, but one bearing seven arching racemes was in full efflorescence. The multitudinous spotting of this flower, and the intensity of the spots, which are nearer crimson than most other spotted Orchid flowers which get the credit of it, are on a clear white ground, and when in condition, such as the plant in question was, compel one to pause and examine it as one would do a fine painting. Not far from it was a tiny beauty of the liliputian order, also in bloom; I refer to Odontoglossum blandum. The segments of this are much like O. nævium in colour and in spotting, but are nodding inwards, and then the labellum is twice the breadth of that of nævium, and has comparatively large purplish spots or blotches—an exceedingly attractive and somewhat rare species to see in bloom. Like every other place where Orchids are grown O. Alexandræ was in abundance and in excellent order, some beautiful crisped varieties being in flower. Some very fine O. Andersonianum were here splendidly grown, and one extra variety with a panicle of fifteen flowers finely marked and the blooms of extra form. O. odoratum was here also in flower, and scenting the house with its Hawthorn-like perfume, the reddish spots on the pale yellow ground contrasting well with its congeners. O. Pescatorei was in particularly fine condition, the pseudobulbs roundish ovate, and of that fine dark colour which is so pleasing for a culturist to look upon. Some fine examples of Hallii, also radiatum, luteo-purpureum, gloriosum, pardinum, &c., were growing exuberantly, as also was cirrosum in some very rich claret-spotted varieties. Along with these Odontoglots were some well-grown examples of Oncidium curtum, macranthum, and many others; as also very fine examples of that grotesque but highly interesting Orchid, Nanodes Medusæ. This plant seems to like an airy temperature accompanied with a good deal of moisture.

Adjoining this is the Cattleya-house, 50 feet long, with a centre table and the usual side tables—a very comfortable house, not too lofty and ample means provided for ventilation. There are some well grown specimens here, great masses of Lælia purpurata in several varieties, fine Boothiana (Cattleya lobata), great anceps, and some of the earliest imported of Lælia elegans in quite first-rate condition, as also Lælia Dormanniana, a rather striking species, not unlike bicolor in both colour and formation, but the lobes of the lip folded back towards the base and running out towards the extremity, not unlike the "lappels" of a frock-coat. Cattleya crispa, too, was prominent, and among the more recent introductions, Trianæ, Warscewiczii in its many forms, C. Mendelli, gigas, all in good condition; some very good plants of maxima, with its pale noble-looking flowers ornamented with radiating purplish lines, some of the varieties much more distinguished-looking than others; together with exoniensis × and some other of the Veitchian hybrids. Troops of others filled the space in crowds; while suspended were quantities of Lælia Dayana, Cattleya Regnelli, Schilleriana, bulbosa, and many others.

In the other 50-feet division were some excellent Vandas, which I am glad to see as species looking up again. When in first-rate cultivation there are few nobler looking plants, and the flowers are redolent of sweetness. Vanda suavis in several forms as also V. tricolor, in point of variety of ground-colour and spotting more variable still, were doing excellently, many of them clothed with leaves to the bottom, and quite 4 feet high, branching, not flaccid-looking things, but having a lustiness about them indicative of getting proper treatment, and a consequent large show of bloom; Saccolabiums, too, of the guttatum and Blumei type, were going along fairly well, although I have seen them much finer in the Dayan collection. Aerides in numerous species filled the stages, and were showing well. Without a good batch of these handsome-looking distichous plants the centre stage of an East Indian-house looks bald. On the side stage were some of the dwarfer growing species along with those "fair plants" which do well in company and in a climate of this kind—Zygopetalum maxillare, for instance, which now seems to move along fairly well and reward growers with plenteousness of bloom. Dendrochilum filiforme, too, a charming subject with its drooping racemes of flowers, like a design of fine lacework; the exquisite Odontoglossum Roezlii, which evidently likes the warmth of this climate more than any one of its compeer Odontoglots, and if kept from the ravages of thrips is undoubtedly the queen of that section for general appearance. Oncidium ampliatum majus, too, more a plant for show and glare than for general usefulness. Cypripediums in plenty, Dendrobium densiflorum in quantities, particularly noticeable being one with a distinct white margin round its luxurious-looking labellum, and quite a host of very well managed D. Cambridgeanum full of flowers. This plant is not generally well under hand, but Mr. Day tells me he grows comparatively cold, and after resting the plants during the winter months takes them into this climate, where they set buds freely and flower as I saw them profusely.

Down the steps we emerge into a house of a lean-to stamp, where considerable head-room is required for tall plants, and among others we note finely grown Vanda Lowii, gigantic Vanda Batemanni, which have each yielded their great flower racemes—the one like a whip, so to speak, with its dimorphic flowers, first yellow-ground, then cinnamon; the other like a rod for a camel's back, both excellent species, but not often cultivated as they might be, chiefly, it is to be presumed, from the want of accommodation. Associated with them in temperature to suit their wants were the North American Dendrobes, superbiens doing well. The "toad-stool" looking Bolbophyllum Beccarii always arrests attention, what it will turn out to be in the way of a flowering subject is yet to be seen; it seems to like a warm climate. Dendrobium taurinum, one of the best coloured of its race, is a shy doer—the tall growing one was well in hand here—it seems rapidly disappearing out of the country.

Passing through the door, we are ushered into the Phalænopsis-house, which is about 50 feet long, and excellently fitted both for commanding heat and giving off moisture, and is only high enough to admit walking with your hat off. Such a climate is a splendid one for Angræcums, Cypripediums, and some other miscellaneous species. There is a grand lot of Plalænopsis, comprising almost, if not all, species alive in this country, comparatively free from spot. Judging from past experience, I should say, it is almost impossible to keep all these growing satisfactorily year by year; and the grower labours under this difficulty, that he can rarely increase them by division, consequently we have had to draw statedly from a native habitat to keep up the supply. Mr. Gedney seems to have these well in hand, in the meantime the blossoms of the hundreds of plants in this house must be quite a sight. The Angræcums are in splendid condition, comprising sesquipedale in several plants, Chailluanum, Ellisii, pertusum, the elegant citratum; splendid masses of Cypripedium lævigatum, Stonei, unique as a cultivated plant, and its variety platytænium, which is as rare among Stonei as Aerides Schröderii is among maculosum; Argus, Swannianum, Lawrenceanum, Dayanum, and, not least in point of rarity, Spicerianum, are conspicuous. I have not seen for years so fine a batch of Cattleya Aclandiæ, which is tied to blocks and suspended to the gable of the house—in this way Mr. Day reports that it grows and flowers quite satisfactorily every year. This, indeed, is a most interesting house, and it takes a long time to inspect it satisfactorily.

Passing out of the principal range we come to a set of low span-roofed houses with path up the centre for various species. The first is a cool-house, measuring, as they all do, about 30 by 9 feet. There are quantities of the popular Odontoglots and numerous examples of citrosmum in fine condition, grown much colder than one usually finds it, showing there is no royal road to culture. As companions to it were groups of Rossii and even Oncidium crispum, and the charming Lælia anceps Dawsoni, which certainly bears more cold to grow it well than any of the forms of anceps I have seen, and it was abundantly evident from the state of Mr. Day's plants that they were in the proper climate—a warm Odontoglossum-house. Here, too, was the rare O. gracillimum, fine pieces of Cattleya maxima, the spider-flowered Oncidium phymatochilum, in better style than we have seen it for years; Oncidium Barkeri, and many others.

The second house of this group was set apart for Masdevallias—for collection of species unique. I do not know another one, either personally or by reputation which contains so many species, unless it be that of M. A. de Branteghem, at Constantinople. To name them all would be merely the repetition of a catalogue. Mr. Day evidently grows them colder in winter than most amateurs. Along with them were Lycaste Skinneri and alba, and, what surprised me much, such a grand lot of imported Cattleya Mendelli, with great pseudobulbs and sheaths that might be equalled but certainly could not be excelled. How long they may remain in this climate in the same first-rate condition is a question to which experience only can furnish a proper reply. Cœlogyne barbata, too, was fine, and so was a group of Pleurothallis, of which P. Dayana and scapha were the most prominent.

The third house was filled with Odontoglossum vexillarium and other species, including the best grown lot of Cymbidium eburneum which is possibly to be seen in this or any other country. There are about a couple of hundred plants, and they will each bear individual inspection and criticism, which is saying much. Lælia cinnabarina seemed at home in this intermediate-house, and so were Cymbidium Lowianum, Oncidium fuscatum, and another group of Cattleya Mendelli.

In the other house were some plants of Eriopsis biloba of very high cultivation. The great difficulty with this spiny-rooted Eriopsis is to maintain its young roots intact. It is apt to go off suddenly, and once suffering in this way, like many other Orchids, it lessens in bulk every year. It has a singular succulent appearance, but when in flower it readily rewards those who grow it well; the combination of crimson and yellow and chocolate in the the individual flower commands attention, and where you have a raceme—as seen during my visit—of twenty-six flowers, the effect on lovers of Orchid flowers can be easily understood. There are quantities of Dendrobes establishing themselves after the fatigue of the journey from their native home, none evidently doing better in their way then Parishii and Bensoniæ—both species that are well thought of, and not by any means free growers.

The responsibility of gardeners, and especially of those having charge of Orchid collections, is on the increase every year, and Mr. Gedney has a task every day before him of no ordinary importance, in keeping intact such a vast number of plants in a comparatively small space within the immediate influence of all that is inimical to plant life of the greatest commercial city in the world; and yet Orchids grow—and can be grown satisfactorily, too—although in the dark days of winter the duration of their bloom may be considerably affected. *James Anderson, Meadowbank Nurseries, Glasgow.*

New Garden Plants.

Masdevallia militaris, *Rchb. f., Wswz.*

That set of scarlet, purple, or rose Masdevallias with short tubes and wide limb contains a number of species, while contrasted with them stands Masdevallia rosea, Lindl., with a wide tube equal in length to the wide limb. A scarcely known species of the first set was published as early as 1854 (*Bonplandia*, ii., 115!). It was called, from its flowers reminding one of English soldiers' jackets, Masdevallia militaris; and the next critical species is Masdevallia ignea, with its dazzling flowers. It is very easily recognised by its exceedingly stiff, dark green leaf of great substance, standing on a petiole shorter than the blade, by a thicker peduncle, a much wider flower-tube and a wider limb,

the first yellow, the limb cinnabarine, now partly yellow. The lip is much broader and shorter. The plant does not flower very readily, while M. ignea, with its much broader and longer, lighter green, thinner, long-stalked leaves, and much less-wide flowers, gives a profusion of bloom. It was originally discovered by late V. Warscewicz, my excellent friend, and Dr. Lindley had the flowers glued on the same paper with his typical Masdevallia coccinea, Linden! (Lindeni, André). The Warscewiczian plants arrived dead with the exception of a few remainders, which Mr. S. Rucker obtained, I believe: the flowers now to hand are descendants from those relics. Messrs. Veitch were so kind as to supply me four (!) years ago with specimens and their observations upon them. Since the plant was not represented by many specimens and was an especial pet of the possessors, an exceptional procrastination of decision might be permitted. I have just now obtained the same thing from Sir Trevor Lawrence and from the garden of Baroness Rothschild, at Gunnersbury, grown by Mr. Roberts, through Messrs. Veitch. *H. G. Rchb. f.*

Vanda Parishii (*Rchb. f.*) Mariottiana, *n. var.*

A very unexpected, glorious surprise, though we have already had some very curious cases of Vandas giving such an unusual variety of colours, that it might not be unreasonable to look out for a scarlet Vanda cœrulea.

Mr. Arthur Veitch, staying the other day with Sir William Mariott, a most enthusiastic Orchidist, was quite astonished by the sight of a Vanda Parishii bearing flowers of such a colour as neither he, nor the discoverer of the species, Rev. C. S. P. Parish, had seen before. The sepals have outside well-developed white keels, and on a light mauve ground numerous darker mauve blotches. The petals are quite mauve. Inside all those organs are totally mauve. The auricles of the lip are white with longitudinal mauve stripes and two yellow blotches under the bent column. Median partition of lip strongest lake-carmine. Column white with some purple. It is highly curious that when fading the blooms take on an olive-green tint with deeper blotches, thus finally looking like the genuine plant. The mauve colour is as warm as in the finest variety of Phalænopsis Luddemanniana. *H. G. Rchb. f.*

Vanda lamellata (*Lindl.*) Boxallii, *n. var.*

This is a far superior variety to the common well-known species, that has been imported rather often, though apparently never in masses. It was only after careful dissection and assiduous comparison I dared pronounce it a lamellate, so distinct does it look by extent of flowers and colours. Yet we learn every day how many varieties in colour are to be found just as in Vandas, where we may see sky-blue represented by scarlet, a rather unique case, in Orchids at least. It has racemes of fourteen to twenty-four flowers, which are much longer than the leaves, nearly twice as long as those of the genuine species. They are ochre-coloured with purple base, blotches with a little hue of mauve, of greatest dimensions upon the lateral sepals; top of column, and lip's blade, purple-lake. It may be expected to be a very beautiful plant. I gave, indeed, the colours from Mr. Boxall's coloured sketch. It was he who discovered it in the Philippines, and sent it to Mr. S. Low. It is much to this gentleman's credit that he accepted for the sale my name, when every one who is initiated in the mysteries of Stevens' Rooms knows the plant would have fetched much more as a new Vanda. Ah, the words "new," "new species," help a good deal.

If Mr. Boxall was so lucky to meet with such a differently coloured variety, how would it be, if most accidentally he had a similar success as to Phalænopsids? *H. G. Rchb. f.*

Dendrobium capillipes (*Rchb. f.*) elegans, *n. var.*

This is much taller than was the original plant as I saw it at Mr. Low's, and as it was drawn by its excellent discoverer, the Rev. C. S. P. Parish. The flower is as large as that one of D. dixanthum, and of the nicest yellow, dark orange at the base of the great lip. The stems reach 5 to 6 inches in height, and the oblique scars of fallen sheaths or leaves are black, when the surface of the articuli is covered with very numerous small grooves. From the young breaks the leaves would appear to have almost linear blades. This is a quite recent Burmese introduction. Two nicely dried flowers, collected by Mr. Richard Curnow, and two living plants, were kindly sent by Mr. S. Low, my oldest English Orchidic correspondent. A very minute examination of the materials persuaded me that it was really capillipes. It bears also that surprising nearly conico-pyramidal anther. I have also in my herbarium a very aberrant specimen of what I regard as the same thing. It flowered at Mr. W. W. Buller's, who then was a most enthusiastic Orchidist. It has very short pale red bulbs. I never saw any other like this. *H. G. Rchb. f.*

THE OLEANDER.

The interesting collection of varieties of this fine old plant—a subject far too much neglected in these days—which Mr. Barron has flowered at Chiswick, and produced at the meetings of the Royal Horticultural Society, has special claims on the attention of plant cultivators. It is nearly 300 years since the Rose Bay, as it is termed, was introduced to this country, and after becoming a leading subject in gardens, it has been put on one side, as "a relic of bygone days," in order to give place to plants that were the fashion of the hour.

The Oleander has been represented in English gardens for several years past by several varieties. The group at Chiswick includes some fifty varieties, representing the labours of Continental horticulturists, and it is with pleasure testimony is borne to the large amount of success which has attended their labours. The new varieties, so far as they have bloomed, are mainly single, and a few semi-double; the flowers are large and well-formed; and size being also present and united to freedom, the blooms are conspicuous and highly attractive.

The most brilliant coloured variety is one named Lattes, which has large and well-formed crimson-magenta flowers, remarkably attractive in colour. This cannot fail to make a highly valuable plant for the decoration of the conservatory and greenhouse. Next in depth of colour comes Notaire Cavallier, rich lake flushed with magenta, looking much like a small Dipladenia, and of excellent form. This and the foregoing will no doubt be much grown when better known. Frederic Guibert has very large flowers, which are of a fine lively pink colour; a thoroughly fine variety. Delphine is of a pale magenta hue paling to pink, the flowers large and not of such good form as some of the others, but yet fine and useful. Pauline Gregoire is also pink-flowered, of a clear deep pink hue; very free indeed and most attractive. Rose Claire is pink, but the segments are distinctly flaked with ruby-rose, distinct and free. Rose Foncée has flowers of fine shape and size, rich pink in colour, with the segments edged and flaked with rosy-red; very fine and distinct, and perhaps the best of the pale pink varieties. Acrostial is of a very delicate pink colour, but the flowers being inclined to cup are not displayed to the best advantage. Rose Clair is a pretty pale pink variety, and very free of bloom. De Claude Sabut is a kind of hose-in-hose variety, clear pale pink in colour, the segments margined with ruby-red.

The white varieties are not the least attractive among them, the best being Madoni grandiflora, with clear white hose-in-hose, or semi-double flowers, large and very free and fine. Blanc Simple is quite single, and very pure in colour. Lastly comes Madame Dubois, also white; but the flowers are much curled on the segments.

The plants average from 2 to 3 feet in height, and appears to have been raised from layers. They were received from France in small pots—the soil in which they are growing being a stiff loam, apparently without any admixture whatever; and yet, confined as the roots must of necessity be, the plants have made a good growth and had excellent heads of bloom. The moral to be drawn from this is, that the Oleander should not be over-potted, rather its roots should be restricted to space, and their well-ripened wood will put forth heads of bloom of a valuable character. Plenty of water is necessary to the plants while growing and flowering; and after they have done blooming the wood must be well ripened. The best place to flower them is in a temperate-house.

One who has been successful in flowering the Oleander reports that, after blooming, the plants are placed in the open air, and watered when necessary. In October they are placed in an out-building, warm enough in winter to preserve Fuchsias and such-like things from harm from frost, and during the winter and up to early in March they should be watered only just enough to keep the plants alive. Then the plants are thoroughly saturated with water about the roots, in order to get a ball of earth and mass of roots thoroughly saturated, after which the plants are repotted into 24-sized pots, nothing being used but pure forest loam, and up to the time of blooming the pots are set in pans of water, and the plants kept in the warmest and lightest parts of the greenhouse, with the tops pretty near the glass. The plants grow very rapidly; the pots are quickly filled with roots, which overflow and cover the surface of the pots also. The flowers begin to expand in June, are very large, and of a good depth of colour, the specimens remaining in flower for two months or more, and are beautiful and attractive objects. When the plants go out of flower the flower-stems are cut away, and the plants set out-of-doors till October.

There are some parts of the world in which the Oleander is seen to great advantage. At Sydney and in its vicinity it grows in great luxuriance, attaining the height of 15 to 20 feet, and when covered with its elegant clusters of rose-coloured blossom it forms a magnificent ornament to the garden and shrubberies. A writer speaks of having seen a variety at Cairo on which the flowers were of a pure white colour, and the tree 8 to 10 feet in height.

It is stated that the Oleander "is a deadly poison, and may frequently prove a treacherous fondling if not carefully watched. It is one of our most beautiful window plants when covered with its large Rose-like blossoms, but in these blossoms the weapon of death resides." A case is recorded of a child having eaten a few flowers and being poisoned by the same. *The Annals of the Peninsular War* states that "a number of French soldiers went out foraging near Madrid, returned laden with the fruits of their search. One of the number, with a view of securing some wood to make skewers for the meat, cut a quantity of Oleander boughs, and, having stripped them of the bark, used the wood in the meat. The result was, that out of twelve who ate of the roast seven died, and the rest were dangerously ill. The poisonous principle is so subtle that its exhalations alone are sufficient to cause serious accidents, and even death, to those who recline or sleep for any time under their influence. It exists equally in every part of the plant, but it is considerably weakened by cultivation." *R. D.*

EVERGREENS AT BORROWASH.

It would be impossible to point to any place where the lesson taught during the past winter to planters and all who take an interest in evergreen trees and shrubs is more complete and important than in the above nursery, and this for several reasons, the first of which is that quantities are grown of all the evergreen trees and shrubs which have been introduced during the last forty years; and the second that the locality is such as to thoroughly test their ability to stand our severest winters, the frost during the past winter having been more intense in the neighbourhood than in almost any other part of England. Consequently a short notice of such things as have been killed or injured, and also of those which have withstood the extreme cold, will be instructive. It may be here stated that the cold registered at the Elvaston Nursery was 40° of frost, or 8° below zero, which, coming as it did after a summer when there was so little solar warmth to solidify the soft and excessive growth that plants of all kinds made through the extreme moisture, rendered everything at all liable to suffer from a low temperature in the worst possible condition to bear it.

Commencing with Araucaria imbricata, some have almost escaped, whilst some large specimens, 15 to 18 feet high, as well as smaller examples, are killed or severely injured. The Silver Firs (Piceas) of this favourite family all appear to have come out unscathed, except the beautiful Californian species, P. Parsonsii, some of which that had attained a height of 12 or 14 feet are all but killed, and others standing near them are not much injured. Some plants of P. Pinsapo have lost their leaves on the ends of the shoots, but beyond this are no worse; others are not touched, showing the difference in ability to bear cold in different examples of the same plants under conditions precisely similar. Arthrotaxus cupressoides, the jointed Yew, from Tasmania, and A. selaginoides Donniana, have both suffered so severely that they may be set down as dead. Some of the plants had reached a height of 10 feet, and have not been touched by frost before. Abies Douglasii: the green form much cut, but the glaucous variety is not touched. The Japanese Abies firma has also suffered much, but does not appear to be past recovery. Cryptomeria elegans is not much injured, whilst C. japonica is very brown. All large plants of Aucuba are killed down to the ground, the smaller ones have escaped. Euonymus generally are either killed completely down, or much injured. Hollies have suffered severely; a few are killed outright, but

the greater portion have the wood not much injured, escaping with more or less loss of leaf. The large-leaved varieties, such as I. Hodginsii, are more injured than the smaller leaved sorts; I. maderensis and I. maderensis atro-virens have stood the best of the green kinds; I. laurifolia nova is one of the best and most effective of the green varieties, it has very large long leaves, and unusually large berries: the variegated sorts, taking them as a whole, have not suffered so much as the green ones. This about completes the return of killed and maimed, which collectively are a much more serious loss than the simple details given convey an impression of.

It is a much more pleasing task to turn to the quantities of fine things which have completely withstood the unusual ordeal through which they have passed; the more so, as many of them have not before been exposed to near so low temperature as occurred last December. To begin with the beautiful Japanese Spruce, Abies Alcockiana (*i.e.* ajanensis), which is evidently as hardy as an Oak, is as fresh and untouched in every way as if it had never been exposed to a single degree of frost. This plant is quite distinct from A. acicularis (the true Alcockiana), the under side of the leaves being silvery, whilst the leaves of the latter are green, it also starts into growth later; in ability to bear cold there appears to be no difference between the two. A. polita, another Japanese Spruce, of which it would be difficult to speak too highly for its distinct and handsome appearance, is equally as hardy as those previously named. A. Parryana glauca (syn. with A. Englemanni) has not so much as a leaf injured; this handsome glaucous-leaved plant is deserving of a place everywhere where evergreen trees are cultivated. A. Pattoniana has stood just as well as the above mentioned; it is much darker in the foliagethan A. Hookeriana. This last is also uninjured. A fine young specimen here, 9 feet high, is as fresh in foliage as if it was the end of summer in place of spring succeeding such a winter. All the green forms of the Lawson Cypress are untouched, some of the coloured-leaved varieties are a little browned. C. Lawsoniana lutea, one of the finest of all the golden-leaved sorts, has stood bravely, as also C. Lawsoniana gracillima. The handsome dwarf-growing Californian Pine, Pinus Bolanderi, something like P. insignis, is not harmed in the least. The graceful-habited Thuyopsis Standishii, from Japan, is quite green and unaffected. The very distinct Sciadopitys verticillata, the Japanese Umbrella Pine, is perfectly frost-proof, an 8-feet specimen here has not a leaf browned. Pinus parviflora, a very beautiful small-growing Pine, is not the least injured. How much more suitable this and other similarly compact-habited species of evergreen trees that do not attain a great size would be for the numbers of places of limited extent than the large-growing kinds so often introduced to situations where in a few years they get too big for the place. The Biotas have stood well generally, B. orientalis elegantissima is unscathed. The beautiful free-growing Picea or Abies Veitchii (= homolepis or brachyphylla ?) is not injured in the least, and it may now be looked upon as quite safe from our severest winters. All the Retinosporas have passed through the winter with next to no injury. The largest plant of R. plumosa aurea here is now 10 feet high by 7 feet through, a dense mass, finely coloured; R. pisifera has grown to 14 feet in height and 8 feet in diameter. Thuyopsis dolabrata, one of the best and most distinct of all the Japanese evergreens, is not the least hurt. The Cephalotaxus also have stood quite uninjured.

Whether or not variegation is a disease, or its presence an evidence of a weakened condition, as some attempt to make out, it is clear, by the way in which many have withstood last December's frost, that the variegated or coloured forms of plants are quite as able to bear extreme cold as are the green types from which they have sported or been raised from seed, as instance both Hollies and Yews at the Elvaston Nurseries, where the numerous seedlings with variegated leaves have all stood, as also the Elvaston golden variety, Taxus baccata elvastonensis, which having its leaves wholly of a yellow hue, might be supposed to have been less able to bear an extremely low temperature than the green type, yet it has come out unharmed. Mr. Barron's favourite seedling, Taxus baccata Barroni, is quite as impervious to frost as the green kinds; it is much superior to the ordinary variegated variety, being a much quicker grower, forming a leader without any training. Some of the largest examples are beautiful plants. Some of the seedling varieties raised from the common Irish Yew, crossed with the golden sort, are very handsome, retaining the erect habit and hardihood, and being beautifully variegated. *T. Baines.*

WEEPING TREES.

In this class are embraced the most charming examples of ornamental trees. Graceful in outline, elegant and novel in their mode of growth, impressive and attractive in appearance, they possess all those characteristics of growth and foliage which render them especially desirable and valuable for the embellishment of landscapes and the ornamentation of grounds. The beautiful cut-leaved Weeping Birch, sometimes called the Lady Birch, with its bright bark glistening in the summer's sun and its graceful drooping branches swaying in the lightest breeze, is a worthy subject for the artist's pencil and the poet's pen. In winter, too, covered with ice and illumined with the brilliant rays of the setting sun, its trembling branches apparently studded with innumerable brilliants, it presents a charming picture, attracting the attention and winning the admiration of even the most careless and indifferent observer. Henry W. Sargent, Esq., writing to the *Horticulturist* from Germany in 1848, and describing Booth's nursery at Holstein, stated that "among trees and shrubs new to me I noticed a Weeping Birch peculiar to Germany. It had descending shoots 32 feet long. The branches hung as perpendicularly downward as those of the Sophora pendula or the common Weeping Willow, and are quite as pensile as the latter."

The Cut-leaved Birch is one of those trees which is complete in itself. It has no defect in habit which requires to be concealed, and should always be planted by itself in the most prominent and conspicuous position on the lawn. Although it is a rapid grower, and attains to considerable size, it is equally well adapted for large and small grounds, and wherever planted always contributes towards rendering a landscape charming and effective. For avenue planting it surpasses all other trees. I have in my mind an avenue which has been planted lately in our city, and I trust the time is not far distant when we shall have several. Were we limited to a single ornamental tree, we should have no hesitation in selecting this in preference to any other. It is the most graceful of all trees, and deserves to be better known and more widely disseminated.

Young's Weeping Birch is a new and interesting variety, which is admirably adapted for the lawn. It was discovered about twenty years ago by Mr. Young, of Milford Nursery, Godalming. Owing to the slenderness of the branches, which, in the original plant were so weak as to creep along the surface, great difficulty was experienced in propagating it. To the graceful elegance peculiar to the Birch family it adds the odd singular erratic habit of the Weeping Beech. It has long, slender, thread-like branchlets, which fall from the main branches like spray. Grafted upon stems 6 to 7 feet high, it can be grown into a rounded, regular head, like the Kilmarnock Willow, or, left to itself, it will send up a leading shoot, with side branches like the cut-leaved, only more spreading. In this distinct type we have gracefulness and picturesqueness combined. It is one of the very best of new trees, and worthy of being introduced into every garden.

Betula alba pendula elegans is another charming variety, of quite recent introduction, and, as yet, but little known. It originated with the Messrs. Bonamy Bros., at Toulouse, France, in the year 1866, and was first exhibited by them at the Paris Universal Exhibition in 1867, where it received a Gold Medal, the highest award for new trees. Its habit of growth is unique and beautiful. Grafted on stems 6 to 8 feet high, the branches grow directly downwards, parallel with the stem. Its decided pendulous habit, rich, handsome foliage, delicate branches, render it particularly showy and attractive on the lawn. Among ornamental trees of recent introduction this and Young's Weeping may be considered the most valuable acquisitions of many years.

The Kilmarnock Weeping Willow is now so well known as to need no description. Being one of the most popular and widely-disseminated of weeping trees, its history may not be uninteresting. It was discovered growing wild in a sequestered corner of Monkwood estate, near Ayr, in Scotland, by an aged botanist named John Smith, an enthusiastic lover of plants and a zealous collector. From him, Mr. Lang, a nurseryman at Kilmarnock, purchased one plant in the year 1844.

Sir W. J. Hooker, Curator of Kew Gardens, received two plants in the spring of 1852, and having observed how exceedingly ornamental it was, gave Mr. Lang a decided opinion, stating that he thought very highly of it, and that it was much admired in the Royal garden at Kew. The name, Kilmarnock Weeping Willow, was given to distinguish it from the common Weeping Willow and the American Weeping Willow. Of all weeping trees, it is the one best adapted for small lawns, garden plots or yards. Very handsome plants may now be obtained, grafted on stems 6 to 8 feet high, for training into umbrella heads. Grafted low, say 3 to 4 feet high, with the head nicely kept and the branches trailing on the ground, it becomes a novel and interesting object on the lawn. For rounding off or completing the end of a belt or border of trees or shrubs, it is very appropriate.

The Weeping Beech is undoubtedly one of the most remarkable of drooping trees. Its habit of growth is odd and eccentric, but at the same time picturesque and beautiful. A strong grower, its branches shoot upward, then outward, twist in various directions, and turn into a variety of shapes, then droop and trail on the ground. Divested of its leaves, it is quite ungainly; but clothed with its rich, luxuriant foliage, it presents a magnificent appearance. It is one of the largest and most curious of lawn trees, and should be planted by itself, where it can have abundance of room. Large specimens often cover an area 100 feet in diameter. Its history is somewhat remarkable. Some sixty years ago Baron de Man's gardener, at Beersal, Belgium, was planting an avenue of Beeches. The Baron, while superintending the work, noticed among the trees selected for the purpose one poor and crooked specimen, and rejected it; the gardener thinking, however, that it possessed some merit, planted it in a corner of the garden, where it grew to be one of the most beautiful of trees. One of the noblest specimens I have seen was in Mr. Anthony Waterer's nurseries, at Woking, England.

The New American or Fountain Willow is a well-known pendulous variety, which forms a very handsome specimen when budded standard high. While it can be trained in umbrella form like the Kilmarnock Willow, it is a much stronger grower, and requires more space. On account of its vigorous growth, it is much more difficult to keep in shape than the Kilmarnock, and, all things considered, hardly equal to that variety for ornamental planting. It is a trailing species of American Willow, grafted standard high, and was introduced from France about the year 1852.

The European Weeping Ash is a well-known weeping tree of vigorous habit, its branches spreading, at first horizontally, but gradually drooping towards the ground. Its strong, stiff growth does not render it as graceful and ornamental as many of the trees of this class, but planted singly on a large lawn it forms an interesting object. It is one of the best trees for forming an arbor.

The White-leaved Weeping Linden is a handsome drooping variety, with large round leaves, of a greyish-green colour above, and silvery-grey beneath. Worked upon stocks standard high, the branches shoot out almost horizontally, and as they increase in length bend gracefully towards the ground, giving to the tree a decidedly pendulous character. Being a strong grower it requires to be vigorously pruned to keep in shape. In this way it can be trained into a round symmetrical head, and will always be found a desirable addition to any collection, on account of its distinct silvery foliage, which contrasts effectively with the deep green of other trees.

Of Weeping Elms there are several which deserve attention. Our American Elm is one of the most noble and stately of weeping trees. It is so well known, that any notice of it here would be superfluous, but it may be proper to remark that it is not admissible on small lawns.

The most popular of Weeping Elms is the *Camperdown*, a very picturesque and elegant tree, which can be employed with the most satisfactory results in extensive grounds, as well as in small garden plots. It is of rank growth, the shoots often making a zigzag growth outward and downward of several feet in a single season. The leaves are large, dark green and glossy, and cover the tree with a luxuriant mass of verdure. By a judicious use of the knife it can be kept very regular and symmetrical in form, and

handsome specimen, isolated on the lawn, will always arrest attention and elicit admiration.

The Scotch Weeping Elm (montana pendula) is a drooping variety, resembling the Camperdown, but not so good.

The Rough-leaved Weeping Elm (rugosa pendula) is a pendulous variety with large rough leaves, and Elm viminalis is a distinct slender-branched variety, very ornamental in habit and foliage.

The Weeping Mountain Ash has probably received as much attention as any weeping tree, on account of its distinct and curious habit. A careful examination of its mode of growth cannot fail to excite wonder. If worked 2 or 3 feet from the ground and allowed to grow wild, it soon becomes as odd a piece of framework as it is possible to imagine. I have an indistinct recollection of one I saw growing in this manner, and at the time I considered it as great curiosity as I had ever seen. Grafted 6 to 8 feet high, it becomes a very desirable lawn tree, and in the autumn, laden with large clusters of bright red fruit, it produces a brilliant effect.

The Weeping Poplar (Populus grandidentata pendula), although not so elegant and graceful as some of the drooping trees we have mentioned, has many desirable qualities which commend it to the admirers of fine trees. Its character is decidedly pendulous, and its branches spread and droop gracefully towards the ground. But the knife must be used unsparingly to preserve the symmetry. It is the most rapid grower of any in this class, and those who desire a weeper which will produce immediate effect will find their wants amply requited by planting this tree.

The Black-barked Weeping Poplar and the Parasol de St. Julien, two varieties recently introduced from France, are almost similar to the above.

Probably the most remarkable and beautiful tree in this class, and one which is very little known or mentioned, is Bujot's Weeping Honey Locust. It has every characteristic of habit and foliage to commend it, but in severe winters it is liable to injury from frost. Its propagation is somewhat difficult, which will always make it expensive and rare. Like the weeping Japan Sophora, it sometimes succeeds in sheltered positions. I know of only one specimen in this vicinity which has survived the severity of several winters, unprotected. Those who love and admire fine trees, sufficiently to give them the necessary protection, will feel themselves amply repaid for any trouble or expense they may incur in securing a specimen, and giving it the protection it requires.

The Weeping Japan Sophora, one of the most beautiful trees, is not quite hardy here, and is not propagated in the nurseries. We have a fine specimen tree, however, which thrives in a sheltered position, the same as that occupied by the Sequoia, or big tree of California. The Golden-barked Weeping Ash, a handsome weeper, is not hardy.

The Weeping Cherries.—Everflowering Weeping, Avium pendula, Bigarreau pendula, are all pretty lawn trees, but not sufficiently known to be properly appreciated. On some future occasion I hope to be able to call attention to these more particularly. It should be borne in mind by those intending to plant drooping trees, that their appropriate position is always on the open lawn, single, never in groups or masses, nor mixed in with other trees or shrubs in belts or borders. In the hands of the skilful planter they are capable of producing the most charming results, and are more effective in giving character and expression to a landscape than any other trees. I append a list of select varieties for large and small grounds :—

Select Drooping Trees for Small Grounds.

Kilmarnock Weeping Willow	Weeping Larch
Young's Weeping Birch	American Weeping Willow
Cut leaved Weeping Birch	Camperdown Weeping Elm
Dwarf Weeping Cherry	Birch elegans pendula

To the above may be added :—

For Extensive Grounds.

Ash European Weeping	Elm, Scotch Weeping
Beech, Weeping	Linden, Weeping
Birch, European Weeping	Weeping Poplar
Birch, tristis	Weeping Cherry
Elm, Cork-barked Weeping	Mountain Ash, Weeping

From an Essay by Wm. C. Barry, Rochester, N.Y.

FIG. 128.—DRACÆNA "REGINA," HORT. BULL. (SEE P. 759.)

EUCALYPTUS AMYGDALINA.

FROM Baron von Mueller's admirable treatise on Eucalyptographia we extract the following :—

This Eucalyptus is one of the most remarkable and important of all plants in the whole creation. Viewed in its marvellous height, when standing forth in its fullest development on the slopes or within glens of mountain forests, it represents probably the tallest of all trees of the globe ; considered as a hard-wood tree, of celerity in growth, it ranks among the very foremost ; regarded in reference to its timber, the tall variety can fairly be classed with the superior kinds of Eucalypts, and contemplated in respect to the yield of volatile oil from its copious foliage it is unsurpassed, and perhaps not equalled, by any other tree in the whole world. These various signal qualities of E. amygdalina having become gradually known,

much through the exertions of the writer, this tree has found already a wide appreciation abroad in countries neither subject to severe frost nor to intense moist heat. It assumes under different climatic and geological conditions various forms; thus in the irrigated ravines of cooler ranges the tree attains the most towering height, combined with a perfect straightness of stem, while the outer layers of its bark decorticate so completely as to render the huge stems quite smooth and almost white, the habit then being that of its only rival in loftiness among its congeners, namely, E. diversicolor (the Karri of West Australia). According to Mr. F. Abbott, it is this form which constitutes the Swamp Gum-tree in Tasmania, where Sir William Denison placed its huge dimensions on record. In more open and in merely ridge country, E. amygdalina remains much lower in stature, even often a comparatively dwarf tree, with outside rough, inside tough, somewhat fibrous bark, which remains more or less persistent on the stem and even lower branches; under such conditions the species is called a Peppermint-tree in Victoria and Tasmania, and a Messmate-tree in some tracts of New South Wales.

E. amygdalina is one of the hardiest of its congeners, and if E. coccifera constitutes an alpine state of it, then it has in that remarkable form braved even unusually cold winters of Britain. For instance, at Powderham Castle, the seat of the Earl of Devon, it passed unscathed through an ordeal of + 9° of Fahrenheit's scale, while E. globulus was destroyed at + 20° Fahr. The above-noted severe cold caused E. coccifera no injury whatever, so that perhaps it will withstand a still somewhat lower temperature; it produced in the subsequent summer thousands of sprays of blossoms. Its height at Powderham Castle was 58 feet, the stem measuring at 3½ feet from the ground 7½ feet in circumference; it grows there on sandy loam on rising ground. [See *Gard. Chron.* 1879, vol. xii., p. 113.]

Mr. D. Boyle first of all ascertained the length of a fallen tree of this species, found by him in the Dandenong ranges, at 420 feet, the length of the stem up to the first branch being 295 feet; the diameter of the stem at the commencement of the ramification proved 4 feet, 70 feet higher up the diameter was 3 feet, the top portion was wanting. A still thicker tree there measured at 3 feet from the ground 53 feet in circumference. Mr. Boyle found another tree with a stem 25 feet in diameter at the base, yet the bark quite thin. Mr. Howitt obtained in Gippsland also measurements up to 410 feet. The Rev. Th. Ewing (as stated in Henfrey's *Botanic Gazette*) measured a prostrate tree on a rill of the North-west Bay River at the rear of Mount Wellington, thirty years ago, and recorded the height up to the first branch as 220 feet, from thence to where the top was broken off 64 feet more; the basal diameter proved to be 30 feet, the stem-diameter at 220 feet was still 12 feet, and to that distance it would turn out more timber than three of the largest Oaks taken together with their branches. A standing tree at the same place measured, at 3 feet from the ground, 102 feet in circumference, but close to the ground even 130 feet! The reverend gentleman observed within a square mile at least 100 trees, none less than 40 feet in circumference at the base. Mr. G. Robinson noticed in the back ranges of Berwick the circumference of a stem to be 81 feet at a distance of 4 feet from the ground. (See Ellwood Cooper's edition of some of my lectures and essays, p. 161.) The same gentleman, whose professional judgment as a surveyor would give every guarantee for accuracy, obtained at the foot of Mount Baw-Baw the measurement of an exceptionally large tree, which was 471 feet high. From the Cape Otway ranges a tree is also on record by Mr. Walter, with a height of 415 feet, and a basal diameter of 15 feet, although the loftiest trees have not always the most colossal stems.

The utmost praise is due to Joseph Bosisto, Esq., for his lengthened and extensive researches on the oil of this and other congeners, to the technical productions, local utilisation and mercantile export of which he has given large dimensions by his enterprise and perseverance, it having fallen to the writer's share to draw in the first instance attention to the enormous yield of oil from the foliage of E. amygdalina. Mr. Bosisto sums up his experience with the Eucalyptus oils, as regards the percentage of the yield of the various species on which he experimented, in the following schedule:—

From 1000 lb. of Fresh Leaves with their Stalklets and Branchlets—

Eucalyptus viminalis yields	7 oz.
,, melliodora yields	7 ,,
,, rostrata yields	15 ,,
,, obliqua yields	80 ,,
,, globulus yields	120 ,,
,, goniocalyx yields	150 ,,
,, leucoxylon yields	160 ,,
,, oleosa (mixed with other species of the Mallee scrub) yields	200 ,,
,, amygdalina yields	500 ,,

THE HORTICULTURAL OUTLOOK IN IRELAND.

Never within the memory of the present generation has horticulture been at so low an ebb in Ireland as it is at present; indeed, if matters do not soon take a favourable turn, the majority of Irish gardeners will have to turn their attention to some other means than that of horticulture by which to earn a livelihood. In all directions we hear of gentlemen discharging their gardeners and filling their places with grooms, garden labourers, or such-like utilitarians. No doubt many people will be found to assert that this state of affairs is to be attributed altogether to the severe and widespread depression, combined with tenant-right agitation, which has now existed for the past twelve months and more. That the causes just named have had something to do with the matter we are quite willing to admit, but we also feel perfectly confident that these are not the sole causes.

It is a notorious fact that there is no greater tyrant, nor any to whom more abject devotion is paid, than fashion. This is just as true with regard to gardening as it is with regard to the particular style in which ladies wear their hair. But as the fashion in gardening is, in our opinion, of much more importance than the decoration of ladies' persons (we fear we shall be looked upon as very ungallant for saying so), we consider the leaders in it should be particularly careful as to the way in which they set it. As a matter of course, we look to Her Majesty's representative in Ireland to show a good example in horticultural matters, for it is but natural to expect that the many noblemen and gentlemen who visit the Viceregal gardens will, to some extent, adopt at their own residences what they see there. Consequently it is of considerable importance—far more so than may at first appear—that these gardens be kept in the best possible condition, and be models of what a private gentleman's gardens should be.

Some eighteen months ago we were reluctantly compelled to notice the way in which these gardens were managed, drawing attention to the very extraordinary fact—a fact which has never since been contradicted—that they were being utilised for the purpose of supplying the Dublin markets with fruit, flowers, and vegetables! Notwithstanding our remarks at the time, and the unfavourable comments in the daily press, this system of market gardening was continued during the period that his Grace of Marlborough held the office of Lord-Lieutenant. Such a proceeding could not fail to have—as we prophesied it would—an injurious effect on Irish horticulture, and the result has abundantly proved the correctness of our views. The market garden system inaugurated at the Viceregal Lodge was quickly and extensively followed by noblemen and gentlemen in all parts of the country; so that instead of gardens being kept as heretofore for the pleasure of the owners, they have in numerous instances come to be looked upon as a source of income. A combination of pleasure and profit is all very well in its way, but any attempt at sacrificing the former to the latter in the particular case now under consideration is utterly uncalled for and out of place. The paltry few shillings made by such transactions are but a poor recompense for the contempt brought on those concerned. To our own knowledge, several gentlemen, some in the neighbourhood of the metropolis, others in distant parts of the country, have discharged their gardeners and taken on handy men, whom they consider in every way fully competent to grow vegetables, &c., for market. As we have already said, to the pattern set by the late Lord-Lieutenant this very undesirable change is in a great measure due. Whatever cause our famine-stricken poor have to be grateful to her Grace the Duchess of Marlborough, certain it is the gardeners of Ireland have no reason to be thankful to the Duke. However, there is no use dwelling too much on the past, we must look to the future for a remedy; and it is to be hoped that with the new Viceroy a different order of things will be instituted, especially in the matter of gardening. Surely, with such a princely income as His Excellency is reported to be possessed of, there will be no necessity whatever for continuing the cheeseparing policy which has reigned supreme during the past three or four years. Let us have no more caricatures of greengrocers, but let the Viceregal gardens be again devoted to the purpose for which they were originally intended, and maintained in a way befitting the dignity and high position of Her Majesty's representative in Ireland.

In conclusion, we wish it to be distinctly understood that we do not for a moment attempt to identify Mr. Smith, the worthy chief of those gardens, with the remarks we feel called on to make regarding their management. We feel sure it was not his desire that he should have to enter into competition with market gardeners, and we are confident that he would be only too glad were the means placed at his disposal to make these gardens what they ought to be—the first in the country. *Gardeners' Record.*

PUBLIC TOWN GARDENS.

Few acts of our metropolitan authorities have been productive of more positive good to the London poor than the conversion of huge wastes or small enclosures into public parks and gardens, where not only may the masses get pure air but also some insight into those elements of rural life that gardening so brightly and effectively illustrates. With the formation of Battersea, Victoria, Finsbury, and other parks, with the formation of public gardens on the Thames Embankment, with the opening to the children of surrounding crowded courts of the Temple Gardens at certain periods, with the opening of the Royal Horticultural gardens on Bank holidays at a nominal charge—with these and other movements, of which the one to open to the public the large gardens in Lincoln's Inn Fields is the latest, we have abundant evidence of the interest taken in the welfare of the poor on the one hand by those in authority, and on the other not less pleasing proof of the high appreciation for these gardens and ornamental spaces which the masses evince. Not only should the agitation now being made in favour of the opening of the Lincoln's Inn gardens be persevered in until successful, but it should be the effort of the promoters to secure for the public the same privilege in every open space of a semi-public nature that is in the metropolis. There is in Charterhouse Square a plot of greenery and umbrageous trees enclosed by high strong rails into which numbers of poor children may gaze with envy and longing, but wherein they may not enter. Not more impossible for them is entrance into the Paradise of the Peris than it is here. Yet at no time are there to be seen more than some half dozen children of wealthy parents, who can afford to give their offspring a thousand pleasures to which the poor little ones are strangers, and yet this bit of greensward and leafy shade, this oasis in the desert of houses and hot, noisy streets, is locked up, and the public is denied access. There is in Finsbury Circus even a more charming spot than is the one just mentioned. It is really a garden, and well kept. Its trees, with their luxuriant foliage, fairly surprise those who suddenly alight upon the garden. Here for a few years was held the City of London Flower Show, but two years since the little Arabs made so merry in their unwonted liberty, that some damage was done to the flowers, and the place has been closed against the show since.

These two are but illustrations of many others spread throughout the metropolis, where certain limited proprietary rights intervene, and keep shut against the public these open spaces. It may be that too much would be demanded if it were proposed to buy up the proprietary rights over all these enclosures, place their care in the Metropolitan Board of Works, and make them henceforth and for ever public gardens; but some kind of compromise may not be impossible. Certain days, or portions of days, or portions of the year, may become public days or periods, and thus the proprietors would be saved some of their privileges; but it is most essential that in the locality of crowded poor neighbourhoods these enclosures should become the property of the public. Grown wiser now than were our forefathers, who could never have imagined that London would have grown to what it is, we have made some outside provision for the public recreation, and it is now all the more important that every open space, however small, should become public for ever.

VERBENAS FROM SEED.

We have already passed the period of the year when the spring-time smile spreads over the face of Nature, and the gardener lays himself out to set in motion a series of activities, of which sowing is one of the most pressing and important. There is ordained for mankind many duties, and the "benignant toils and tender cares" inseparable from the garden overflow in the pleasurable and healthy excitement in the spring-time. Let the winds roar and the rains fall, letfrost and snow again essay their strength, the reign of violence is over, and each dawning day serves to weaken the force it seeks to exert.

The peculiar pleasure derived from raising seedlings—the hopes and uncertainties that are inseparable from it—the upspringing in glory of some forms of satisfying beauty—or the appearance of others in gross and unworthy characters, need not be touched on in this relation. It is an occupation full of subtle satisfaction to any one who can open his soul to the reception of things clothed in the grace of the beautiful. And to ensure this as far as possible he should sow good seed — not only good in relation to its growth, but rich in that higher form of goodness likely to largely reward the sower's toils.

It sometimes falls to the lot of the sower to have to complain that the seeds he puts into the ground with so much care do not germinate. It is not unfrequently laid to the charge of Verbena seed that it does not grow; and the accusation is laid at the door of the seedsman that he did not supply good seed, when it does not occur to him who fails with his seed that it might be owing to a want of knowledge or skill on his own part. You can no more coerce seeds, and the laws by which they germinate and grow, than you can sentient animals; perhaps the latter are the most plastic in the hands of him who uses force. There is little difficulty in raising Verbenas from seed if only the right method be adopted; and it need scarcely be stated, that he who sows should care only to operate with seeds likely to produce appreciable results in point of quality.

Mr. Henry Eckford, in the days when he was a raiser of new Verbenas, was very fortunate in getting large batches of seedlings. His invariable practice was to sow about the middle of March, or a little later, in any convenient sized pots, using a fine sandy loam, and taking care to have the pot well drained. The seed was sown thinly, and then covered to the depth of a quarter of an inch or so with fine soil, and the pots placed in a brisk heat of some 65° or 70°, the surface of the soil being kept constantly moist, on no account being allowed to become dry. Good seeds of the Verbena quickly germinate in such a temperature, and in three weeks or a month the plants will be fit to handle, when they require to be pricked off into pans or boxes, 2 inches apart, and as soon as they get hold of the soil they should be gradually hardened off till placed in a cold frame. The sooner the plants are there the better; heat is not required except to raise plants from seed, and is more hurtful than otherwise to them when growing into size: it induces red-spider, and if affected in this way in a young state it is difficult to rid the plants of it.

Mr. Eckford's practice was to plant his seedling Verbenas out in the open ground on a well-prepared border, generally by the beginning of May. As the seedling plants make a generous growth, the ground in which they are planted needs to be deeply dug and well manured, making a liberal use of decomposed manure. In selecting the site of the flowering bed or border an open situation should be preferred.

Little needs to be done during the summer besides keeping down weeds and stirring the surface soil. As the plants come into flower the raiser should note all as they open their blossoms, pulling out any of an inferior character, and placing a mark against any of a promising appearance. If these do not prove good enough for naming they may be worthy of propagation for general purposes, as well as for saving seed from for sowing the next season. We have by no means attained to perfection in the Verbena, and there is much to be done before we shall reach this stage of attainment. To assist in bringing as much perfection of ideal as possible into his flowers, the florist crosses his best sorts, taking the pollen from one and putting it on another by means of a fine camel's-hair brush, without, however, attempting to remove the pollen deposited in the course of Nature, which would be a very tedious operation, if, indeed, it could be performed without injuring the flowers. Even without fertilising any of the flowers as just described, much can be done by taking seed only from the best flowers, and so selecting the best possible for seed parents.

If any one be wishing to set about raising seedling Verbenas, he should make a good selection of varieties to work with. Such fine flowers as General Picton, Neptune, Lord Leigh, Earl of Beaconsfield, Shakespeare (an old variety, but still one of the best), and Favourite, should be secured. There are, as yet, but few Verbenas of good shades of blue and purple, as generally these colours turn pale and become washy. Kentish Beauty is well coloured, but has the open centre of truss so fatal to many good varieties that would be otherwise fine exhibition flowers; and Blue Superb, bright pale blue, with large white eye, is worthy of notice. Of cerise shades the best are Sparkler, wanting in form, but with a showy white eye; Star of Erin, and Admiration—very pretty colour, and sometimes flushed with blue. Of lilac, pink, and mauve shades, there are Lady Leigh, Apollo, very large truss; Swanley Gem, opens blue lilac, changing almost to greyish blue; Master R. Cannell, pale pink, tinted with purplish magenta, fine truss; and Lady of Lorne, blush, with pink centre. The best white Verbenas are the old Boule de Neige, and Edward Perkins, white with magenta eye, but somewhat rough in the truss. There are yet some pretty striped flowers that ought not to be absent from a collection—viz., Miss Matilda, striped and marked with purple—very pretty; Princess of Wales, white and pale purple, quartered; Esmeralda, white, flaked and distinctly lined with blue-purple; Lady of Langleybury, an old striped sport from Purple King, and yet worthy a place in every collection; and Swanley Gem, flaked with pale magenta on a white ground.

Let this collection, or a selection from it, be purchased in the spring, and planted out on a well manured open border; some seed taken from the sorts that find most favour with the grower; and something good and satisfactory may result. But one leading aim of the raiser must be to have a good compact and vigorous habit of growth in association with the most desirable qualities in the flowers. *R. D.*

THE ELM AS A ROSE-PROP.

Of some twenty varieties of Elm enumerated in Loudon's *Hortus Britannicus*, over one-third are to be found in British hedges, sometimes so pruned as to be sadly out of character; for even the common Wych Elm is usually well feathered where it has not been trimmed, as it too often is, to look like a scaffold-pole with a crow's nest at the top. To bear ill-usage bravely, and to be the drudge among other gay plants, is the true character of this tree; and this is no new thing for it to do, since we find Homer, in the sixth book of the *Iliad*, making mention of its "barren shade," and of its abode at "the place of the tombs." This trait in the character of the tree is still to be seen, for I planted a churchyard for the elder Pugin with Elms; and in this respect there is little doubt that he did the thing right where he was not fettered for want of funds. Now, as so many old churchyards are closed against further burials, it is an excellent opportunity to adorn the place of the tombs and the green graves of those who are gone before us to their everlasting rest.

Some few years ago the question was asked by some gentleman in the *Gardeners' Chronicle* what they were to do with their fine old churchyards, and what plants would be suitable for the sacred spot where so much that was lovely had been laid, and over whose remains so many tears had fallen. The Elm, as a tree, would here be sadly out of place, but the Elm as a prop to support a climbing Rose is quite a different thing, and we have only to read the account of the Grape Vine "wedded to its Elm" in the sunny South, or even to take a stroll through a Hop-field in Kent, to see what service the Elm is doing. This plant may be called a weed in our hedges, although the lofty Elm trees that adorn the Southern Counties, and all about the metropolis, are grafted or worked, and attain the timber size of sufficient girth to cut up into wheels for gun-carriages, when they fetch a high price. As props or posts for palings the Elm is well adapted, and it has got much of the coffin trade to itself, on account of its lasting so long underground, and in the wet. But it is not in reference to its wheels, nor for its coffin-boards, that I have taken up the Elm subject, but on account of its being so well adapted to prop the climbing Roses—those glorious specimens that we sometimes see against the walls of some villa, where the owner or occupier has had the good taste to plant one, to prove the envy of all beholders.

Many villa residences have no spread for such plants, but it is easy enough to plant a weeping Elm, worked as a standard, and against this a climbing Rose; so that whilst the Elm will remain, yielding its "barren shade," the Rose will ramble all over the flat table of the Elm, and not only cover that with Roses, but hang down all round in its own graceful style; for while Hop-poles are all pointed stakes, the Elms to which "Vines are wedded" are all alive, and are not driven into the ground, but planted, and their few roots and few leaves are just what are wanted to hold up to admiration not only climbing Roses, but climbers of all kinds that are hardy enough to bear our summer seasons in the open air, most of which, with the exception of the Clematis family, seem to be neglected.

I have bright recollections of the climbers at Chiswick, on walls and arches, many years ago. To use the language of the wine-dresser, these beautiful climbers want wedding to props of some kind, and we are left in no doubt as to what we have to do in the matter, for the Grape Vine never puts out a fruit-bud but it puts out a tendril whereby it may be supported; and this tendril will run long, and turn often, to find a twig on which to hang the bunch of Grapes.

Painted stakes, four-square and pea-green, are the usual props of garden Roses; but I found in practice that a round stick, and of a grey colour, was more like Nature's fashion; and so I planted an Irish Yew against every stake to hide it, and it was curious to see the lively Rose crowning the sombre Yew. I borrowed the idea from a wild Rose that had grown up inside an Arbor-vitæ, and bent down gracefully, laden with flowers, and which differed from Roses propped up, for it was all beauty, with not an inch of grey bark to be seen, and it waved in the summer wind so "wild and well" that we had no other Rose-tree like it, the evergreen Arbor-vitæ giving the green back so much wanted in all nosegays.

The Ash has a pinnate leaf, and as such agrees with the foliage of Roses, but the weeping Ash is the only one suitable to be wedded to the Rose, and that should only be a little higher than the height of a man to be seen to advantage; but, after all, the weeping Elm will bear more trimming and fitting than the Ash, and as it advances in growth very little in a few years, it has the charm of neatness, which the weeping Ash never has, for its bending boughs are large and coarse, frequently bare, like a bald head, at the top, and full of twigs at the bottom.

The system of planting two trees where we formerly planted only one may be seen in various specimens; and where two or three Rose plants can be got into one pot, it is good practice to get them in. Some years ago it was the fashion in well-kept gardens to hoe and rake the front of shrubberies, as if black and barren earth were ornamental, whereas the clean bright greensward ought to be the carpet spread under the Rhododendron as well as the Rose; and fortunately the Rose family so abounds with dwarfs, runners, climbers, &c., that we read in Canon Hole's *Book on Roses*, of some that saluted him from the church wall. I had to give over growing some ramblers on account of the nails and labour they took to cover a high stone wall, which they do well, covering the wall at the rate of 30 feet in one summer. So well are Roses classed in the new catalogues, that one has only to name what is wanted to our great growers to get well suited.

The late Duke of Northumberland wanted to stop parties from getting over the ha ha in front of Syon House, and as his Grace knew plants well, he had a climbing Rose planted there, and it politely warned people to go some other way; indeed, after one summer its horrid hooks had but to be seen to get a wide berth. The difference here named is to use a living prop instead of a dead one—one of slow growth, planted, instead of a pole driven into the ground. *Alex. Forsyth.*

THE WINTER AT ELVASTON CASTLE.

We never realise that which comes to our knowledge by hearing so fully as by the evidence of our eyes, yet after what has become known of the severity of last December's frost in some parts of England, most people conversant with the effects that an exceptionally low temperature has upon outdoor vegetation when following a wet, sunless summer like the last, will be prepared to hear of much destruction in localities where the temperature was lowest, such as in the southern portion of Derbyshire, at and about Elvaston, where the land lies flat, and the soil and air are charged with moisture. The winter of 1860-61 told severely on many of the grand Coniferous and kindred evergreen trees for which Elvaston is so celebrated. A recent visit enabled us to see that many things have succumbed which came out unscathed, or only slightly injured, nineteen years ago. Portugal Laurels seem to be completely killed; from those which have been planted half a century with stems that have attained the thickness of a good-sized tree, to the low clipped hedge that bounds the long walk leading from the kitchen garden to the pleasure grounds all appear to be destroyed. Some of the Araucarias left by the frost of 1860-61 have again suffered little, others are so much injured as to be useless. Deodars have been so far denuded of leaves as to give them an appearance like the deciduous Cypress, but they are now breaking freely. Even the well-proved Cedar of Lebanon has lost half its leaves. Pinus insignis, planted to replace those destroyed in the 1860-61 frost, again all quite killed; P. macrocarpa so far affected as to be worthless; P. Coulteri badly cut, but not so much as the last. Of the many examples of Wellingtonia some are not much worse, but the greater portion are severely browned, and some killed or beyond recovery; one, a fine tree, standing at the top of the church avenue, with a stem 8 feet in girth, is quite dead. Gorse, both the double and single variety, is killed down to the roots. The female Chinese Junipers are all but killed; the male plants are untouched; Abies Douglasii somewhat injured in the foliage. Picea Pinsapo here, as in most other places, has lost its leaves in the extremities of the shoots, but the wood is uninjured. The common green Holly and varieties like the gold and silver Queen, maderensis, Cunninghamii, and the Milkmaid, of all of which there are such quantities up to 20 feet in height, many are killed outright. Waterer's Holly, a row of which stood on each side of the road leading from the back entrance—specimens of a size rarely met with—seem totally destroyed. Several Walnut and Mulberry trees of considerable size, looking not less than forty years old, are quite killed. The many Yew and Box hedges have the points of their shoots killed, but will apparently break out again; those that have been cut, so as to keep them within the least size, have suffered worse than where let to get larger. All the Menziesias seem quite dead. The above in a great measure comprise the things that have been affected more or less to the extent described. It is a heavy list of death or injury; but there is the satisfaction accompanying the last winter's experience at Elvaston, that the many fine species of evergreen trees which have come safely through the ordeal may be fairly reckoned to stand anything in the shape of cold we are likely to have, as we understand the thermometer fell on two or three nights some 10° below zero! *T. B.*

THE CATALPA AS A TIMBER TREE.

Much has been recently said in regard to the Catalpa as a timber tree, and, as it would appear from very recent information, Professor C. S. Sargent, of the Bussey Institute, has directed attention to it, and spoken highly of its value and urged its cultivation, I believe, for that purpose. It appears, however, that its importance as a timber tree was known half a century ago, and its culture recommended by one so capable of judging as the late President of the United States, General Harrison, of Tippecanoe fame. In June, 1831, General Harrison delivered an address before the Agricultural Society of the county of Hamilton, Ohio, in which he spoke of the Catalpa as follows:—

"In acknowledging the progress our country has made in rural economy, it is painful to notice how little we have advanced upon the method of fencing now in use, or in the substitution of enclosures more durable and at the same time more economical. Our old rail fences, whose dilapidated appearance produces such a disagreeable effect around our farms, are as wasteful and expensive as they are inefficient, and the increasing price of timber and the great quantity which will be required demands speedy improvement, for the country is likely to soon lose the material for their construction. If we could procure posts and rails of the Locust or Mulberry they would last, without doubt, a great many years; but the wood of the Catalpa, a tree of such easy culture and of such rapid growth, furnishes, perhaps, a material much more durable than either of the others. This valuable tree is indigenous in the lower or southern part of Indiana, and grows to a very large size upon the Wabash River and several of its tributaries. Its property of resisting decay has been sufficiently verified in the vicinity of Vincennes, where the soil is saturated with water. One of these trees was cut down on the little stream of the Detha, five miles from Vincennes, before there was any emigration from other States. It was certainly a giant in the year 1785, when a colony of Virginians from the Southern Potomac settled there, and this Catalpa served for a foot-bridge for crossing the river. I have been informed by a worthy man, in whom I place great reliance—Dr. Hiram Dickson—that he has recently seen this tree, and found it but slightly injured from the moisture; and he assures me at the same time that a fence built with posts of the Catalpa which had been set in the ground in 1770, by his father, had been recently taken up and reset on his own farm, by his brother, Major André Purcell: it had been found yet perfectly sound, and quite as good for the purpose as those which had been put down to take their place. The Catalpa is a very beautiful ornamental tree, but I do not think it is appreciated or has been employed as a timber tree elsewhere than in the neighbourhood of Vincennes. It grows with remarkable vigour upon the farm of my cousin, Mr. Short, where it is increased by seeds; and I believe that in places where timber is scarce, and the soil suitable to its growth, it offers very great results, not only for fencing, but for the construction of all kinds of buildings."

The above extract from General Harrison's address I translate from the *Annales de Fromont*, vol. iv., where there is a brief account of the Catalpa by the late M. Chevalier Bodin, the well known horticulturist and proprietor of the once famous Fromont Gardens, near Paris, as also the raiser of Magnolia Soulangeana. M. Bodin probably quotes from the western papers of the day or from the address, which may have been published, and perhaps forwarded to him. He does not state from what source, or I should like to refer to General Harrison's original and undoubtedly highly interesting address. It will, however, show that our native Catalpa was considered a neglected and valuable timber tree fifty years ago, whatever its nearly related species—a variety recently introduced from Japan—may be. *C. M. Hovey.*

Foreign Correspondence.

Ten Days at Tunis.—Goletta, the harbour of Tunis, stands on the western side of the narrow bank which separates the bay of Tunis from the shallow inland lake, on the further side of which the city itself is built. Until very lately it was necessary to cross this lake in a flat-bottomed barge, poled tediously over the shallow water, but now a railroad made by an English company runs round the lake, and takes the traveller in half an hour to the gate of Tunis. On the left you have the muddy shore, overgrown with Salicornia and Atriplex; on the right a broad open plain, now brilliantly green with young corn, among which Tulipa sylvestris, nodding its head to the breeze, may be noticed in passing. Asphodelus ramosus and fistulosus also catch the eye, and the golden Senecio leucanthemifolius is even more general than in Malta and Sicily.

The country round Tunis is bare and open, rising into low hills or expanding into wide basins, but everywhere without any trees larger than Olives, and everywhere green either with the young corn or with the equally brightly-coloured growth of weeds which has sprung up on the fallows. My first walk outside the town procured me the prevailing corn-weeds. Fedia cornucopiæ and Linaria reflexa, so common in Sicily, were here associated with the handsome Linaria triphylla. Fumaria spicata and agraria were mixed with F. parviflora and the universal F. officinalis. Large Silenes were abundant, not only the wide spread colorata, but also S. rubella, rose-coloured, with a white eye, and S. fuscata, with its curiously curved calyx. There was Adonis, deep red and orange, perhaps varieties of the same species, æstivalis. There was Moricandia arvensis and various Charlocks, of which much the most common was Sinapis amplexicaulis. Another plant, conspicuous with its large yellow flower and abundant snowy pappus—Othonna cheirifolia—grew in great clumps among the corn, as if it had successfully defied the plough to extirpate it. Nonnea pulla and a large-flowered Cynoglossum occupied dry bits of waste, and on the fallows Geranium tuberosum was the most usual flower, where also Bellevalia romana, Muscari racemosum and comosum, and Ornithogalum umbellatum were in bloom.

The only variety of crop from the great expanse of Wheat was a field of Trigonella Fœnumgræcum, but so small and stunted that, with the flowers clustered together in a head on the plant scarcely more than 6 inches high, it had much more the look of a Trifolium than of a Trigonella.

On the dry uplands, uncultivated but pastured by sheep and goats, I found one or two Orchids, Ophrys lutea and Orchis saccata, Daphne Tartonraira and Calycotome spinosa, Helianthemum thymifolium, and a curious stemless Centaury, C. nana, whose flowers are collected for their sweet scent. Boys were carrying branches with a flower stuck on the end of each twig, and they are also used by the Moors to put among linen as Lavender is in Europe. On the east side of the town are some low rocky hills crowned by forts and mosques, and their slopes covered in great part by ancient graves. This was the only ground which I could not examine. Mahometans are very sensitive to the intrusion of infidels on their graveyards, but, with this exception, I found I could go everywhere without the slightest risk of molestation. On the further side of these hills I was free to look for the plants which grew on the almost bare white limestone. Conspicuous was Fagonia cretica with its very handsome purple flowers, certainly deserving of garden cultivation, also the deep orange-coloured Glaucium corniculatum. Here, too, grew Lavandula multifida and the curious Carrichtera annua, Globularia Alypum, Thymus capitatus, &c. I was fortunate enough to discover an extremely rare Medicago, M. secundiflora; Baron Cesati, who kindly determined it for me, informs me that it has only once before been found—by Cosson, at Constantine in Algeria. Growing mixed with it was Medicago elegans, whose pod is like an Ammonite in miniature; Trigonella monspeliaca, the graceful Paronychia argentea, and various other spring flowers which are common in Italy. Returning another day to Goletta, I walked across the sandy plain some 3 miles to the low hills breaking down on the sea, which are covered by the ruins of ancient Carthage. Near Goletta the sand was brilliant with the pale lilac flowers of a Romulea which seems to be very nearly allied with R. ligustica of Parlatore. Trigonella maritima with its Coronilla-like umbels was in such abundance as to spread over the permanent way and among the sleepers of the railroad. Triglochin Barrelieri, with its bulbous roots, marked the damper spots. On the slope of the hill, over which stands the chapel, erected by Louis Philippe to the memory of his ancestor Saint Louis, whose death happened at this very place, there grew a handsome Ononis with a pink and white flower, probably geminiflora; a tall Astragalus, whose name I have not been able to determine; a Vicia akin to lutea, but with a purple flower; and a Medicago, with a pod like that of M. orbicularis, but only half its size. I take it to be M. lævis, which Desfontaines describes as having been found in this very neighbourhood.

Of Carthage itself there are absolutely no remains except shapeless masses of masonry and foundations of buildings which have long ago disappeared. On them I found Arenaria cinerea with its pretty carmine-coloured blossoms, and a handsome Verbascum coming very close to V. virgatum. Further on, among the Olive groves which surround Marsa, a small village on the shore, where the Bey of Tunis has a summer palace, Anemone coronaria was plentiful, and a tall Ranunculus, R. millefoliatus, rose above the young corn. Close to the sea I found at last (and this was the only place where I saw it) Genista monosperma, in full blossom and deliciously sweet. Under its shade grew Ophrys fusca, and not far off Ophrys bombylifera, with its tuber connected with the stem by a long fleshy sucker. Here also

first saw Ophrys funerea, which is more common on the Hammam-el-Emf mountain.

This mountain rises from the shore with a picturesque double peak to a height of 1200 feet or more, at a distance of 8 or 10 miles to the east of Tunis. At its foot are the Hammam or hot springs of El-Emf—salt-water—and said to be of great efficacy in rheumatic complaints, but quite without any of the civilised appliances for using them. Immediately on leaving the baths I met with great masses of a Cyclamen having white petals and a rosy eye, which from its deeply serrate leaves would seem to be latifolium of Sibthorp. At an elevation of 300 or 400 feet I came upon bushes of the famous Thuja articulata, but on the whole mountain I found nothing larger than a bush of this or any other tree. A handsome shrubby Erica, E. multiflora, was nearly out of blossom, while Cistus fastigiatus, with its small white flowers, had hardly begun. Tulipa sylvestris in a dwarf form was not uncommon, more sweetly scented than I ever remarked it. Why do not florists, by crossing with this species, attempt to add the only charm wanting to our garden Tulip? I met with Linaria simplex on a level shoulder immediately below the two peaks of the summit, and Ranunculus chærophyllus was common up to this height. On the steeper slope above was a quantity of a large Ranunculus, perhaps spicatus, and an Orchis, principally with white flowers, but identical, I think, with the common O. mascula. Close to the top was Anthyllis Vulneraria, the variety with crimson flowers; and on perpendicular rocks, quite out of reach, a large white flowered Brassica, probably no other than B. oleracea, though the distance from the sea is rather greater than it generally affects. From these same rocks I secured Ruscus Hypophyllum, and a large Scrophularia, perhaps trifoliata, but I was unfortunately not able to reach the root-leaves, whose shape is so important in determining the species. Another day I took the railroad which runs westward parallel to the coast, and which in a few months will be completed to its junction with the French lines of Algeria. The general character of the country remained the same over the 30 miles which I traversed, wide basin plains, rimmed around by low bare hills, perfectly treeless, and either uncultivated or under an immense breadth of Wheat, which everywhere seemed most healthy and promising. Little water—we only crossed one small river—and scanty inhabitants: a few small villages were all I saw, but there seems to be a scattered population of cultivators

FIG. 129.—ASPARAGUS PLUMOSUS. (SEE P 760.)

and shepherds, who live in more or less temporary huts near their work. The station to which I went, Medjaz-el-Bab, was a staring red-brick house standing solitary amongst a sea of corn in the centre of a broad basin 5 or 6 miles across. I struck across to the hill border, which was extremely rocky and barren. The soil was bare between bushes of dwarf Rosemary and Calycotome spinosa, mixed at the highest point with Juniperus phœniceus. Helianthemum salicifolium and ægyptiacum, along with Ranunculus chærophyllus and Ophrys funerea, were thinly scattered among the rocks, and Lithospermum apulum was associated with an Alkanna, having a brilliant blue flower, and therefore it may be, not tinctoria, but strigosa. On the level among the corn was a quantity of Narcissus, which did not appear to differ from the common Tazzetta, and the fallows, which rest for years before they are broken up again, bristled with Asphodelus ramosus. Paliurus aculeatus formed large islands among the corn, from 2 or 3 to 20 yards across, the cultivator finding it better to guide the plough round such masses of tangled roots than to attempt to grub them up. Everywhere by the side of the roads was Mandragora officinalis, showing, as usual, a few of its pale blue Gloxinia-like flowers in the spring, but reserving its full bloom for the late autumn.

Here, as elsewhere, I could not help remarking how much chance there is in the collections made during a hasty visit to a country. I got single specimens of so many plants which, but for the accident of my meeting with a solitary individual, I should not have known to belong to the flora of Tunis. I found here one, and only one, specimen of Convolvulus tricolor, the same with Securidaca coronilla, the same with Reseda phyteuma, the same with a handsome Althæa, which I could not name from this one specimen. So, too, the class of plants found depends greatly on the season of the botanist's visit. It struck me as remarkable, when I arrived at Tunis, that there were absolutely no grasses in flower, scarcely even the universal Poa annua. But on the last day of my stay I came upon several, including Lamarkia aurea and Schismus marginatus, and no doubt a few days more would have added largely to the number. The great genus Trifolium was without representatives in my collection until almost the day of my leaving, when T. stellatum began to show itself everywhere, and T. tomentosum also broke into flower.

Looking at the mass of the 235 species which I collected at Tunis, the general impression is that the flora is one almost identical with that of South Italy. Less than twenty of my species are not Italian, and there are perhaps not more than two which are distinctly not European. There is the Thuya articulata, which, even in classical times, was recognised as African; and still more, Othonna cheirifolia, an outlying member of a large genus, all the other species of which, forty or fifty in number, are Cape plants from the extreme South of Africa. About a dozen more (Genista monosperma and Fagonia cretica are examples) are extremely rare denizens of Sicily and Sardinia, and it seeems highly probable that they are African species of comparatively recent introduction into those islands. Migratory birds are continually bringing the seeds of plants from Africa to Europe. A Palermitan friend lately informed me that when he was a boy he and his companions used to ask that the crops might be kept for them of the quails which were cooked in the kitchen. These crops contained numbers of seeds, which the boys sowed, and there was great rivalry among them as to which should raise the largest number and greatest variety of plants. The same process occurring in Nature, must be always tending to extend the African flora towards the North. So far, however, as the evidence of my collection goes, it would appear that there is a still closer connection between the flora of North Africa and that of Spain than that which unites it with the flora of Italy. Not only are several plants in the list common to North Africa and Spain which are absent from Italy (Ononis geminiflora, Leucanthemum setabense, Schismus marginatus, are examples), but other plants which are rare and occasional in Italy are among the most plentiful alike in North Africa and Spain. So I recognised at once Fumaria spicata and Carrichtera annua from having seen them many years ago as common weeds at Malaga, although in Italy, though they exist, I have never had the chance of meeting with them. It is a matter for speculation whether this difference results from an earlier separation of Italy from the African continent or only from the greater similarity of the climate of Spain to that of North Africa. *A.*

Notices of Books.

An Elementary Text-book of Botany. By Dr. Prantl; the translation from the German revised by H. Vines, M.A. Swan, Sonnenschein & Allan.

To those to whom Sachs' *Lehrbuch* is too voluminous, this translation of a now well known handbook may with confidence be recommended. The Editor has adopted Sachs' classification of Thallophytes, which must be looked on as provisional only, for it would seem probable that the Protophytes may simply be states or forms of some more highly endowed organisms, and capable of developing into them when circumstances are favourable. The prominence given to the product of the reproductive process is stated with clearness, and divisions are made according as the product in question is a resting spore, a new individual, or a fructification. The morphology of the higher groups is founded on that professed by Alexander Braun, and the classification followed is based upon it. In these points, the book is a truer representative of the state of science than are most of our existing text-books. The value of such a work cannot be fairly estimated until it is tested, not as a reviewer would do, but by actual use by a lecturer or a student. The most cursory examination, however, suffices to show that the book is a great advance upon some older text-books, and is likely to be valuable to those imbued with older ideas by helping to lift them out of the rut of routine.

There are some points upon which discussion might be raised; thus the term "monopodial sympodium" appears to us to be to some extent a contradiction in terms and to convey a false impression. If a "sympode" be composed of successive lateral axes belonging to different generations superposed one to the other, then the term "monopodial," as applied to it, is incorrect, and "polypodial" would be more applicable. The different modes of branching may therefore be grouped as monopodial or indefinite, where the lateral branches from the primary axis are given off in continuous succession; chorisipodial or dichotomous, and polypodial or definite, wherein the lateral branches do not all belong to the same generation, as in the true monopodial branching, but represent an interrupted sequence, and belong to so many stages, separated one from another by distinct cessations or arrests of growth. The successive branches do not all arise directly from the main axis or "podium," but the second originates from the first, the third from the second, the fourth from the third, and so on, each successive ramification forming a distinct podium.

The decomposition of carbonic acid and water by the chlorophyll under the influence of light is not considered as a process of assimilation, although on pp. 70, 71, the formation of starch is spoken of as "the first product of assimilation," its subsequent changes being included under the newly devised term of metabolism.

Introduction to the Study of Flowers. By Andrew Wilson, Ph.D. W. & R. Chambers.

A well devised little book, as it may well be, seeing that to a large extent it follows the same plan as that adopted by Henslow and Oliver. We demur, however, to some of the opening paragraphs, for instance, it is not true that "every organ or part of a plant is in reality a leaf of one kind or another;" neither does it convey a correct idea to say that the "leaf is in fact the type of the plant." Towards the end of the book, too, we find only three conditions mentioned as altering or modifying flowers, viz., cohesion, adhesion, and suppression of parts, adhesion being stated to be union of unlike parts, which is certainly not always true. In fine, we like the "practical exercises" very much, but we think the author would have done well to have omitted the inferences from them.

—— *The Weather of* 1879, *as observed in the Neighbourhood of London.* By Edward Mawley. (Bemrose.) —This is a very complete account of the weather of each month of 1879, of the different seasons, and of the year as a whole, together with numerous comparative tables, showing the relation of this remarkable year to others. The information here gathered together is so valuable that meteorologists and gardeners are under a heavy obligation to the author. The year 1879 was colder than any year for thirty-eight years, and, with one exception, the most gloomy. The whole twelve months continued from first to last persistently sunless and cold. The two months, moreover, immediately preceding 1879, as well as the month immediately following it (January, 1880), were all singularly cold ones. The fall of rain was also extreme in the summer, but reduced to a minimum during the winter. Mr. Mawley's pamphlet will have a special value in connection with the records as to the effect of the winter upon plants which the Scientific Committee propose to investigate.

Garden Operations.

FLOWER GARDEN.

Bedding Plants.—Any kinds that will not bear exposure by this date should be discarded altogether as "bedders," for all such work ought now to be completed by getting out Alternantheras, Coleus, and fine-foliaged subtropical plants. The first named are indispensable in all foliage arrangements, and are less trouble than any other bedding plants, except those that are perfectly hardy, for, to get up a stock of many thousands not more than a few hundreds of plants need be saved through the winter, and, by adopting the dung-frame mode of propagation and growth, cuttings need not be put in till April, and yet fine plants secured—such as we are now putting out, and which have been no trouble, except as to watering and airing, since they were put in as cuttings after the manner detailed in a former Calendar. Plant out thickly, to ensure immediate effect—and the same remark is applicable to Coleus and Iresine—to prevent disappointment in the event of the season being ungenial and growth slow. Large-growing foliage plants such as Ricinus, Wigandias, &c., that are likely to be affected by wind, should be staked as soon as planted; free growth should be promoted by keeping them well watered, and neatness assured by pegging down the undergrowth plants at once. Also peg into form all plants that are used for divisional lines, together with all straggling growers that need such manipulatfon to preserve the pattern or design. With a view to full effect at the earliest period, growth will be much accelerated by now picking off the flowers from Calceolarias, Violas, Verbenas, Ageratums, and Pelargoniums, and throughout the entire season all these should be kept from impoverishment, through seeding, by picking off the old flowers the moment they begin to fade. Lobelias that may have become drawn in the cutting pans or boxes should, as soon as established in the soil, be clipt over with sheep-shears, which process will ensure their breaking thickly from the bottom, and to the production of stouter flower-stems. That invaluable groundwork plant, Mesembryanthemum cordifolium variegatum, sometimes refuses to start into growth freely, and the cause will mostly be found to be its seeding propensities, that are always manifested if the plants have been cramped as to root run whilst in the cutting pots; the remedy is therefore obvious—pick off the seed vessels.

Roses, Climbers, and Rhododendrons.—Roses that were moved last autumn, or this spring, must have water; longer established plants, that were mulched early in the season, may not require artificial watering, though, if convenient, its application would prove beneficial, and particularly where aphis is prevalent, and it can be applied with force to dislodge them at the same time as watering the roots. Hand-pick for grubs, dust the foliage with sulphur, and give copious waterings to destrow mildew. Stake standards: at this season the growth is so rapid that if improperly supported they get top-heavy, and are liable to break off. Proceed with budding as opportunity offers and buds can be had, and keep stocks free from suckers and unnecessary shoots. Secure climbing Roses to supports before their weight endangers their safety, and train and regulate the shoots of Clematis, and other quick-growing climbers once a week. Plants of these growing under eaves of houses, verandahs, &c., where rain cannot reach them, should during the summer season have copious waterings and syringings to keep them clear of insects. Such annual climbers as Nasturtiums, Canary Creepers, Convolvulus, Maurandyas, and Lophospermums look most natural when trained by means of pea-sticks, and all of them are useful for forming temporary and quick growing screens for concealment of unsightly objects and corners. Pick off the seed-pods from those Rhododendrons that have done flowering; keep grafted varieties free from stock-shoots and root-suckers, and any plants that are making an uneven balance of growth may now be got into form by cutting away

straggling branches, which, if done now, will quickly break into fresh growth. Standards and other single specimens on turf, and in dry positions, should be well watered to promote a healthy vigorous growth, without which good flowers are an impossibility.

General Work.—Maintain neatness by keeping lawns regularly cut, walks free from weeds, and the edgings trimmed. If dry weather prevails keep bedding plants well watered, and as soon as bedding-out is finished clear away all traces of the inevitable litter connected with the operation. Pots and boxes should be placed in some convenient place for washing and cleaning the same in bad weather, before being finally stored away. Clip Box-edgings, and regulate the growth of any evergreen shrubs that it is desired to keep in bush or other form. Continue to plant out Asters, Stocks, Balsams, and other annual flowers, and make a last sowing of Sweet Peas and Mignonette. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

We have still a protracted period of drought, which was beginning to cause some uneasiness in horticultural circles where the supply of water is deficient, but a few refreshing showers in the early part of last week has relieved a good deal of anxiety and given some assurance of brighter prospects. As far as crops for the present season are concerned the scanty sprinkling of Pears and Apples are holding fast; and now, as the period for summer pinching is close at hand I propose saying a few words in regard to the curtailment of growth as it is practised in the cultivation of bush fruit trees.

It is cheerfully admitted that a row of dwarf-trained bushes, whether of Pears or Apples, or of both, running parallel with the main walks of a garden, are not only desirable adjuncts in point of beauty at any season, but the fruit (and this is the question), when there is a crop, is of superior size and quality. Of late years, however, a full crop has been of such rare occurrence that this dwarfing system ought either to be abandoned or the roots of the trees conconfined within a proportionately limited area. With young trees in full health and vigour it is often difficult enough to maintain them in a fertile condition by careful summer management and root-pruning in winter, and how much more difficult is it to keep trees in a fruitful state when their crops are regularly decimated or totally destroyed from one cause or the other, leaving them all the vigour they possess to make soft, sappy, young wood which in time induces a coarse quality of roots and ultimately leads to a state approaching absolute barrenness in the tree. There can be little doubt that the frequent stopping of these soft young shoots in trees with vigorous root-action is the cause of so much canker and decay, for if this be not the cause how are we to account for the exudation of sap which flows so copiously from those knot-like wounds in trees, which are not permitted a natural outlet (a sufficient number of branches) into which this waste of vigour may flow, and yield its fruit in due season? These remarks have a particular and an especial application to districts where the air is moist and damp, where lichens and moss and dead and dying branches abound, and where, consequently, owing to these unfavourable atmospheric conditions, a moderate form of growth should be induced and encouraged. Clearly, I think, it would be a gain if we allowed our dwarf trees more headway, and ceased to pare and prune for the sake of producing examples of mechanical skill. What is wanted is fruit, and there is no disguising the fact that many of our old-fashioned trees are bearing crops this season, while a great many of our fancy shaped ones are nearly barren. The subject deserves that a leading article should be devoted to it. Wall trees generally are looking well, but black and greenfly, which is fast increasing, will have to be kept under. Where shoots have to be thinned out or pinched back, the fingers should be kept busy at work removing those that are the worst attacked with insects, which will render the use of tobacco-water and other insecticides less needful. Dust Gooseberries with dry lime to keep down caterpillars, and see to the netting of Strawberries in time to save the best fruit from the attacks of birds. Strawberries for dessert or exhibition purposes should be tied up in loose bunches so that the air can play freely amongst the leaves, in order to keep the fruits perfectly clean and also to secure good colour and flavour. Two or three sticks put round a single stool, and a piece of bast mat run round them will answer the purpose effectually. *W. Hinds, Canford.*

FRUIT HOUSES.

Figs.—Under good management pot Figs, unlike many other kinds of fruit, improve with age, and when they attain a large size and become well furnished with short-jointed wood, they produce a succession of fruit of the finest quality throughout the summer. At the present time the succession crop on November started trees will be swelling fast, and some of the most forward will be ripening. Where the spring growths are profusely set with fruit, a general thinning will relieve the trees, and add greatly to the size of the Figs, which will excel in quality in proportion to the amount of light, heat, and ventilation they receive. Good feeding throughout the growing season is indispensable; and now the days have nearly reached their greatest length, the quantity of diluted liquid that large trees require will be considerable. Our own pot-trees, some 10 feet in height, although firmly rooted in the plunging material, receive about 8 gallons each every other morning. The ammonia arising from this, combined with copious syringing, keeps the foliage in a clean, healthy state, free from red-spider, and it rarely happens that we lose any fruit by premature ripening or dropping. Where pot Figs are not plunged it is a difficult matter to keep them free from scale and red-spider, but an effort must be made to keep these in subjection—the former by the application of strong soap-water with a half-worn painter's brush before the insects extend to the leaves, and the latter by syringing with clear sulphur-water, after the sun is off the house. Trees established in inside borders, and trained over a fixed trellis, should be tied down before the crop begins to ripen, and vigorous growths that are likely to carry the support away from the fruit should be pinched out as the work proceeds. It will be necessary to make additions to the mulching as the feeders appear on the surface, and to keep them there by the application of moisture at short intervals. Ventilate houses in all stages of growth early in the morning, and allow the temperature to rise gradually until the maximum of 80° is attained; reduce in the same way, and finally close on fine afternoons in time for the declining sun to raise the heat to 85° or 90°. *W. Coleman.*

Melons.

In establishments where these delicious and cooling summer and autumn fruits are much esteemed—and where is the place in which they are not so esteemed?—the supply can be considerably increased by planting Melons in frames just vacated by bedding and other plants. The frames can be placed upon a south, west, or even an east border, and a barrow-load of soil, consisting of three parts stiff loam and one of lime rubble, placed in the centre of each light. In planting, presuming the soil to be moderately dry, it should be pressed firmly around each plant; also, when the hillocks necessitate more soil being added thereto, it should be trodden firmly all over the bed, and especially so along the sides and ends of the frames, to prevent the soil coming away from the framework. Should the weather be bright and sunshiny at planting time, shade the plants for a few days until they have re-established themselves, after which it can be discontinued. Plants growing in these frames will require little, if any, water to the roots other than what they receive at planting time to settle the soil about them, bearing in mind that there is no bottom-heat in these frames other than that imparted to the border by the sun. However, the plants will need being syringed every afternoon during bright and sunny weather, putting on air early (half-past 7 o'clock) in the morning, and shutting-up early (from half-past 3 to 4 o'clock), with plenty of atmospheric moisture in the afternoon. Of course the time of putting on and taking off air must be regulated according to the aspect in which the houses, pits, and frames are situate, as also by the condition of the weather, which should be the chief guide. In other departments the stopping, tying, thinning, and otherwise regulating of the shoots, will require due attention. The houses in which the fruits are approaching maturity should be ventilated freely, and a somewhat high and moderately dry atmosphere maintained. In houses in which the fruits have set, ply the syringe freely both ways twice a day during favourable weather, to prevent and keep down red-spider. *H. W. Ward, Longford Castle.*

Cucumbers.

Plants that have been producing fruit since the middle of March will be considerably benefited by receiving a good top-dressing of three parts loam and one of rotten dung, over which, where the plants are trained to a trellis, a couple of inches of well-decomposed stable-manure may be placed with considerable advantage to the plants, after which the whole should receive a good soaking of tepid water. The shoots should be thinned well out, and re-arranged and syringed twice a day during favourable weather, and shut up sufficiently early in the afternoon to entrap the sun in his western transit. In successional houses, pits, and frames, attend regularly to the stopping, thinning, tying, and arranging of the shoots, and the removing of superfluous and misshapen fruits. Maintain a steady bottom-heat and an equable temperature, so that the plants may not receive any check while the fruits are swelling, which would probably result in the production of deformed fruits—which, moreover, would be tough instead of being crisp. *H. W. Ward, Longford Castle.*

PLANT HOUSES.

The time of year has now arrived when, with a favourable change in the weather from the cold we are now experiencing, some of the hardier stove plants will be available for use in the embellishment of conservatories, but before removing them for this purpose to these structures it will be necessary to gradually harden them off by affording more air and a cooler temperature than they have been accustomed to, that they may not suffer from the change which, without adopting precautionary measures of this kind, is sure to be too sudden for their welfare. Not only is it important that they be inured by degrees, but it is equally so that when transferred they should be stood in positions out of reach of draughts or cold currents, such as they would be exposed to if placed in close proximity to the ventilators—a situation most unsuitable for tender subjects like those under notice. Besides being particular in regard to the sites they occupy, the plants will require very careful watering, for if the soil be kept at all wet the roots soon feel it, and are affected injuriously, as the delicate spongioles perish, and these, being the feeders, are a serious loss when leaves and flowers are so dependent on their aid for support. In order to afford more room for the choicer kinds and specimens to grow and develope themselves it will be well at once to remove from amongst them all winter blooming stuff, such as Eranthemums, Sericographis, Thyrsacanthus, Plumbago rosea, and the like, which after this succeeds best in pits, where it can be plunged in some gently fermenting material and kept under more immediate control. Gardenias, too, delight in the same kind of treatment, and if pushed on now by being heavily syringed and closed early it will tend greatly to free them from insects, and to get them into condition for blooming at a time when their flowers will be of much value, as they always are at mid-winter. Should the plants have mealy-bug on them there is no safer or better way of ridding them of the pest than by the use of paraffin in the proportion of a wineglassful to 4 gals. of water, which should be constantly stirred when being applied, so as to thoroughly mix the oil that it may be distributed regularly. When syringing it on it is always advisable to lay the plants on their side, in which way the foliage can be effectually wetted above and below without risk of the liquid penetrating the soil, a thing to be avoided when insecticides of this kind have to be resorted to, as without care the roots feel the effects and suffer to a serious extent.

Greenhouses.—Azaleas that were forced early ought now to have completed their growth and be ready for training, but in doing this the thing is to avoid unnatural stiffness, as, beyond being of moderately regular outline, the less formality there is infused in the shape of the plants the better and more pleasing will they look. Although it is necessary to use some stakes for the tying and support of the main branches they should be hidden as much as possible, as to see the heads of these obtruding themselves spoils all beauty, and the same may be said of many of the trellises, the conspicuousness of which is often such as to be an eyesore. In removing the old stakes, previous to inserting the new ones, it is very important that the decaying ends be withdrawn from the ball of earth, as left there they generate fungus, which parasite spreads at a great rate and does irreparable mischief. The wood best adapted for making stakes that are required to stand long is yellow Baltic deal, as the resinous matter it contains and its hard nature renders it very enduring. For supporting the stems of Lilies and other similar temporary uses the long young shoots of Hazel answer very well, but the strongest, neatest, and best things that can be had for such purposes are small Bamboo rods, that may be obtained at a cheap rate, and which, if taken care of, will last for a great number of years. In regard to Lilies, it has been stated by a writer that the stem-roots are useless, but Nature is generally faultless, and it is very certain that they would not make their appearance in the way they do were they not necessary to some end, which end it is very plain is for the nourishment and support of the flowers, and as this is the case, they should be encouraged as much as possible by having a surfacing of rough fibry loam afforded them, which they will soon lay hold of and form into a perfect mass of feeders, ready to drink up the liquid manure or water whenever either are given. To prolong the season of these serviceable plants to as late a period as they can be had, a portion of the stock should be plunged outdoors in a cool airy position, while others may be gently forwarded under glass; but the more air, light, and sun they get, the sturdier and better will they be. Wherever placed, the shoots require very close watching at this period of their growth, or they soon get crippled by greenfly, which insinuate themselves in the plants among the tender leaves and buds, where they are not observed till much injury is done. A puff of tobacco dust is the safest and easiest remedy to apply, and this as soon as it has done its work may be washed away by a heavy syringing, which will leave all clean and free from deposit. *J. Sheppard.*

APPOINTMENTS FOR THE ENSUING WEEK.

Wednesday,	June 16	Royal Botanic Society's Second Summer Exhibition. York Gala commences.
Thursday,	June 17	Chertsey and District Horticultural Society's Show, at Walton-on-Thames Linnean Society: 8 P.M.
Friday,	June 18	Scottish Pansy Society's Show, at Edinburgh. York Gala closes.

THE daily routine of work and generally the favourable spring are likely, to some extent, to banish from our minds the memory of the wretched year 1879. Not absolutely so by any means—farmers and gardeners suffered too severely for the recollection of the disastrous year ever to be wholly obliterated. We see daily traces of its effects in dead and dying plants, and note its results even more plainly in the poor flowering and small blooms of our trees and shrubs, and in the unusual periods at which some plants are blooming. Such seasons may occur again—there is no telling when or how often. We can do nothing to avert them—can we do aught to mitigate their ill effects? Unquestionably we can, but if we sit wringing our hands and deploring our fate, without striving to profit by the lessons set before us, we court failure and put ourselves beyond the pale of sympathy. Does any intelligent person in the nineteenth century believe that such seasons are sent only to plague and annoy us, to humble our pride and punish our shortcomings? Suppose it to be so—what then? Are we—duly and deservedly punished, it may be—to go in the same way as before?—or are we not rather to profit by the experience of the past? In the case of the farmer ground game bills, modified land-laws, freedom of tenure, increased capital, may, especially the latter, do something towards averting similar catastrophes in the future. But, supposing such beneficial changes to be made, there is still the element of foreign competition on the part of neighbouring or far-off countries blessed with a more propitious climate than our own. That is not likely to diminish; there is every prospect that it will increase. Practical cultivation by what we may call the rule-of-thumb is as perfect as it well can be. It is difficult to imagine anything better in its way than the practice of an experienced and intelligent first-class farmer or gardener. It is hardly likely much further progress can be made in this direction. New ground must be broken, fresh experience sought and obtained. Masters and men must be more thoroughly educated, more carefully trained; and the education and the training must be special. Given a common basis in the shape of a good general education, there must be added to that a special training in natural science—the knowledge of the forms, structure, and manners of living creatures — knowledge of the powers and capabilities of the air, the soil, and the waters and their inhabitants—knowledge of physics and of chemistry. By these means, and these only, as we believe, shall we be able to break out from our old routine into fresh fields and pastures new. In the field of practical horticulture, to take a single illustration, there is no one thing more promising of good results in the future than is the application of the electric light for forcing purposes; but out of the thousands of employers, and the tens of thousands of workmen, what an infinitesimal proportion know anything whatever of the mode of action of electricity. Again, of what avail are the labours of practical entomologists and practical students of fungus pests if cultivators are not educated sufficiently to turn them to good account? The investigations, for instance, into the nature of the Potato disease are at least amply sufficient to afford valuable lessons to the grower as to what means are in his power to mitigate the disasters to which he is subject, but has he availed himself of them?—does he show any inclination to do so? We fear not.

The education of the masters consists in a good deal of Latin, a smattering of Greek and mathematics — still less modern languages — a little history, and a little geography. The education of the men is in so far better that it includes a great deal more practice, but in all those points which we may look on as the keys to the as yet unopened treasure-houses of natural knowledge, the education of the workers is wholly defective. A thoroughly good practitioner of the present day is in himself no better than many of his predecessors. He is better because he has means and appliances which they had not; but, taking the two men, irrespective of their surroundings, the man of the nineteenth century is no better than his predecessor. This should not be. It is contrary to Nature's law of progress. It is the surest indication of the operation of that other law of Nature—the law of progressive deterioration and ultimate extinction. To promote the onward and prevent the downward progress in agriculture and gardening, the most efficacious means, so far as we know, are to be sought in the study of natural and physical science in all its branches, and its application to the business of life.

"Does it not seem extraordinary" (said Sir John Lubbock, the other day) "that in such a country as ours there should be only one school devoted to agriculture; that we should have no forest school, so that the young men who are going to be placed in charge of our great Indian forests have to learn their business in France or Germany; that no instruction is given in agricultural matters in any of the schools and colleges to which our landed proprietors send their sons: and that the education code practically excludes all elementary instruction in the processes of agriculture, the nature of soils, or the care of domestic animals, from our country village schools?"

It does, indeed, seem extraordinary, seeing that we call ourselves a practical people! Of such and similar institutions America boasts scores, Germany has them in abundance, France has them, Belgium makes them portions of her University *curriculum*. France has quite recently established a Chair of Vegetable Physiology at the Jardin des Plantes, and no one who reads M. Dehérain's lecture, the substance of which we hope to lay before our readers, in part at least, can doubt the benefit that will in course of time accrue from such a Professorship. What said Mr. Church the other day, at the Congress held at the Royal Agricultural College at Cirencester, on the occasion of a thoughtful address of Professor Tanner? Was he not right when he said that the bulk of British farmers—and the same remark applies, in its way, to British horticulturists—are entirely ignorant of what has been done for their benefit by Messrs. Lawes and Gilbert at Rothamsted? Was he not right when he pointed to the results obtained in sixty-two experimental stations in Germany, fifteen in Austria-Hungary—127 stations in Europe generally, and asked how much our British cultivators had profited by them? What are our horticultural Societies about? Is it well that their labours should practically be confined to the establishment and conduct of flower shows? The countries we have named are right, and we are wrong. We are tamely letting them get the better of us, and complaining of bad seasons and hard laws, all the time doing next to nothing to meet the altered circumstances. Scientific training in the Universities for those who are to become possessors of estates or managers of property in the future, chairs and classes of agriculture, botany, physiology, physics, chemistry, geology, entomology — all these are wanted, and should be supplied in our great Universities and elsewhere, with special reference to practical needs and requirements. We would by no means limit such means of instruction to the Universities, but the existing Colleges, or some of them, have revenues which might very profitably be devoted to some such purposes as we have indicated.

For the working classes the Board school or the village school should furnish the basis, not only of a common education, but also such a knowledge of the soil, the air, the waters, the plants and the animals as may be made available in the daily routine of the farm or the garden. We cannot too emphatically repeat our conviction, that progress in gardening and farming in the future depends far more on the results to be got from a thorough training in the various branches of natural knowledge, than it does in any readjustment of land laws or lightening of fiscal regulations. These are, as it were, local accidents—limited in their area, restricted in their range, but Nature is universal, the application of a knowledge of her laws to the business of life is limited only by the finite faculties of man.

—— Cypresses.—The illustration which we give at p. 735 (fig. 130) was taken from a photograph kindly sent us by M. Joly, of Paris. It represents a view in the Buena Vista Garden at Verona, and affords a singularly good illustration of the value of this fastigiate Cypress as an adjunct to architectural details. The trees in question are 60—70 feet high, and how well they harmonise with the obelisks and other architectural features may be seen at a glance. The effect would, to our thinking, be greatly improved by the intermixture of round-headed trees, such as the Stone Pine, but for the purpose of landmarks, marking out boundaries, forming avenues, and the like, these evergreen fastigiate trees have great value. They are very marked features in Italian landscapes, but it is not often that the traveller sees such fine specimens as those now represented.

—— Retirement of Mr. Dominy.—We hear that Mr. Dominy, whose name has now for forty years been associated with Messrs. Veitch's establishments, is about to retire. Few men connected with horticulture have deservedly gained so much esteem and respect from the wide range of people with which his position has brought him in contact, and still fewer have so indelibly fixed their mark upon any family of cultivated plants as has Mr. Dominy upon Orchids, Nepenthes, &c., by the number of hybrids with which, by his skill and assiduous perseverance, the gardens of this country have become enriched; for it may truly be said, that of the hundreds of collections of these plants which now exist there are none of note that do not contain some or other of the fine things he has raised. In proof of this we need only refer to the two grand plants, Cattleya exoniensis × and Lælia Dominiana ×, than which it would be difficult to name any amongst the crowd of fine species that surpass them. Others have since followed, and are still following the track in which Mr. Dominy has been the pioneer, and without detracting in the least from their praiseworthy work, still the name of Dominy will ever be intimately associated with this, the slowest and most patience-taxing of all operations connected with the gardener's art. Mr. Dominy retires whilst yet hale, and with his love for horticulture undiminished. May he long live to enjoy the esteem and good wishes of his wide circle of friends and acquaintances.

—— Horticultural Club.—A special dinner of this Club was held on Tuesday evening, which was one of the most successful that has as yet been held. Between thirty and forty members and their friends were present. The chair was occupied by Mr. John Lee, who was supported by the Hon. and Rev. J. T. Boscawen, Dr. Hogg, Dr. Masters, Messrs. Veitch, Adams, Osborn, Turner, Wheatstone, Harty, Deal, G. Paul, Rivers, Cutbush, Prince, &c. Amongst the visitors were Messrs. Henri and Maurice Vilmorin of Paris, Mr. Barron of Elvaston, Mr. Rutland, Mr. Laird, and Mr. Sewell. According to the rules of the Club no toasts are given on these occasions, except that of the visitors, which was given by the Chairman, and responded to by Messrs. Henri Vilmorin and Mr. Barron.

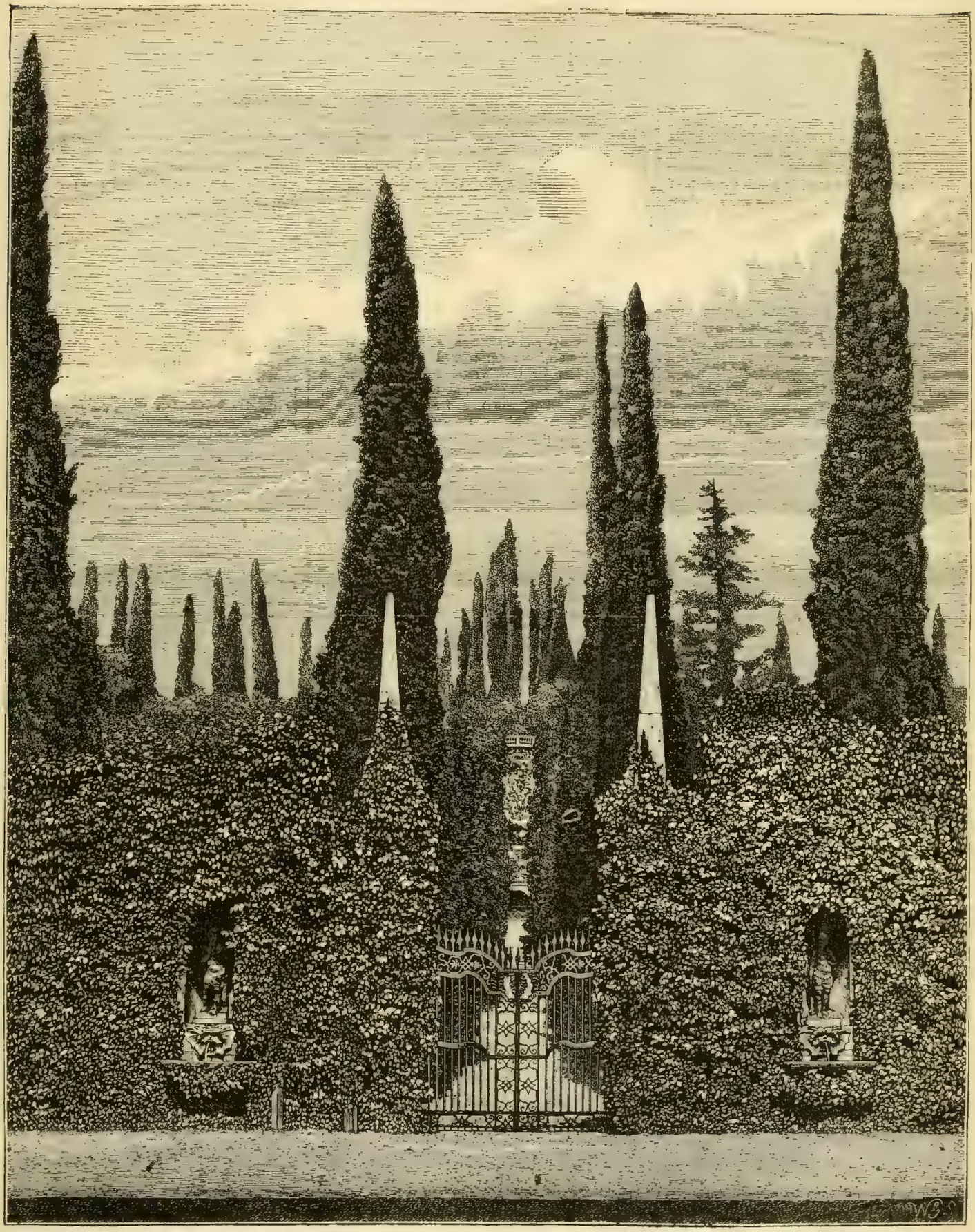


FIG. 130.—THE CYPRESSES AT VERONA.

—— Science Primers.—Professor Huxley has redeemed his promise of writing a general introductory treatise to the series of excellent Primers published by Messrs. Macmillan & Co. It deals clearly and briefly with certain general notions concerning sensations and things, causes and effects, the physical properties of mineral objects, and of living bodies; and lastly, in two short paragraphs, the phenomena of mind as manifested by sensations, emotions, and thoughts, are adverted to.

—— Double Calceolaria.—Mr. Burbidge has lately sent us some flowers of Calceolaria presenting an unusual but not unprecedented state of things. An ordinary Calceolaria has four sepals, a two-lipped corolla, two stamens, and a two-celled ovary. From various considerations, which it is not necessary to enter upon here, it may be assumed that this flower is a modification of a regular type, in which the parts of the flower are arranged in fives, nearly as in Verbascum. In the present case one, and sometimes four, of the stamens were represented by tubular petals corresponding exactly in position to the stamens usually suppressed, so that here the numerical symmetry of the whorl of stamens was, as it were, restored. A peloria condition of the corolla, in which the irregular bag-shaped flower is replaced by a regular sleeve-like form, is not unusual; nor is it very uncommon to see one or more of the sepals assuming a petal-like guise.

—— Actinidia sp. — Messrs. Veitch send us flowering specimens of an elegant species from Yesso, with slender virgate branches, stalked, ovate, acuminate toothed leaves, thinly setose, and in some cases having a silvery blotch on the upper surface near the apex. The flowers resemble those of a Philadelphus. We shall speak further of this on another occasion.

—— The "Flora of British India." — We are glad to announce the issue of the seventh part of this important publication. It is almost wholly occupied with the Rubiaceæ, elaborated by Sir Joseph Hooker himself. This great order is arranged for the most part according to the same plan as adopted in the *Genera Plantarum*. Among the plants more especially interesting to gardeners may be mentioned the lovely Luculias, represented by L. gratissima, a native of the Temperate Eastern Himalaya, and L. Pinceana, a less known species, from the Khasia Mountains. Mussændas are remarkable for the increased size and coloration of one or more segments of the calyx. Ixora comprises no less than thirty-eight species, the common one cultivated throughout India being I. coccinea, of which a yellow variety is stated to be in cultivation. A few new genera are established—viz., Clarkella, in honour of one of the coadjutors in the work, Mr. C. B. Clarke; Keenannia, in compliment to Mr. Keenan, formerly an *employé* at Kew, and who collected largely and well in Cachar. The memory of the late Mr. Kingston, also formerly in the service of the Royal Gardens, is kept up by the dedication of an Ixora. The small orders Cornaceæ, including Benthamia (referred to Cornus as a section), and Caprifoliaceæ, are the work of Mr. C. B. Clarke, whose steady help has greatly aided in the more speedy publication of the work.

—— Renanthera coccinea.—The following is an extract from a letter, dated March 8, 1880, from C. Ford, Botanic Gardens, Hong-Kong:—"I am now able to furnish particulars of cultivation which has been most successful, as all our plants are now producing flower-stems. I was at Canton in July, 1878, when I purchased a large quantity of Renanthera from the Chinese gardeners at the Fa Tie gardens. It was growing on Mango and other trees; but, with the exception of one piece, which was growing at the very top of a bare branch, it was not flowering. I had the pieces, about 2 feet long, cut off the trees, and when I got back home planted half of the number, five pieces, in one pot, amongst lumps of charcoal and soft bricks. The other half of the plants I had tied to pieces of wood Mango. For several months I kept the whole of the plants under the shade of trees until they had made new roots, and became well established. They were then put in positions of full exposure to sun, where they have remained ever since, and been syringed morning and evening until the cool weather of November set in, when they were kept much drier. After the plants were placed in the exposed situations they became very yellow, but continued to grow well. They have been very little trouble, and I have no doubt that if the above conditions could be imitated in England, the flowering of this showy Orchid would be insured. The pots in which our plants are growing are 14 inches in diameter, and fairly well filled with roots."

—— The Grape Louse. — At the f rthcoming Botanical and Horticultural Congress, to be held at Brussels, one of the subjects for discussion is as to the measures to be taken to avert the dangers to horticulture threatened by the Convention of Berne.

—— The current number of the *Journal* of the *Verein zur Beforderung des Gartenbaues* of Prussia, after commenting on the prohibition, for all practical purposes, of the export and import of plants owing to the Phylloxera, states that petitions against the enactment of Section 3 of the Convention of Berne have been sent in by Germany and Belgium to the Minister of Foreign Affairs. The French gardeners have protested against it, and Holland and England, it is expected, will do the same. At a meeting of the above Society, held on April 28, it was agreed that a similar petition to that of the Society of Feronia and Flora of Dresden, should be sent in by them.—Complaints continue to reach us of the oppressive and useless character of these enactments. Some of our nurserymen are compelled to decline orders for Continental countries (although those countries are in places, as the French have it, saturated with Phylloxera), and could not be made worse by the importation of a few Cycads or Orchids. Only the other day Messrs. Chantrier Frères, of Mortefontaine, were debarred from sending some of their new Crotons to the exhibition at South Kensington, from the fear that they would not be allowed to take back the plants into France. The stupidity of these laws surpasses belief, considering that a slight breeze, or the assumption by the insect of its winged condition, would make all such laws impotent.

—— The Grape Louse in Algeria. — M. Cosson, with a view of protecting the vineyards of Algeria from the introduction of the Phylloxera, recommends that the same measures of precaution taken by the Italians should also be taken in the case of Algeria. He advises that the introduction of all living plants, roots, and vegetables, coming from infested districts, should be interdicted. Such precautions will be futile if the conditions for the transport and establishment of the insect prove otherwise favourable, which in this case is doubtful, owing to climatic causes. Meantime the interests of the colony are likely to be seriously interfered with by these over-rigorous and ill-considered edicts.

—— New Rose.—Mr. H. Bennett has handed to us specimens of a pretty new Rose of the R. polyantha type, which has been obtained by two or three different French growers, and which has been sold under the name of Anne Marie de Montravel. The Rosa polyantha in its typical form bears a cluster of small single white flowers. It appears that without seeding, but simply from the influence of good soil and higher cultivation, this has yielded, in more than one case, double flowers, and thus a new variety has been obtained by evolution—for it is said to be permanent. Mr. Bennett describes the plant as a free-flowering bush of about 18 inches in height, and likely to be an acquisition for bedding. The specimen before us has small leaves, with ovate toothed leaflets, and a corymbose cluster of some half-dozen buds, one of which is expanded into a beautiful pure white sweet-scented Rose a little more than an inch in diameter, and double to the centre. It will, we think, be a charming plant for pot-culture for decorative purposes, as well as for cutting.

—— Elwes' Monograph of Lilies. — The seventh and concluding part of this beautiful monograph has just been issued. We shall call attention to it more in detail in a future number, but we can but regret that so valuable a contribution to science should have been so speedily brought to an end—assuredly not for lack of matter.

—— Double Pomegranates.—A recent number of the *Revue Horticole* contains a beautiful coloured plate of some varieties of this plant, some with double flowers all scarlet, others with scarlet petals edged with white, and others again with a yellow (not red) calyx and white petals. The varieties in question originated as sports, or bud variations, from a variety called Legrelle, which has salmon-red flowers edged with white.

—— Flora of Algeria.—M. Cosson has recently published his lecture on the vegetation of Algeria, which he divides into groups, according to geographical and physical characters, as follows:—Mediterranean near the coast, the mountain region, the region of the high plateaux, consisting of monotonous treeless plains with profusion of Alfa (Stipa tenacissima); and, lastly, the Sahara or desert region. The botanical characteristics of these several regions are briefly alluded to, and incidental mention made of the excellent results obtained by planting the Australian Gum-tree, especially Eucalyptus globulus, in previously unhealthy spots. M. Cosson pronounces strongly against the proposal to convert the Sahara into an inland sea, the disadvantages of which would, in his opinion, greatly outweigh any possible benefit. The destruction of the Date trees, and the formation of stagnant unhealthy morasses, are mentioned among the evils likely to occur if this project were carried out. Well projected railways, and artesian wells in suitable localities, are recommended as preferable means of developing the resources of the country.

—— A Dry Spring.—If a drouthy springtime has many inconveniences for the gardener, it has also some advantages. Spring and early summer as combined in May, is one of the chief planting-out months of the year, and if moist, then the ground is too often cold and unsuited for the reception of tender plants, whilst slugs and the usual ground vermin that prey upon plants are abundant. Last year at this period slugs and snails were legion, and ate up all kinds of tender plants as fast as they were put out, almost driving the unfortunate gardener into a state of madness. Owing to the coldness of the soil, further growth was so much retarded that the effects were seen all through the season. Now, in spite of drought or rather of the drought that existed prior to the recent acceptable but cold showers, all kinds of plants, thanks to abundant sunshine, were robust and forward, and in a condition to grow surpassing that of several previous springtimes. Then, in spite of winds, the sun had warmed the soil deeply, if absorbing its moisture in return, imparting heat, and the young plants have been induced to emit roots with unusual rapidity. In excessively dry soils, where its lumpy condition rendered it fractious and difficult to plant, the drawing of shallow drills, and running therein of a few cans of water, converted it into soil of the softest and most genial kind, and if the cold water for the time lowered the temperature, the warmth in the great body of soil soon raised it again. Dibbled into these watered furrows with the loose surface soil drawn in around to prevent rapid evaporation, the plants have made new roots and become established with rapidity, whilst slugs have been unable, thanks to the exceedingly dry surface, to perambulate and do much mischief. In gardening as in other things, if there are banes there are also antidotes.

—— Market Garden Prices.—Those growers of market produce who are compelled to commit the disposal of their crops to salesmen doubtless have now another reason to think that their returns are not at all times commensurate with their hopes. Perhaps a few weeks' experience as salesmen of their own things would induce them to be more generally charitable when, as now, on the first twinge of disappointment, they lay the blame upon the wrong shoulders. A few weeks since and there was almost a dearth of green stuff in the market; winter greens had gone by, white Broccoli was scarce, and Cabbages small and of poor quality. Then a price that was eminently satisfactory was obtained for all that was sent to market, whether Spinach, Cabbages, or whatever could be had. Now Spinach will barely fetch 3*d.* per bushel, and Cabbages about 9*d.*, whilst bunched greens are not paying for the labour of pulling, tying, and taking to market. Were it not that many market growers in the metropolitan district have manure contracts which compel them to send to town, it is doubtful whether much of the green crops would get to market; but all hope that if not that day the next may show a remunerative rise in price. It is worthy of remark that these low prices are quoted, not so much as market rates, but are the prices obtainable on the road, as many growers do

not send to market at all, but deal directly with suburban shopkeepers. The point of interest for the public is whether it receives the full benefit of these low prices or not, and if not then the shopkeeper must reap an enormous profit. The great want of London is an abundance of suburban markets, in which the consumer and grower may come into immediate contact.

—— SALE OF MR. TURNER'S ORCHIDS.—On Wednesday and Thursday, June 2 and 3, the entire collection of Orchids belonging to W. TURNER, Esq., Over Hall, Winsford, Cheshire, was sold at Stevens' Rooms, the total amount realised being £2082 16*s.* 6*d.* The highest price obtained for a single specimen was 95 gs., for Saccolabium Turneri, "the only true plant of this marvellous Saccolabium in the country." A specimen of Saccolabium guttatum Loddigesii realised 60 gs.; Dendrobium thyrsiflorum Walkerianum, 31 gs.; Cypripedium Veitchii, 8½ gs.; Cattleya Warneri, 10 gs.; Dendrobium Schröderi, 11 gs., 14 gs.; Cattleya exoniensis, 30 gs.; Lælia Brysiana, 42 gs.; Vanda suavis Veitchii, 36 gs.; Cattleya Wagneri, 20 gs.; Aerides Schröderi, 27 gs., 13 gs.; Aerides affine roseum, 20 gs. and 14½ gs.; Odontoglossum vexillarium, 22 gs.; Cattleya Morgani, 10 gs.; Cattleya Skinnerii alba, 22 gs.; Lælia Williamsii, 13 gs.; Cattleya Dowiana, 15 gs.; Cypripedium caudatum roseum, 17 gs.; Saccolabium giganteum, 19 gs.; Masdevallia Harryana, bull's-blood var., 15½ gs., 6 gs., 11 gs.; Dendrobium Goldieanum, the plant that flowered first in this country, 20 gs.; Cattleya aurea, 14 gs.; Saccolabium guttatum giganteum, 34 gs.; Lælia purpurata marginata, £12; Dendrobium Lowii, £12; Odontoglossum vexillarium roseum, 27 gs.; Lælia gigantea, 11 gs.; Cattleya virginalis, 17 gs.; Aerides Thibautianum, 25 gs.; Saccolabium guttatum Dayanum, 10 gs.; Vanda Denisoniana, 18 gs.; Odontoglossum vexillarium aureum, 38 gs.; Lælia anceps alba, 11 gs.; Cattleya amethystoglossa, 11 gs.; Cypripedium Sedeni, 13 gs.; and Lycaste Skinneri alba, 11½ gs.

—— HARDY RHODODENDRONS.—The importance of planting only the truly hardy varieties of Rhododendron—excepting, of course, in special positions and under special circumstances, in which the tender but high-coloured early-blooming kinds may be found desirable—was never more evident than it is in the present season, the two past severe winters and the unpropitious summer of last year having left their marks upon the plants. This we found very evident on the occasion of a recent visit to the American Nursery at Knap Hill, where the array of blossoms, though sufficient to be pleasing, does not bear comparison with the display of any former year within our memory. The fact is, that owing to the uncongenial circumstances referred to, the flowers of those varieties which most freely partake of the tender blood of R. arboreum especially, and of R. ponticum in a lesser degree, were either not formed in the autumn, or have been killed or irreparably damaged by the winter frosts, while those in which the blood of R. catawbiense preponderates have felt much less the evil influences of either autumn or winter, and are indeed, in many cases, flowering in a very satisfactory manner. The old R. roseum elegans, one of the earliest of this breed, stands out to great advantage, its fine foliage and somewhat drooping habit rendering it exceedingly ornamental, while the flowers, if not possessing the large size and the rich spotting of more recent kinds, are at least bright and cheerful in hue, and abundantly profuse. R. fastuosum flore-pleno also, another of the older sorts, a double mauve-lilac, and no doubt the best of the doubles, is flowering well, and may therefore be planted with confidence of success. Amongst others of this hardy race which were blooming well we noticed Mrs. Milner, remarkable for its bright, rich, rosy-crimson colour; Mrs. Shuttleworth, a beautiful rosy-crimson with dark spots on a white ground, and remarkable also for its fine semi-drooping habit; Mrs. G. H. W. Heneage, purplish-rose, with a light centre; Mrs. H. Ingersoll, scarlet with bronze blotch, remarkable for its splendid foliage, and its complete hardiness; J. Marshall Brooks, rich crimson, thickly dotted with dark spots on a conspicuous bronzy yellow blotch in the upper segment; Sylvio, a fine purplish-rose, with the green or bronze blotch, very fine; and last but not least Sigismund Rucker, one of the grandest Rhododendrons ever raised, with fine Laurel-like foliage untouched by the frost, and immense trusses of well-set flowers, which are of a rich magenta-rose and bear a dense blotch of close set black spots, which render it thoroughly distinct and attractive. Amongst the breaks in colour to be here and there observed, those with pale centres and purple and claret-coloured margins were perhaps the most novel. Some new forms in this way are, as yet, unnamed. The Azaleas are, on the whole, less affected by frost than the Rhododendrons, and are many of them charming.

—— ORCHIDS IN BLOOM.—The following Orchids are in flower at Messrs. JAMES VEITCH & SONS' Royal Exotic Nursery, King's Road, Chelsea:—

Aerides Larpentæ
,, maculosum
,, odoratum
,, suavissimum
,, Schröderi
,, virens
Acineta Humboldtii
Aerides falcatum
Bletia hyacinthina
Bollea cœlestis
Bolbophyllum Lobbii
Brassavola Digbyana
Calanthe Dominii ×
,, Masuca
,, veratrifolia
Camarotis purpurea
Cattleya Mossiæ
,, ,, alba
,, Warneri
,, Mendelii
,, tricolor
Cypripedium Argus
,, barbatum
,, caudatum
,, Crossianum
,, Harrisianum ×
,, Lawrenceanum
,, Lowii
,, niveum
,, Parishii
,, Sedeni ×
,, selligerum ×
,, supercilhare ×
,, vernixium ×
,, Stonei
,, Veitchii
Cryptochilus sanguineus
Dendrobium aduncum
,, clavatum
,, secundum
,, Bensoniæ
,, crystallinum
,, bigibbum
,, Brymerianum
,, Huttoni
,, japonicum
,, Jamestanum
,, Parishii
,, rhodostoma ×
,, xanthinum
,, suavissimum
Epidendrum vitellinum majus
,, crassifolium
,, Frederici Gulielmi
,, syringæthyrsus
Lælia cinnabarina
,, elegans
,, purpurata
Lycaste Deppei
,, locusta
Liparis elegantissima
Masdevallia Chimæra
,, fenestrata gracilenta
,, Harryana
,, Davisii
,, ionocharis
,, Lindeni
,, ceithodes
,, Peristeria
,, Veitchiana
,, xanthina
,, Nycterinia
Oncidium bifolium
,, divaricatum
,, hastatum
,, leucochilum
,, fuscatum
,, Reichenheimii
,, macranthum
,, stelligerum
Odontoglossum Alexandræ
,, cirrosum
,, crocidipterum
,, hastilabium
,, nævium
,, nebulosum
,, Roezlii
,, Pescatorei
,, tripudians
,, cordatum
,, vexillarium, several fine varieties
Phalænopsis amabilis
,, grandiflora
,, Luddemanniana
,, rosea
Pleurothallis leucopyramis
Saccolabium curvifolium
Sobralia macrantha
Thunia Bensoniæ
Vanda tricolor

—— NEW WHITE DECORATIVE PELARGONIUMS.—Two of these, of a specially attractive character, are now flowering in the large collection at Chiswick. They are both new varieties, raised by M. LEMOINE, of Nancy, France. Lucie Lemoine has pure white flowers, that are so destitute of markings in the way of a blotch that there is only a slight pencil flake of deep pink on one of the segments of the flower. Madame Charles Kœnig is of the purest white also, but without the slightest trace of colour. The flowers are about medium-sized, well-formed, and produced in compact and symmetrical trusses. For bouquets these two promise to be invaluable, and especially useful for those used at bridals. There is also a good habit of growth and freedom of bloom: qualities that will commend them to those who make a supply of bouquets a speciality.

—— CLAYTONIA ALSINOIDES.—A correspondent sends us this, which he says grows in profusion near Chatsworth and Bakewell. It is not a true native plant. It is very like C. perfoliata, but the leaves are not perfoliate.

—— LINNEAN SOCIETY: *June* 3.—Professor ALLMAN, F.R.S., President, in the chair. The only botanical paper read at this meeting was by Mr. GEO. MURRAY, "On the Application of the Results of PRINGSHEIM'S recent Researches on Chlorophyll to the Life of the Lichen." Summarising the results of PRINGSHEIM'S labours, the author considered the suggestion of Dr. VINES, that by the aid of an artificial chlorophyll screen, the protoplasm of fungi might be excited to the decomposition of carbonic acid, and contended that this experiment is proceeding naturally in lichens. He pointed out that in these organisms we have the fungal tissues in the body of the thallus, and the chlorophyll screen in the gonidia, and that light traversing the chlorophyll-containing gonidia—often occurring as a dense layer—excites in the fungal tissues the decomposition of carbonic acid. In evidence he adduced the plentiful occurrence of starch, or rather lichenin—a substance of the same chemical composition as starch ($C_{12}H_{10}O_{10}$), and formed from it by the action of the free acids of the plant. In conclusion he submitted that this process tended to explain the nature of the consortism of the fungal and algal elements in the lichen, and thus to support the views of SCHWENDENER. In the discussion following, Messrs. CARRUTHERS, BENNETT, and STEWART, and Professors MARTIN, DUNCAN, and GREENE took part.

—— LAST WINTER.—In the Champs Elyseés, at Paris, it is calculated that more than 10,000 trees and shrubs were killed by the winter; in the Trocadero, 11,000; in the Bois de Boulogne, 50,000 evergreen trees, 30,000 deciduous trees, and 20,000 Conifers.

—— RUBUS AUSTRALIS.—That a Blackberry should be recommended for culture as a decorative plant may appear strange to some, but the species under notice is now to be seen in good form at Chiswick, with other specialities of a very interesting character which Mr. BARRON has provided for the instruction and enjoyment of Fellows and their friends. Some plants in pots standing on the brick ledge of one of the houses display themselves to the best advantage; the bright-red fruits, very like in shape to those of our own wild Blackberry, stand out almost erect, while the trailing growth, with runners at short intervals on the stems, hang down and form a leafy fringe of a charming character. This deserves attention as a decorative plant, and some of our floral artists could make excellent use of it. Many gardeners would find it very useful for greenhouse and conservatory decoration, as well as effective in suitable places in the open ground. The fruit is of itself poor, but the uses to which the plant can be put makes this a matter of secondary consideration.

—— THE BUCKLAND YEW.—Mr. BARRON, of Borrowash, sends us sprays of this now doubly famous Yew, to show the young growth that is being made, and the numerous buds or breaks that are being formed from the old wood. So far well. It must be remembered, however, that this new growth is at the expense of the reserve stored up in the tissues of the plant, and is not derived from without. It is to be hoped that the greatest care will be exercised throughout the summer in attending to the requirements of the tree. Mr. BARRON'S success in moving large and old trees is well known, and he is not to be held responsible for failures that occur from after-neglect, of which we have seen instances.

—— THE WEATHER.—General remarks on the weather during the week ending June 7, issued by the Meteorological Office, London:—The weather in Ireland and Scotland has been moderately fine, though with some rain; generally overcast in England, and very showery. Hail fell at some of the western stations on the 7th, and thunder occurred at Brookeborough and Hillington. The temperature was again below the mean in all districts; over the inland and eastern parts of England the deficit was as much as 5° or 6°, and elsewhere from 2° to 4°. The highest of the maximum readings occurred at our north-western stations, and were registered on the 3d, when the thermometer rose to 72° at Barrow-in-Furness, and 71° at Glasgow. The minima were low in all parts of the country, and during the early morning of the 5th the sheltered thermometer went down to about 35° in nearly all parts of Great Britain; at many of our inland stations a sharp ground frost was experienced. The rainfall was less than the mean in "England, N.E.," "England, S.W.," and "Scotland, W.," equal to it in "Ireland, S.," but slightly more than the mean in all other districts. Bright sunshine shows a decided decrease in England, but a slight increase over Ireland and Scotland. The number of hours recorded varies from 69 hours in "Scotland, E.," to 26 hours in the "Midland Counties" and "England, S." The wind was north-easterly during the first two days, northerly on the 3d and 4th, and westerly during the remainder of the period. In force it was generally moderate in the east and south-east, but fresh in the west and north, and on the 4th and 7th blew a fresh gale at Scilly, and a moderate gale on some of the exposed parts of our northern and north-western coasts.

THE RHODODENDRON SHOWS.

Hyde Park.—We mentioned recently that Mr. Anthony Waterer, of Knap Hill, had entered into an arrangement with the Office of Works to make an annual exhibition of American plants in the vicinity of Rotten Row. A few days since we paid a visit to the locality, and found that the works at that time in progress had included the formation of two large oval groups of Rhododendrons and two smaller oval groups of hardy Azaleas, while several magnificent standard and other specimen Rhododendrons had been dotted about in appropriate situations to work in with the permanent planting in that portion of the park. The effect was very pleasing, notwithstanding that the plants had had for some six weeks to do battle, fully exposed, to the bitter biting east winds and the morning frosts, which have in most places left their mark on the spring growth of trees and shrubs. The Azaleas, being the earliest to blossom, have suffered most, but even these have not been hit hard enough to prevent them from unfolding masses of beautiful coloured flowers, which needed but the aid of sunshine to give the natural glow to their brilliant tints of yellow, orange, and scarlet.

Entering the park at Albert Gate, the first object which meets the eye is the finest specimen in existence of Rhododendron Scipio, a noble standard plant, with massive head, fully furnished with compact trusses of its showy, deep-rosy, dark-spotted flowers, and, what is of equal importance, viewing it as an ornamental evergreen, furnished with bold, enduring foliage in such a way that the branches are always densely clothed with them. This is balanced by a standard rosy-crimson variety at the opposite corner. Between them, but lying in further from the pathway, is a large group of choice sorts now nicely in bloom, all, or the greater portion of them, being of the well-known Knap Hill catawbiense strain, which has been bred as much for the beauty of the foliage as for the high colour of the flowers, though quality and distinctness of character have also been successfully aimed at. In this bed we particularly noted in fine condition the plum-coloured Old Port, the cherry-red Charles Bagley, the rosy-scarlet Mrs. W. Bovill, the pale-rose Lady Armstrong, the rosy-scarlet dark-spotted Lady Clermont, the rosy-pink dark-eyed Lady Eleanor Cathcart, which the last few dull days had brought out charmingly, almost as delicately as when under canvas; Lord John Russell, pale-rose intensely spotted; the beautiful Mrs. Joseph Shuttleworth, a rosy-crimson with a blotch of black dots on white background, and remarkable for its fine habit as a standard; the dark rosy-purple Nero, the salmony-scarlet moderately spotted Mrs. R. S. Holford, the finely-formed crimson Michael Waterer; Delicatum, one of the best whites; and a grand bush of Mrs. John Clutton, another fine white, described fairly as being the most beautiful hardy white Rhododendron in cultivation, remaining longer in bloom than any other variety.

Advancing eastwards we come to one of the beds of Azaleas, near to which stands a grand bush in perfect health, and profusely decorated with deep rosy-crimson flowers, of R. Barclayanum, the original plant now forty years old, the same which was exhibited at the first Regent's Park show. In the same vicinity are dense bush specimens, 6 feet high, and broad in proportion, of Album grandiflorum, a pleasing blush flower, and of Delicatum, the latter being the finest plant of its kind.

On the north side of the "row" we come to a magnificent standard of Lady Eleanor Cathcart, with a clear stem of about 3 feet, and a dense spreading head 12 feet across, which will by this time be a mass of flowers. Further on is a specimen of Roseum elegans (the true old sort so named), which is a model of what a standard Rhododendron should be, having a sufficiently sturdy stem, a dense well-balanced head some 8 feet high, with a somewhat dependent habit in the branches which renders it exceedingly effective, while its abundant clusters of warm, rosy-lilac flowers, with just enough green visible to afford a good contrast, leave nothing to be desired. This, though an old variety, is always a telling one on account of its excellent habit—the specimen now under note is in truth a perfect picture. A large standard Delicatum in the same vicinity was not yet open, and will carry on the bloom till the end of the Rhododendron season.

Here comes in another showy bed of Azaleas, and a little further on a second charming bed of Rhododendrons, in which several of the sorts already noted are repeated. In addition we noted grand trusses of the purplish-crimson H. W. Sargent; a very telling plant of Purity, one of the best of the whites, with a faint yellow eye, and here blooming exceptionally fine; Othello, a purplish-crimson; Fastuosum florepleno, the best of the double-flowered sorts, a deep mauve with faint greenish eye, very effective and desirable; Stella, pale rose with intense blotch, associated with such fine sorts as Michael Waterer, Mrs. Joseph Shuttleworth, Old Port, Mrs. Holford, &c. These and many others were blooming most profusely and effectively in the open glades between the permanent trees and shrubberies, notwithstanding the long interval of bleak nipping weather to which they have been exposed ever since their removal from the peat beds of Knap Hill.

Sloane Street.—Messrs. John Waterer & Sons, of the Bagshot Nurseries, hold an exhibition of American plants this year in Cadogan Place, Sloane Street, where a spacious tent in three spans has been erected for its accommodation. At the time of our visit it consisted entirely of Rhododendrons, which were fairly in bloom, and will be fully so during the ensuing week. The space is neatly laid out in irregular beds; and, as is always the case when a considerable number of these fine flowering shrubs are brought together at this season of the year, the show is a very pleasing one. The centre of attraction, and occupying the place of honour near the centre of the tent, is a fine well-flowered bush of Lady Eleanor Cathcart, which, as is well known, is always attractive when flowered under canvas; the late dull weather had, moreover, favoured the production of that delicate tinge of pink which is so captivating under these conditions, and which contrasts so well with the dark chocolate blotch of the upper segment. Very few of the varieties were named, so that we can individually mention but few of the sorts which were shown. One of the best and most pleasing was the old Everestianum, a variety which is still indispensable in all good collections; its warm lilac tint, its conspicuous greenish spotting, and its prettily frilled margin, all combine to render it one of the most pleasing of its race, besides which it is of excellent habit, is one of the hardiest of the hardy sorts, has fine healthy foliage, and is a most constant and abundant bloomer. There were some good trusses of Michael Waterer, with its finely shaped, rich crimson faintly spotted flowers; Sir H. Mildmay, bright rose-crimson; William Ewart Gladstone, a large-flowered pale rose; James Mason, rosy-pink with pale centre; Baron Schröder, plum colour, with yellowish blotch; the old Roseum elegans, always and everywhere good; and Delicatissimum, a very effective blush-white. Small plants of Lady Olive Guinness were rather telling, from their dark spotting on pure white ground, but the small flowers, small trusses, and narrow foliage are objectionable. Many other sorts will no doubt be open now, and the collection will be well worth a visit during the ensuing week.

Fig. 131.—Masdevallia bella. (see p. 760.)

Regent's Park.—Mr. Anthony Waterer, of Knap Hill, has of late years held an annual exhibition of American plants in the gardens of the Royal Botanic Society. The show of this year is a very good one, despite the cruel injuries suffered by many plants during the last unpropitious season, and it will be in good condition throughout the next week. It occupies the usual ground, the laying out of which, as many of our readers know, is very effective on account of the irregularity of its surface. When we saw it we found abundant use for our note-book, some of the entries in which we will here transcribe. Always on the look-out for something new, our attention was first taken by a splendid novelty named Mrs. F. Hankey, which has fine, broad, bold foliage, and large compact trusses of flowers, which are of a deep salmon-pink, somewhat paler in the centre, with a conspicuous blotch of black spots on the upper seg-

ment. It is a beautiful variety, and a very decided advance on Lady Eleanor Cathcart, some two or three shades deeper in colour. Of other sorts which we found in admirable condition and specially noticeable, there were Alexander Dancer, having fine bold flower-trusses and good foliage, the flowers bright rose with a magenta flush, and small white blotch dotted with black, a grand flower; Mrs. R. S. Holford, very bright and distinct, a salmony-scarlet, with dotted blotch of medium density, fine leaf and bold truss; Lucretia, a noble variety, with bold trusses of flowers which are pale in the centre, with a margin of magenta-rose, and yellowish spots in the upper segment, the leaf also remarkably good; Vauban, scarcely out, but with a noble truss of soft reddish-lilac flowers, having a very conspicuous blotch of bronzy-yellow spots on the upper part; Lady Clermont, a very superior variety, producing fine trusses of deep rosy-crimson flowers with a conspicuous dark blotch; Lady Armstrong, a pale rosy-magenta with light blotch marked with small black spots, very distinct and beautiful; Delicatum, one of the best of the whites, having good foliage, and large white flowers marked with a large trifid blotch of greenish-yellow spots; and Mrs. H. Ingersoll, a distinct sort, of fine habit, with bright rosy-scarlet flowers, having a well-marked green blotch, which renders it very attractive. Other fine sorts in good condition were Mrs. J. Shuttleworth; The Moor, a deep dull crimson with dark spots; Mrs. W. Bovill, Sir J. Sebright, purple with bronzy blotch; the grand old Everestianum, and Michael Waterer. We noted a very attractive plant of the thoroughly good variety named Helen Waterer, one of the Bagshot seedlings, which has a bold leaf, and produces good trusses of white-centred flowers with a deep scarlet-crimson edge, a decided improvement, by which the older and long-favoured Alarm is superseded. Madame Carvalho, a good white sort, was just opening; and there were others in abundance coming forward to keep up the display. *M.*

Fig. 132.—MASDEVALLIA BELLA: NAT. SIZE. (SEE P. 760.)

Home Correspondence.

Dead Apple Trees.—"C. L.'s" note upon this topic (p. 724) does not give a satisfactory reason for the severe injuries to the many Apple trees I recently mentioned. Why should all the King Pippins in a row, for instance, be nearly killed whilst Keswick Codlins within a few feet are unhurt? Or the same may be said of rows of Wellingtons half dead, and rows of other kinds quite unhurt. When the injury is entirely limited to certain few kinds, and these injured more or less without exception, and certain other kinds have entirely escaped, it is obvious that the injured sorts must be tender and more amenable to the excessive changes of temperature. It is worthy of note that the peculiar fractures on the injured branches were not visible until after the January hoar frosts, and chiefly after the sap had begun to flow; whilst it is further evidenced that the damage was of recent origin, in the fact that many branches put forth leaves and bloom, and only collapsed when the rot induced by the frost injuries spread through the wood. All the trees in question are growing on a south-west slope, the soil beneath being elevated into 6 feet rounded beds, on which are planted Gooseberry bushes and Violets, that all excessive surface-water can get off quickly, and that the soil is naturally well drained and by no means waterlogged. On the higher portion there is a considerable substratum of gravel, and here the damage is just as great as lower down, where the soil is stiffer and has an admixture of clay. All these facts point to the conclusion that the intense frost was the cause of the injuries referred to. *Alex. Dean.*

The Herb Sorrel. — The author of "Notes from a Lancashire Garden" would find this a great addition to his herb-beds. It is one of the first to come in spring, and is most useful in various ways, imparting a relish to the "Potage à la bonne femme," called by some "Dutchwoman's Soup"—though we never saw it in Holland. It gives a piquant flavour when used as sauce for a *fricandeau* when Spinach is wanting, though this dish, so popular abroad, is not much appreciated here, possibly because the butchers always cut the veal the wrong way of the grain, making it appear somewhat unsightly. Sorrel, though mentioned by Culpeper in his *Complete Herbal*,

and therein commended, does not seem ever to have been a popular British potherb. It is not named by Chaucer, Spenser, Shakespeare, or Herrick, I think, though some of these authors have done justice to "Costmaries," and Spenser gives a long list of sweet herbs in the "Fate of the Butterflie;" neither does it occur in his "Garden of Proserpine," where noxious plants are named. Drayton and John Skelton pass it by, though the latter has a charming tribute to Marjoram, addressed to a lady named "Margary Wentworth." In "the Schoolmistress' Garden" Shenstone found no place for our Sorrel, though the kingly Basil was there, and "pun-provoking Thyme." We gather that in the days of Drayton Costmary took the same place that Borage does now. "Costmary that so likes the cup;" but the "fine sour relish," attributed to another kind of Sorrel (the oxalis) by Culpeper, may still be enjoyed by those who include a bed of the common kind in their *potager*. From the days of Solomon, who wrote of "the Hyssop that springeth out of the wall," to those of poor Kirke White, commemorating "the humble Rosemary," herbs have not been the least interesting department of the kitchen-garden. Has John Clare, the Northamptonshire poet, included the Sorrel in his "Cottage Garden"? We cannot remember, but think he has not. *H. M. E., June 7.*

Odontoglossum vexillarium.—We have here in bloom what we consider one of the finest forms of this Orchid. Most persons display partiality to their own bairns, but in this instance, we think, the said partiality may be excused, the plant under notice being so immeasurably superior to any of its fellows—over thirty of them, and amongst which are many truly fine varieties. The length of flower is exactly 5 inches; greatest width across sepals, 3¾ inches; width of lip, 3 inches; lip very square, with corners only rounded. The size of the flowers is less remarkable than their intense depth and brilliancy of colouring, which far surpasses the vexillarium illustrated in Warner's work, or of any plant of the kind, I believe, hitherto exhibited. It would have given me great pleasure to have sent the plant to the Royal Horticultural Society's show this week, could I have found a safe mode of transit for the precious beauty. It may perhaps interest some of your readers to hear that we have the beautiful Utricularia montana in flower with over ninety spikes on one plant, and about 500 flowers; this piece, with another now filling a 6-inch basket, has been grown in three years from half-a-dozen bulbs, or rather bladders. Utricularia Endresii promises to behave equally well; last June or July we received a precious morsel from the Messrs. Veitch which is now throwing up sixteen spikes. *Fred. Yates, Higher Feniscowles.*

Chickens in the Garden.—Gardeners, as a rule, turn with disgust at the thought of allowing fowls to run in the kitchen garden. Unfortunately the feathered roosters give too much reason for this feeling. They are never satisfied with a gardener's labour. No bed is raked fine enough, no seed properly sown, no young plants in their right places, but they must rake again in their own fashion, or redistribute the seed, or scratch out the plants that they might be replanted more to their taste. All this is very annoying, and leads to the conviction that bulls are not more out of place in a china shop than are fowls in the garden. But little chickens do not exhibit the inherent vices of their race in early youth, and display only the virtues—few enough, perhaps—that are peculiar to the fowl family. They run about, doing no harm, their little bodies and feet leave no impression on the soil, they do not scratch, seem never dissatisfied, but find pleasure only in the pursuit of food, or in basking in a warm corner in the sun's rays. Whilst in this stage of infantile innocence the little creatures can in the garden perform a vast amount of good; their little eyes spy out and little bills gather myriads of insects that are not easily visible to the human eye. Perhaps owing to the very minute nature of the food they gather, perhaps arising from their characteristic voracity, they are almost always roaming about and doing useful work. Meanwhile, the clucking and anxious mother may be kept secure in a bottomed coop which, removed here and there in the garden, will allow the chickens to enjoy fresh feeding ground each day. *A. D.*

Rhododendrons.—I daresay you will excuse a few more words about Rhododendrons in this their special season. Among Anthony Waterer's plants in the Botanic Gardens, Regent's Park, I found, in spite of the drawbacks of an unfavourable season, several things worthy of notice. There were many of novel character and colour among the new and unnamed seedlings. In the other varieties Mrs. F. Hankey seemed specially good and distinct (salmon, with a very dark and conspicuous eye); J. Marshall Brooks, deservedly famous for large bronze eye on a rich crimson ground; and Mrs. Holford, of a colour which catches the eye at once among a hundred others. Many later kinds have still to open; but Lady Eleanor Cathcart was in full beauty. It is singular how long this variety has maintained its superiority. Taken all in all, there is still no more effective Rhododendron. I have heard that the seedling plant was sixteen years old before flowering, and it is always shy of bloom when small. To my fancy, one of the parents must have been R. maximum. When are we to have a double crimson Rhododendron in the style of R. fastuosum flore-pleno? *J. H. Mangles, Valewood, Haslemere.*

Orchids at the Manchester Show.—Having been one of the judges at the above show I decidedly demur to the all-round attack made upon everybody having to do with the show, as managers, reporters, or judges. I cannot understand why "Exhibitor" should object to the award for fifteen Orchids merely because the collection contained three plants of Cattleya Mossiæ. With all due respect to the opinion of "Exhibitor," I say they were distinct varieties (although not obliged to be so), and, like every plant in the collection, superbly grown and bloomed. The judges looked upon them with minds entirely unbiassed, and with very different eyes from "Exhibitor," who, I presume was a competitor in the same class, and as a natural consequence failed entirely to see his neighbours' good points. The judges moreover had valid reasons for awarding the premier prize to that collection. Surely Vanda, Aerides, and Phalænopsis are not essential elements in a collection now, when we have such a multitude of magnificent genera and species in cultivation. As regards the award in the class for nine Orchids, we did feel a little difficulty—not as regards the plants, for as a collection they were vastly superior to the other competing collections in that class; but our difficulty was entirely with regard to the ugly square tubs in which they were exhibited, and the glaring way in which the specimens had been made up. When, however, we came to compare notes, and take stock of the other collections, we found that others had been at the same game, but being older hands at the business had done their work with greater neatness. So, considering the superiority of the plants, we came to the conclusion that it would never do either to place them 3d, or to disqualify them merely because the gardener in charge of the collection was not quite so well skilled in the art of making up. The fact is, nearly every collection in the show contained made-up plants to a greater or lesser extent. The practice is general—always was, and always will be, in defiance of all that can either be said or written against it. As regards the remarks of "Another Disappointed Exhibitor," in your last issue, it strikes me that I was awarded premier prizes for large collections of Orchids at the London shows before he had learned his alphabet. I would also advise these "exhibitors" to think seriously before attacking judges again. They would also do well to read, and study carefully, Luke, chap. vi., verse 41. *Robert Bullen.*

The Cuckoo.—This bird is mentioned in a most unfavourable way by Beaumont and Fletcher: see "The Two Noble Kinsmen." The stanza runs thus:

> "The crow, the slanderous cuckoo, nor
> The boding raven, nor chough hoar,
> Nor chatt'ring pie,
> May on our bride-house perch or sing,
> Or with them any discord bring,
> But from it fly!"

—*Song.*

Messrs. Paul & Son's Protest against the Rose Judging at the Crystal Palace.—There are some things said and done which it would be most considerate towards those from whom they proceed to treat with that silence which is often more expressive than words, simply letting them sink into the limbo that entombs so much of human littleness. Of such is Messrs. Paul & Son's protest. But the world is filled with people, many of whom jump at the conclusion that "silence gives consent," so much so that if a man were charged for a breach of promise to marry his deceased wife's great-grandmother they would vote him guilty if he said nothing in defence. It would be difficult to set a limit to the vagaries that disappointed exhibitors sometimes indulge in. But Messrs. Paul have hit upon an original method of letting people know their imaginary grievance. Amongst the numbers who read their advertisement, and who did not see the competing collections, many will naturally think that Messrs. Paul had some reason to complain, or they would not have taken such an unusual step. If, as Messrs. Paul say, "their collection was in every way superior to that placed before it," then the decision can only be accounted for in one of two ways, either through incapacity or dishonesty on the part of the judges. Out of this there is no escape. The question then is, Who are right—Messrs. Paul, or the judges? As one of those who judged the collections, it would be out of place for me to say much about fitness for the office; but, I may perhaps be allowed to remark that all the three judges have had as much experience in growing, showing, and judging plants, Roses included, as have Messrs. Paul, and hold their honour quite as high. The decision was unanimous and unhesitating, a close scrutiny of every plant in both collections confirming the impression we collectively entertained at first sight. It is strange that Messrs. Paul should have their equanimity so disturbed by being beaten on this occasion, for it is really nothing new to them. I find, on referring to the reports of the shows for the last three years—1877, 1878, and 1879—that they have shown thirteen collections of pot Roses against Mr. Turner, and he has beaten them in eleven out of the thirteen; and on the two occasions on which he failed to vanquish them the competition was not with large plants, and in many cases the awards were made by different sets of judges. This I know has nothing to do with the present case, and if Messrs. Paul's plants had been the best on this occasion they would most undoubtedly have been put first; and I only mention it to remind Messrs. Paul that the judges at the last Crystal Palace show are not the only ones who have committed the grave offence of placing their plants second. I have seen collections shown by Messrs. Paul much nearer Mr. Turner's than the one in question. To their unwarrantable assertions my reply is, that either Messrs. Paul cannot see the merits of other growers' plants when opposed to their own, or they have made the charge against the decision of the judges knowing it to be groundless. *One of the Judges.*

English Gardeners.—In the interests of a deserving body of men, *bonâ fide* gardeners out of situations, may I be allowed to make a few remarks? That the supply is in excess of the demand the numbers of good men out of place fully testifies, but why is this? Their number certainly has increased immensely of late years, but so have gardening establishments, both in number and size. It certainly is not German competition, which as yet is inconsiderable, neither is it that gardeners are longer-lived than formerly; but I have an idea, which I am at present unwilling to ventilate too freely, that the practice (now happily on the decrease) of obtaining gardeners through the medium of a nursery is at the root of the evil. Now, to alleviate this evil, could not gardeners form an association having certain rules, and a standard of merit for its members, and having a recognised centre, where a gentleman requiring the services of a gardener (there are gardeners and gardeners) might have his wants supplied without the question of self-interest as in the nurseryman's case? I think the old adage, that "Heaven helps those who help themselves," would hold good in this case, and should be glad of the opinion of practical men on the matter; as I think it a disgrace to the craft that a man whose heart is in his work, who was possibly born and bred in a garden, and hopes to die in one, should go to the wall, while another, who a few years ago was possibly a common labourer, but who through a lucky chance has been enabled to give his nurseryman a good order, should be helped over the stile. *J. Wm. Chapman.*

Falling Peach-Leaves, and Other Matters.—I do not recollect writing any article on this subject (see p. 724). My Peach-leaves are now, and always have been, very healthy. I imagine the leaves spoken of have suffered from gum, which is the worst disease a Peach tree can be afflicted with. I may say, in conclusion, that Peaches out-of-doors are almost *nil*. I regret to say Pears and Apples are a great failure. The Cherries are abundant, but I fear stoning time. Plums are moderate. Gooseberries and Currants of all kinds are most abundant. Strawberries are a great crop, but want rain. Raspberries are a fair crop. Asparagus weak, and much injured by the frost; I have made new beds of this and Seakale. Peas (Ringleader) wonderfully bloomed. I have fine plants of Empress of Prussia and British Queen. Mr. Shilling's new ridge Cucumber gives me capital plants—better than Stockwood and Pain's. He had better advertise! Every seed germinated. *W. F. Radclyffe.*

Phloxes for a Rockery.—The first Phlox to flower in spring is P. verna. It is very gay where it does well, but runs so much as to be troublesome: it is a good plan to collect several well-rooted runners early in autumn, and bunch them together so as to obtain a compact mass of flowers. P. stolonifera, of the same colour as P. verna, and often confused with it, has a close habit; P. procumbens, with pale lavender flowers, grows weakly with me. Of the mossy section, including P. subulata, P. setacea, P. frondosa (three names which seem to me to be interchangeable), perhaps P. Nelsoni is the best; it has flowered unusually well this year, making a sheet of pure white, quite hiding the leaves. It is quite hardy here on rockeries, but dies every winter on the level borders; my only objection to it is the large space it claims for itself when out of flower. Several of the Aldborough varieties of this class are very good, but there is a disappointing sameness amongst others, which seem to me to differ only in name. P. divari-

cata is a very elegant and desirable plant; it has been in flower all May, and is now being succeeded by P. ovata, one of the best of all rockery plants, recommended by its large crimson flowers and neat compact habit. It does well also in the level border. All these Phloxes grow readily from cuttings. *C. Wolley Dod, Edge Hall, Malpas.*

Reports of Societies.

Royal Horticultural: *June* 8, 9, 10, *and* 11.—It is some years now since the leading Horticultural Society had a June show so representative in character as the one which was opened under such unfavourable circumstances as regards the weather on Tuesday last. The large marquee has often looked better filled than it did on this occasion, and some departments have been better represented; but, judging the show as a whole, it was impossible to come to any other conclusion than that a more complete display of flowers and fruits, considering the unfavourable season, it would be difficult to get together. The stove and greenhouse flowering plants, as well as the fine-foliaged plants and Ferns, were of better quality than usual—the leading groups of the former, shown by Mr. Tudgey, gr. to T. F. Greswolde Williams, Esq.: of fine foliaged plants, shown by Mr. Rann, gr. to J. Warren, Esq., Handcross Park, and Mr. Tudgey; and of Ferns, by Mr. Rann and Mr. Hudson, gr. to H. J. Atkinson, Esq., Gunnersbury House, Acton, being especially deserving of praise. For Azaleas and Roses the season was rather late, consequently there was but a thin show of both, and their absence in quantity and defect in quality was sensibly felt. The groups of miscellaneous plants, which always add much to the general effect, were more numerous than ever, and, generally speaking, of good quality. The display of fruit was extremely good all round, and especially so in the case of Grapes, which were very plentiful, and of remarkably good quality.

Stove and Greenhouse Plants.

The first three classes in the schedule were devoted to stove and greenhouse plants in flower, and in the open class for twelve the 1st prize was easily won by T. F. G. Williams, Esq., Henwick Grange, Worcester (Mr. E. Tudgey, gr.), who showed Ixora Williamsii, about 4 feet in height, very fresh, well flowered, and clothed with ample foliage down to the pot; a splendidly flowered example of Erica elegans, about 4 feet through, and superbly bloomed; a well flowered Clerodendron Balfourianum, about 4 feet high and the same in diameter, with its flowers very evenly distributed; a grand Dracophyllum gracile, of about the same width, covered with a profusion of fine large flowers; a first-rate Erica ventricosa magnifica, Erica Parmentieri rosea, a splendid bush from 5 to 6 feet through, but only partially in bloom; Pimelea decussata, Erica Cavendishiana, Azalea Brilliant, well flowered and very fresh; and a small plant of Aphelexis macrantha rosea. Messrs. T. Jackson & Son, Kingston-on-Thames, came in 2d with a group of smaller specimens, the best of which were examples of Darwinia tulipifera, Azalea Souvenir du Prince Albert, well flowered, and very bright; Franciscea calycina major, Statice Butcherii—an admirable specimen; Erica affinis, and Aphelexis macrantha rosea, &c. The 3d prize went to Messrs. J. Peed & Sons, Roupell Park Nurseries, Norwood Road, who had larger plants than those of Messrs. Jackson, but showing the effects of age. The best examples were of Jackson's Crimson Azalea, Anthurium Scherzerianum, nearly a yard through, with fine large spathes; Erica Cavendishiana, young, well flowered, and very fresh; Epacris Eclipse, &c. In the nurserymen's class for eight there were only two competitors—Messrs. B. Peed & Son, Lower Streatham, and Messrs. T. Jackson & Son, who took the honours in the order named. In the 1st prize group were large and well-flowered bushes of Dracophyllum gracile, Erica Cavendishiana, Rondeletia speciosa, Anthurium Scherzerianum, and Allamanda grandiflora, &c. The Messrs. Jackson's plants were a nice fresh lot, included amongst them being a particularly good Darwinia tulipifera, a yard in diameter, in fine health, and carrying a good crop of large and well-coloured blooms. A specimen of D. fuchsioides made a good match for the preceding, and a plant of Azalea Extranei carried a nice head of bloom. In the corresponding class for amateurs there was a better competition. Here again Mr. Tudgey took the lead with a grand lot, consisting of a beautifully bloomed Dipladenia hybrida, Clerodendron Balfourianum, Erica ventricosa magnifica, Azalea Distinction, Dracophyllum gracile, Aphelexis macrantha rosea and purpurea, &c. Mrs. Torr, Garbrand Hall, Ewell (Mr. Child, gr.), came in 2d, with a fine healthy bush of Erica depressa, Azalea Iveryana and Duchesse Adelaide de Nassau, both of good size and well bloomed; Darwinia tulipfera, Dracophyllum gracile, and Clerodendron Balfourianum, &c. J. Warren, Esq., Handcross Park (Mr. C. Rann, gr.), was 3d, with amongst others a splendidly bloomed Statice profusa, about 1 yard through. We should state here that Mr. Rann's plants met with an accident on the road from which some of them suffered severely. The other competitors were D. Martineau, Esq., Clapham Park (Mr. J. Weston, gr.) and Louisa Lady Goldsmid (Mr. G. Wheeler, gr.). Of Azaleas, as before observed, the display was a poor one. The nurserymen's class for ten brought no competition, and Mr. Turner was the only exhibitor of fifteen. These, which took the 1st prize, were small in size but well bloomed, very fresh and bright. Bernard Andrea, semi-double rose; Bernard Andrea alba, semi-double white; Souvenir du Prince Albert, double, pale rose, margined and slashed with white; Cordon Bleu, rosy-purple; Mons. Thibaut, a very fine salmon-red; and Bon pour le Commerce, were especially good in quality. There were only two exhibitors of eight in the amateurs' class—Mrs. Torr and D. Martineau, Esq., but these were so poor that a 3d prize and an extra only were awarded. Heaths, on the contrary, were a little better represented than they have been for the last year or two. For eight, distinct, Mr. Tudgey was a good 1st, with capital specimens of E. Cavendishiana, mutabilis, ventricosa superba, tricolor speciosa, Massoni major, Candolleana, ventricosa magnifica, &c.; and Messrs. Jackson & Son were 2d, with fresh and nicely bloomed young plants of E. affine, ampullacea, obbata, ventricosa breviflora, ventricosa grandiflora, Cavendishiana, &c. Messrs. B. Peed & Son were 3d.

Orchids.

With the exception of a charming group of Odontoglossums from Mr. Bull, the competing collections in the four classes for Orchids were shown in a long tent leading from the Council-room to the large marquee, and made a very creditable display. In the open class for fifteen the 1st prize was awarded to F. Whitbourn, Esq., Loxford Hall (Mr. J. Douglas, gr.); and the 2d to Mr. H. James, Castle Nursery, Lower Norwood; but it was the opinion of some good judges that these positions should have been reversed. Be that as it may, both collections were of considerable merit. Mr. Douglas had specimens of Cypripedium caudatum roseum, Odontoglossum vexillarium, O. Roezlii album, Epidendrum vitellinum majus, Dendrobium thyrsiflorum, with ten spikes; Cattleya Warneri, with ten flowers; Dendrobium Dalhousianum, with sixteen spikes; Masdevallia Harryana, Lælia cinnabarina, Cypripedium villosum, Dendrobium Bensonæ, and Orchis foliosa, with sixteen strong spikes. Mr. James had a good mass of Cattleya Mossiæ, Vanda suavis, with three spikes; Oncidium sessile, Odontoglossum citrosmum roseum, O. Alexandræ, O. vexillarium, Epidendrum prismatocarpum, Dendrobium suavissimum, good; Lælia purpurata, with eight flowers; Anguloa Clowesii, and Epidendrum vitellinum majus. The Duke of Richmond and Gordon, Goodwood (Mr. Rutland, gr.), who came in 3d, had a large Oncidium sphacelatum with eleven spikes, Odontoglossum Alexandræ with six spikes, Cattleya Mossiæ, Dendrobium nobile, D. thyrsiflorum, &c. In the corresponding class, open only to amateurs, the 1st prize was won easily by C. Hart, Esq., Beaufort House, Leyland Road, Lee (Mr. Reeves, gr.), who had fresh, healthy, and nicely flowered specimens of the typical variety of Masdevallia Harryana, and also of the Bull's blood variety, Odontoglossum Alexandræ, Cypripedium niveum, Masdevallia Veitchiana, Odontoglossum Hallii with five good spikes, O. cirrosum, with four good spikes; O. vexillarium, and Epidendrum vitellinum majus, a fine pair. Mrs. Torr (Mr. Child, gr.) was 2d with Aerides Fieldingii, with six well branched spikes; Cypripedium Stonei, Odontoglossum citrosmum, Dendrobium nobile, Masdevallia Veitchiana, &c.; 3d, F. Whitbourn, Esq. (Mr. J. Douglas, gr.), with another but smaller plant of Dendrobium Dalhousianum, D. thyrsiflorum, Odontoglossum Alexandræ, &c. Mr. B. S. Williams had no difficulty in securing the highest award in the nurserymen's class for ten, his group consisting of Cattleya Warneri with ten flowers, Orchis foliosa with about two dozen spikes, a fine pan of Cypripedium barbatum superbum, Odontoglossum Alexandræ with a dozen good spikes, Masdevallia Harryana cœrulescens, Odontoglossum vexillarium with seven spikes, Cattleya Mossiæ superba with two dozen blooms, a fine mass of Epidendrum vitellinum majus, Cypripedium niveum, and Masdevallia Veitchiana. Next to Mr. Williams came Messrs. T. Jackson & Son, who had amongst others a large example of Dendrobium thyrsiflorum, Calanthe veratrifolia with a dozen spikes, Oncidium stelligerum, Odontoglossum vexillarium, &c. Mr. H. James was 3d. For a group of Odontoglossums Mr. William Bull was 1st, and F. A. Philbrick, Esq., Q.C. (Mr. Heims, gr.), 2d, the former showing a charming collection tastefully blended with Maidenhair Ferns, and comprising a number of plants of Odontoglossum Alexandræ, O. vexillarium, O. cordatum, O. vexillarium, and O. Phalænopsis. Mr. Philbrick's plants numbered a dozen in all, the species staged being O. Alexandræ, O. vexillarium, and O. citrosmum.

New Plants.

The class for twelve new plants sent out since 1877 brought out two exhibitors—Mr. W. Bull and J. Warren, Esq., Handcross Park (gr., Mr. Rann). Mr. Bull obtained the 1st prize with Sarracenia atropurpurea, with long erect narrow green pitchers, the lid of which is ovate acuminate, dull red in colour; Plectocomia himalayensis, a Calamus-like Palm, with loosely disposed pinnate leaves and spiny stems; Cyphomandra argentea, a shrub or small tree with large thick coriaceous obovate leaves, suffused with a milky hue—a rather coarse but effective plant; Oncidium Gardnerianum, a relatively small-flowered species, with stalked sepals and petals of a rounded form, undulate at the margins, rich brown in colour, with a yellow edge, the lip transversely oblong, rounded, crisped, bright yellow, with a brown edge; Ceratozamia fusco-viridis, with thick leathery pinnate leaves, the segments lanceolate acuminate, of a smoky or ashy-green colour; Dieffenbachia Leopoldii, a noble form, with deep velvety-green leaves with a central white band (the plant is figured in the *Gard. Chron.* 1878, ix., p. 439); Encephalartos Frederici Guilielmi, a noble Cycad with narrow leaves pinnately cut, the segments narrow, lanceolate, bluish-grey in colour; Juncus zebrinus, the banded Rush, figured in *Gard. Chron.* 1877, vol. vii., p. 399; Thrinax barbadense, a dwarf Fan Palm with shining green leaves; Gymnotheca Raddiana, with pinnate leaves and lanceolate undulate segments; Philodendron Carderi, a scandent Aroid, with ovate-acute leaves, dark green and velvety, with red setose stalks and red under-surface—a very beautiful species; Sarracenia flava ornata, a bold variety of S. flava, with erect, long, funnel-shaped green pitchers and broad ovate lids. Mr. Rann's plants comprised amongst others Aralia filicifolia, with spotted stalks and pinnately lobed leaves, the segments linear, lance-shaped, irregularly pinnatisect; Croton Prince of Wales, with linear, undulate leaves variegated with yellow; Pteris umbrosa cristata, Croton Mortii, with broad obovate-acuminate leaves, green spotted, and blotched with yellow; Dracæna Robinsoniana, with oblanceolate leaves, green striped with pink; Gleichenia dicarpa longipinnata, &c.

The prizes in the class for the same number of new plants not in commerce were competed for by Mr. W. Bull and Mr. B. S. Williams. Mr. Bull secured the 1st prize for a collection containing the elegant finely cut Davallia fijiensis, figured in the *Gardeners' Chronicle*, vol. ix., 1878, p. 440; Anthurium insigne, the handsome Aroid, figured at p. 365, vol. vi., 1876; Selaginella involvens variegata, a dwarf tufted species like a bird's nest, the tips of the otherwise dark green fronds marked with a silver variegation; Croton insignis, Spiræa Aruncus var. astilboides, a dwarf-growing Spiræa, with ternately compound foliage and dense branching panicles of white flowers, the lateral branches of the panicle as thick as a swan's-quill, obtuse at the ends, and thickly covered with flowers; Illicium religiosum variegatum, a shrub with leathery oblong-acute leaves prettily variegated with white; Dieffenbachia regina, a form with bold, cordate-oblong leaves with green ground blotched with yellow, one of the finest of its class (see p. 745); Vriesia Falkenbergii, a Bromeliad of tufted habit, narrow green decurved leaves, and a central spike some 10—12 inches high with two-ranked closely-set boat-shaped bracts, scarlet at the base, greenish-yellow above—a very striking plant; Rhopaloblasta princeps, a Palm with broadly oblong-obtuse pinnate leaves, the segments narrow—a handsome Palm; Aralia splendidissima, with long pinnate shining green leaves, the segments lanceolate; Dieffenbachia rex with large oblong-acuminate leaves, green speckled with yellow spots; Adiantum aneitense, with dark green bipinnate fronds, the ultimate segments small, cuneate-obovate, serrulate.

Mr. Williams, who obtained the 2d prize, showed Dieffenbachia latimaculata, with large lanceolate acuminate leaves with a broad green disc blotched with yellow; Croton Dodgsonii with long linear lanceolate leaves with stripes of golden-yellow in the centre and along the margins, and with intervening bands of green; Aralia nobilis, a Theophrasta-like plant with closely packed bold foliage, the leaves oblong obovate-acuminate, undulate at the margins; Asplenium Baptistei, with black-green pinnate fronds, the segments oblong lanceolate, comb-toothed at the margins; Calamus densus, Nepenthes Dormanniana ×, with cylindric red-spotted pitchers; Sanseviera aureo-marginata, with narrow oblanceolate leaves with central and marginal green stripes and dirty yellow intervening disc; Croton Rodeckianus, with linear leaves blotched with pink and yellow; Wallichia zebrina, a Palm with spotted leaf-stalks and pinnate leaves, the segments broad and wedge-shaped; Alsophila tomentosa; Cocos Baptistei, with yellow-brown rachis and pinnate leaves with narrow lance-shaped segments; and Dracæna Mrs. Turner.

Mr. Bull's Prizes.—Classes A. to D. of the special prizes included the competition for Mr. Bull's cups. Mr. Bull, the spirited introducer of so many fine new plants during the last dozen or more years, not finding it convenient to grow specimen plants himself, but preferring to devote himself to the getting up of a stock, offers yearly prizes to those who grow plants of his introduction into specimens. As these competitions necessarily include some of the finest and most interesting of newly introduced plants, the result is specially interesting, as indicating what are likely to be the most important commercial plants of the future. In Class A., for twelve new plants sent out since 1877 (amateurs), J. Warren, Esq., Handcross Park (gr., Mr. Rann), was adjudged the 1st prize. This exhibitor showed Croton Williamsii, with broad obovate acute leaves, blotched with pink and yellow, finely coloured; Croton princeps, with ovate lanceolate leaves, spotted with yellow and pink; C. Hendersoni, a well grown plant with obovate yellow foliage; C. roseo-pictus; C. Challenger, Lomaria Dalgairnsiæ, Kentia Wendlandiana, a Palm with bold pinnate leaves, the segments broadly lanceolate erose at the edges; Panax laciniatus, with deep green pinnate foliage, the segments remote, lanceolate, toothed; Dracæna vivicans, with linear striped leaves; Aralia filicifolia, previously noted, and Dracæna Robinsoniana. The Rev. Canon Bridges (gr., Mr. Penfold) obtained the 2d prize for Croton Hendersoni; C. rex, with lanceolate leaves with a central stripe; Panax laciniatus, Gymnogramma Mertensii dobroydensis, Alocasia Johnstoni, a curious Aroid with pale maroon-coloured spotted prickly stems and hastate leaves; Kentia Wendlandiana, previously noted; Aralia filicifolia, Davidsonia pruriens, the handsome interruptedly pinnate-leaved plant figured in *Gard. Chron.* 1877, vii., 819; Dieffenbachia Chelsoni, and other plants elsewhere commented on.

Class B. comprised plants of a similar character, competed for by nurserymen. Mr. B. S. Williams obtained the 1st prize: his collection comprised Croton Williamsii, C. Hendersoni, C. Chelsoni, with linear tortuous leaves, dark green, with a central orange stripe; Calyptronoma Swartzii, Dracæna Robinsoniana, Lastrea aristata variegata, Cibotium pruinatum, Encephalartos Frederici

Guilielmi, Kentia Wendlandiana, Dracæna Goldieana, Aralia filicifolia. The plants in classes C. and D., for private growers and nurserymen respectively who have not previously won one of Mr. Bull's cups, were necessarily of a similar character to those previously mentioned. In class C., for private growers, Sir J. H. H. Amory, M.P., Knighthay's Court, Tiverton (gr., Mr. Selway), was 1st with Cycas siamensis, a Cycad in the way of C. circinalis, with narrow mucronate pinnæ of a pale glaucous green hue; Dieffenbachia Leopoldii, elsewhere noted, Carludovica Drudei, figured in *Gard. Chron.* 1877, vol. viii., p. 714; Ixora Chelsoni, with orange flowers; and other plants enumerated in other classes. The 2d prize was awarded to Mrs. G. Pease, Woodside, Darlington (gr., Mr. McIntyre). This exhibitor showed Dieffenbachia Shuttleworthii, Curmeria Wallisii, Aralia gracillima, and other plants mentioned under previous classes. In class D., for nurserymen, the 1st prize went to Messrs. Osborn, of Fulham, for Dieffenbachia splendens, Asparagus plumosus, the very beautiful feathery Asparagus figured at p. 749, (for the illustration of which we are indebted to Mr. Bull); and other plants detailed under other heads.

Fine-foliaged Plants and Ferns.

A class for eight fine-foliaged plants, confined to amateurs, brought out four competitors, and two of them, Mr. C. Rann and Mr. Tudgey, showed grand collections. The two sets of plants, which were very evenly matched, occupied the mound at the western end of the large tent (which Mr. Wills has so often decorated in his tasteful style), and combined made an imposing display of noble tropical foliage. After much consideration the judges awarded the 1st prize to Mr. Rann, and the 2d to Mr. Tudgey. Mr. Rann's collection consisted of a magnificent specimen of Cycas revoluta with a spread of fronds of about 10 feet in diameter, and in perfect condition; Croton interruptus, about 6 feet high and 5 feet in diameter, well clothed with highly-coloured foliage down to the pot; a very handsome young plant of Croton Andreanus, a noble leaved species; large and beautiful specimens of Areca sapida, Pritchardia pacifica, and Encephalartos villosus. Mr. Tudgey had an immense and very perfect example of Latania borbonica, and smaller but very fine specimens of Pritchardia pacifica, Stevensonia grandifolia, Cycas circinalis, especially fine; C. revoluta, Geonoma gracilis, Croton pictus, about 5 feet by 4 feet, and in first-rate condition; and Cordyline indivisa. The Rev. Canon Bridges, Beddington House, Beddington (Mr. T. N. Penfold, gr.) was 3d with a good but much smaller group.

The amateur's class for six stove or greenhouse Ferns was an exceedingly good one, and deserving of all praise. The 1st prize was awarded to Mr. Rann, whose chief specimen was a plant of Gleichenia microphylla, about 8 feet in diameter; his others being also fine specimens of Gleichenia Mendelli, from 5 to 6 feet through; Davallia Mooreana, a grand specimen; Gleichenia rupestris glaucescens, Dicksonia antarctica, and Cyathea dealbata. H. J. Atkinson, Esq. (Mr. Hudson, gr.), was an exceedingly good 2d, with a large Dicksonia antarctica; a large and very perfect example of Thamnopteris australasica, Davallia bullata, from 4 to 5 feet over, a fine mass of fronds; Gleichenia semivestita, about 4 feet in diameter; a very large Davallia Mooreana, and Gleichenia flabellata. Mrs. Torr (Mr. Child, gr.), who was 3d, had a handsome piece of Todea superba, with a spread of fronds about 4 feet over; a splendidly-grown plant of Microlepia hirta cristata, and a fine Gleichenia Mendelli, &c. F. A. Steel, Esq., Littlecot, Streatham Common (Mr. H. Brown, gr.), also showed an exceedingly fine specimen of Davallia Mooreana, about 7 feet over; and well-grown examples of Adiantum cuneatum and A. farleyense; and in another group, staged by Mr. Tudgey, we noted a striking plant of Cibotium regale, as well as a telling specimen of Gleichenia dichotoma. Mr. B. S. Williams was the only trade exhibitor, and he received 1st prize for good examples of Cyathea Burkei, Dicksonia antarctica, Thamnopteris Nidus, Adiantum gracillimum, Gleichenia flabellata, and G. Mendelli.

Roses, Pelargoniums, &c.

Messrs. Paul & Son, Cheshunt, were the only exhibitors in classes for twenty and nine Roses respectively, and to them the 1st prize was in each case awarded. The nine specimens formed a group of large and well-flowered plants, but with a preponderance of rose-coloured varieties. The sorts shown were Céline Forestier, the best plant of all; Anna Alexieff, Marie Rady, Horace Vernet, Juno, Madame Thérèse Levet, Madame Alice Dureau, Maréchal Vaillant, and Madame Margottin. The small plants were well bloomed and in good condition. The amateurs' class for six brought out about the finest lot of plants that we have seen exhibited by a non-professional grower. These came from G. P. Hawley, Esq., Aldin House, Slough, who took the 1st prize, beating Mr. J. Tranter, Upper Assenden, Henley-on-Thames. Mr. Hawley's plants were well grown, neatly trained, and well bloomed, and measured from 2 to 3 feet in diameter. The competition with show Pelargoniums was confined to H. Little, Esq., Hillingdon Place, Uxbridge (Mr. Wiggins, gr.), Mr. Turner, and Messrs. J. Peed & Sons, the former having the largest and best grown plants, which secured the 1st prize. His specimens measured about 3 feet in diameter, well clothed with good foliage and profusely bloomed, the varieties being Princess of Denmark, Hebe, Pericles, Brigantine, Snowflake, Hermit, Prince Leopold, Claribel, and Rob Roy. Mr. Turner's specimens, as usual, bore flowers of the very highest quality, and very pure in colour, the blooms of such varieties as Mrs. A. Matthews, Scottish Chieftain, Prince Leopold, Ruth, Troubadour, &c., being especially rich. Mr. Little, who was the only grower of Fancy Pelargoniums represented, was awarded the 1st prize for nine as good plants as have been shown for some time, each specimen measuring from 2 to 3 feet in diameter, and most profusely bloomed. The sorts were The Shah, East Lynne, Mirella, Princess Teck, Lucy, Juliet, Mrs. Hart, Ellen Beck, and Mrs. Graham. The class for twenty tuberous Begonias brought out the best competition that has yet been seen of this fine decorative flower. Messrs. J. Laing & Son won the 1st prize, but they were very closely run by Mr. H. Coppin, The Rose Nursery, Shirley, Croydon, who had a well-grown lot of plants, but the varieties were not so good all round nor so numerous as in the Stanstead collection. Messrs. Hooper & Co., Covent Garden, were a good 3d. Messrs. Osborn & Sons and F. Whitbourn, Esq. (Mr. Douglas, gr.), competed in the class for a group of not less than thirty hardy herbaceous plants, and the prizes were awarded in the order named, though we think the decision should have been the other way, for while the Fulham group certainly contained the greatest number of species and varieties, it did not exhibit anything like such good cultivation as Mr. Douglas', and certainly was by no means so attractive. The display of Aquilegias, Pyrethrums, &c., in the last-named group was unexceptionally good, and proved a singularly attractive feature. Cut blooms of hardy flowers were well shown both by Messrs. Hooper & Co. and Messrs. Osborn & Sons; and cut blooms of Pansies of very superior quality came from Mr. Hooper and Mr. Catley, of Bath; Messrs. Downie & Laird, of Edinburgh; Messrs. James Cocker & Sons, of Aberdeen; and other growers.

Groups of Plants.

Contrary to the usual rule the three classes for groups of plants arranged for effect brought out not only a good competition, but an exceedingly fine display of really well-grown objects. Remarkably fine indeed was the group of fine-foliaged plants, occupying not more than 300 square feet, which won the 1st prize in that class for Messrs. Hooper & Co., of Covent Garden. The plants on the whole were larger than those shown by the other competitors, of first-rate quality, great variety, and tastefully set up. H. J. Atkinson, Esq., Acton (Mr. Hudson, gr.), was a good 2d, showing a fine lot of stuff, and a few especially good specimens. The 3d prize went to Mr. Rann, who was strong on the point of cultivation but wanting in variety—a result we believe of the accident before alluded to. Messrs. Osborn & Sons and the Rev. Canon Bridges also made a good bid for fame in the same class. An even better competition than the last was a corresponding one for fine-foliaged and flowering plants combined, which brought out seven competitors and an unusually good display of plants of a miscellaneous character. The schedule stated that the competition was for a "group of miscellaneous plants, arranged for effect, and occupying a space not exceeding 300 square feet;" but, singular to relate, the judges gave the 1st prize, not to a group of miscellaneous plants effectively arranged, but to a model of a fernery arranged in the natural style, by Mr. A. Blake, 55, Britannia Road, Fulham. This, we think, was an error of judgment, of which the other competitors have good reason to complain, for the execution of such designs by all or any of the exhibitors could never have been intended by the framers of the schedule. Mr. Blake's work was very good in its way, but was not a group of miscellaneous plants, and should have had a special award as an independent exhibit. The 2d prize was awarded to Messrs. John Laing & Co., who put up a very fine lot of plants, mostly fine-foliaged, of excellent quality, and tastefully grouped. Equal 3d prizes were awarded to E. O. Coope, Esq., M.P., The Rocketts, Brentwood (gr., Mr. J. Ford), and Mr. G. Aldous, South Kensington; but both deserved a better fate. Mr. Aldous' group was strong in the usual market style of flowering plants and handsome young Palms, and was set up in a much more elegant and pleasing manner than this exhibitor usually adopts. Mr. Ford's group was remarkable for the great variety of plants which it contained, and for the good all-round cultivation which it displayed, so different to the mean stuff too often seen in such groups. Large and to some extent very effective groups were also shown by Mr. Rann, Messrs. J. Peed & Sons, and J. A. Causton, Esq., Lodgemore, West Dulwich (Mr. J. R. Bird, gr.). Mr. B. S. Williams was the only exhibitor of a similarly sized group of plants in bloom, and to him the 1st prize was awarded. Stove and greenhouse plants and Orchids were represented by a rich and varied assortment.

Miscellaneous.

The miscellaneous class was of an unusually extensive character, and embraced a great variety of subjects, without which a horticultural exhibition now-a-days would be considered very incomplete. Gold Medals were awarded to Mr. William Bull for a very striking group of fine-foliaged and flowering plants, new, rare, or remarkable for some feature of interest or usefulness, and including the singularly curious Masdevallia bella (see pp. 756, 757), the triangular segments of the flowers of which are prolonged into long narrow tails spotted with brown, and have a small white lip; to the General Horticultural Company (John Wills), Limited, for a magnificent collection of Dracænas, superbly grown, and including all the best of the new varieties; and to Messrs. James Carter & Co., of High Holborn, for an immense group of Coleuses, consisting, we should imagine, of almost every variety in cultivation, represented in a small state. To Mr. B. S. Williams a Silver Flora Medal was awarded for a fine group of plants; and Mrs. Watson, Redlees, Isleworth (Mr. James, gr.), received a similar award for an admirable group of Herbaceous Calceolarias. Silver Banksian Medals were accorded to Messrs. Wm. Cutbush & Sons for a large group of stove and greenhouse flowering and fine-foliaged plants; to J. Brand, Esq., Bedford Hill House, Balham (Mr. Rapley, gr.), for a large and excellent display of herbaceous Calceolarias; to Mr. Boller, of Kensal New Town, for a large assortment of small Cactuses and other succulent plants; and to Mr. Pearson, the Nurseries, Chilwell, Notts, for a most admirable display of Zonal Pelargoniums, all of his own raising, and including many unnamed but most promising varieties. Messrs. H. Lane & Son received a Silver-gilt Banksian Medal for a group of one dozen admirably-grown, columnar-trained Ivies in pots; and Messrs. Kelway & Son, Langport, a Silver Flora Medal for a large collection of cut blooms of Pyrethrums—a remarkably fine set of flowers; and Messrs. F. & A. Smith, of Dulwich, a Bronze Flora Medal for a nice collection of decorative Pelargoniums.

Fruit and Vegetables.

Doubtless the wise proviso added in the schedule—that instead of compelling exhibitors to allow their fruits and vegetables to remain on the tables the full four days the show was open, as heretofore, it was on this occasion permitted them to remove all such exhibits on the evening of the second day—had its weight in producing such a remarkably fine display of these garden products as greeted the judges on Tuesday. The remark was both general and true that for the time of the year the exhibits were a grand lot indeed. Pine-apples were perhaps the most indifferently represented; the fruits were of medium size, but nicely ripened, yet few in number, the class for two fruits having no award, the two fruits entered being unworthy, and two others not entered were unable to take an award. For one Queen Pine there was the fullest entry, the 1st place being taken by L. J. Baker, Esq., Haydon Hall, Pinner (Mr. J. Fry, gr.), with a moderately good fruit; Mr. T. Bailey, of Shardeloes, Amersham, coming 2d; and Lord Somers, Eastnor Castle (Mr. Coleman, gr.), 3d. In the Smooth Cayenne class there was but one entry, and a 2d prize only was awarded. This was shown by Mr. Sage, of Ashridge Park. For one fruit of any other variety, J. Ellice, Esq., Poulett Lodge, Twickenham (Mr. Bates, gr.), was 1st with a moderate Charlotte Rothschild; and Mr. Breese, of Congleton, was 2d with a small Montserrat. Grapes were a very fine feature, not less than 162 bunches being staged in fifty-four lots. Of these twelve were Black Hamburghs, the 1st prize in this class going to T. Barnes, Esq., The Quinta, Chirk (Mr. Loudon, gr.), who had large, handsome, even bunches, the berries black and well finished. This lot was well ahead of all the others in the class. Next came the Duke of Marlborough, Blenheim Park, Woodstock (Mr. Crump, gr.), with very pretty medium bunches, the berries large and well coloured; and the 3d place fell to Mrs. Tristram, Fowey Court, Liphook (Mr. P. Edwards, gr.), whose bunches were good and the berries as black as Sloes, but rather lacking size. The class for any other black Grape brought fewer entries, the best lot being the three fine and superbly coloured bunches of Burchardt's Prince, shown by Mr. Loudon. These were of the true Prince form, and were most meritorious examples of a Grape not generally grown. W. Spottiswoode, Esq., Coombe Bank, Sevenoaks (Mr. Bolton, gr.), with neat bunches of Black Prince, was placed 2d; and the 3d place was taken by Mr. Miles, of Wycombe Abbey Gardens, with very fair bunches of Muscat Hamburgh. As usual, Muscat of Alexandria at this time of year, though shown largely, was deficient in colour and ripeness. The bunches shown by Mr. Edwards, though very good and fairly coloured, lacked size and form. Another month was needed in all cases to supply the desired amber tint. Mr. J. Loudon took the 2d prize, and Mr. Coleman was 3d. The strongest Grape class was that for three bunches of any other kind, not less than twenty-four lots being staged. In this class the 1st prize was easily taken by the Marchioness Camden, Bayham Abbey, Sussex (Mr. W. Johnson, gr.), with some really grand bunches of Buckland Sweetwater, every berry large and finely coloured. The 2d prize went to the Earl of Leven and Melville, Fulmer, Slough (Mr. Mowbray, gr.), with smaller bunches of the same variety; and Col. L. Lindsay, M.P., Lockinge Park, Wantage (Mr. J. Atkins, gr.), was 3d with admirably finished bunches of Foster's Seedling. Not less than fourteen dishes of Peaches were shown, and the major portion rich in colour, telling of sunshine during the past month. Mr. Coleman took 1st place with a dish of the Abec, a large rich-coloured fruit, and evidently a valuable early kind. The second dish, a very fair example of Royal George, came from Mr. W. Bones, Havering Park, Romford; and Mr. Crump was 3d with excellent fruit of Barrington. In the Nectarine class Mr. Miles was 1st with a good dish of Elruge, brilliant with colour. J. Norris, Esq., Castle Hill, Bletchingly (Mr. G. Holliday, gr.), was 2d, with Lord Napier; and Dr. Fuller, Shoreham (Mr. J. Nash, gr.), was 3d with the same variety. Strawberries were large and good, but not abundantly shown. In the class for three varieties, Mr. Norman, of the Gardens, Hatfield Park, was 1st, with good examples of Sir C. Napier, Sir J. Paxton, and President. T. C. Hardwick, Esq., Tonbridge (Mr. Goldsmith, gr.), was 2d, with huge James Veitch, good Sir J. Paxton, and very moderate President. There was a better competition in the single dish class, Major Stone (Mr. J. Mortimer, gr.) coming 1st with a grand lot, named President but evidently Sir Joseph Paxton; Mr. James, of Redlees, Isleworth, was 2d, with good Sir Joseph; and Mr. Gibson, Halstead Place Gardens, Sevenoaks, was 3d, with the same kind. Cherries as usual found their best examples in those sent by Mr. Miles, who was 1st in the class for two dishes with Black Circassian and Governor Wood; Mr. Woodbridge being 2d, with Belle d'Orléans and Frogmore Bigarreau. With a single dish of the Black Circassian Mr. Miles was also 1st, and Mr. Woodbridge was placed 2d. The class for one Melon brought not less than thirty-one fruits of all sorts

and sizes, and as the judges tasted all their office was not an enviable one. With a fruit named Blenheim Orange, oval in shape, medium size, prettily netted and having scarlet flesh of the most luscious taste and flavour we have ever met with, Mr. Crump was placed 1st. J. H. Rolls, Esq., The Hendre, Monmouth (Mr. Coomber, gr.), was 2d, with Hendre Seedling, a scarlet-flesh kind; and Mr. Norman, of Hatfield, was 3d, with large fruit of Read's Scarlet-flesh. Tomatos were remarkably good, the dish of Stamfordian staged by Captain D. Wingfield, Orsett Hall, Romford (Mr. Iggulden gr.), were as handsome and large as desirable; the 2d prize went to Mr. Crump, for a pretty lot of Excelsior, and J. T. Friend, Esq., Margate (Mr. Miller, gr.), was 3d, with smaller samples of the same kind. Big and sutured samples of Trophy were passed over for handsomer if smaller fruits.

The single class for ten dishes of vegetables brought ten collections, all remarkably even and good, not a coarse dish being seen amongst the entire lot. Here Mr. Miles well maintained his old *prestige* as a grower of high-class vegetables, with a collection admirable at every point. He had a fine bundle of Asparagus, excellent London White Cauliflower, large Stamfordian Tomatos, pretty Snowball Turnips, handsome Petch's Superb Cucumbers, good Lapstone Potatos, with Canadian Wonder Beans, Nantes Horn Carrots, White Naples Onions, and Unique Peas, all first-rate. Mr. Iggulden was 2d with a nice lot, only just inferior, that included good Unique Peas, Munich Early Turnips, Trophy Tomatos, Woodstock Kidney Potatos (a handsome dish), and find Cauliflowers. The 3d place was taken by Mr. Chittleburgh, gr. to Col. Rous, M.P., Worstead House, Norwich.

A good competition resulted from the special prizes offered by Messrs. Sutton & Sons, seedsmen, Reading, for Peas, Melons, and Cucumbers. With four dishes of Peas, half a peck each, Mr. Iggulden was 1st with capital samples, just fit for table, of Sutton's Ringleader and Bijou, and Laxton's William I. and Unique. In a small collection it is unfortunate that both these kinds should be included, as the pods are exactly alike, one being but the dwarf form of the other. Mr. Bellis, gr. to Major Thoytt, of Sulhampstead House, Reading, was 2d, with very good Blue Peter, Ringleader, Emerald Gem, and William I.; the 3d prize going to Mr. J. Clarke, gr. to Lord Hastings, Melton Constable. A fine lot of pods, staged by Mr. Chittleburgh, were about a week past their best. Cucumbers and Melons grouped do not make a taking combination on the show-table, as it is not easy thus to judge them on their merits. In the class for two brace of Cucumbers and two couples of Melons, Mr. Goldsmith, of Tunbridge, was 1st, with Cucumbers Telegraph and Duke of Connaught, and Melons Hero of Bath and Read's Scarlet-flesh. Mr. Lockie, gr. to Lord Otho Fitzgerald, Oakley Court, Windsor, was 2d, with same kinds of Cucumbers and Hero of Bath and Royal Botanic Prize Melons. Mr. Crump was 3d, with Tender and True and Duke of Connaught Cucumbers, and Earl of Beaconsfield and Victory of Bath Melons.

HORTICULTURAL APPLIANCES, &C.

In this department there did not seem to be so great a variety as usual, and but few awards were made. The highest was a Silver-gilt Flora Medal, given to Messrs. Foster & Pearson, Horticultural Builders, Beeston, Notts, who showed a well designed and substantially built span-roofed plant-house, and a couple of span-roofed frames ventilated on a novel yet simple system, that should take the fancy of amateur and professional alike. Mr. W. Richardson, the Meadow Foundry Co., Mansfield, was awarded a Silver Banksian for a new throttle valve with removable bored part; and Mr. T. Clarke, Twickenham, a medal of similar value for the Patent Excelsior Lawn Mower. Mr. J. C. Fox received a Silver Flora Medal for summer-houses, of which every frequenter of South Kensington knows him to be a good designer and builder; and Messrs. J. J. Thomas & Co., 362, Edgware Road, were Highly Commended for an extensive display of wirework of all kinds applicable to horticultural purposes.

SCIENTIFIC COMMITTEE.—Arthur Grote, Esq., in the chair.

The Secretariat.—The Rev. Geo. Henslow, the newly-appointed Secretary to the committee, entered upon the duties of his office.

Plants Exhibited.—Mr. Lynch, Curator of the Cambridge Botanic Garden, exhibited cut specimens of the following plants, and made some comments on them:—Arctotis arborescens, a Centaurea-like plant, from South Africa, of which it is believed that the Cambridge Botanic Garden possesses the only living example. It is a perennial Composite, about 2 feet in height, covered with grey shaggy pubescence, pinnately-lobed leaves and flower-heads, some 2 inches across, with a short scarious involucre, and numerous pink rays. Mr. Lynch is about to try it as a bedding plant. Lathyrus Sibthorpii, Eremurus spectabilis, Syringa persica laciniata, in flower; Pyrus coronaria, a handsome late flowering species—the Apple-like flowers have a delicious perfume of Violets; Cytisus Laburnum involutum in flower; the Sun Hemp of India—Crotalaria juncea; and specimens of Cuscuta reflexa, to show its effect upon the stems of a Pelargonium.

Pitcher on Broccoli.—Mr. W. G. Smith exhibited a young Broccoli plant with a pitcher developed on a stout peduncle in place of the usual raceme of flowers. The example was received with native Cornish specimens of Arum italicum, from Mr. W. Roberts, of Penzance.

Australian Insect.—Specimens were sent by Mr. Protheroe of an insect (Coccus?) supposed to have been imported from Australia to Cape Town, and which were referred to Mr. MacLachlan for examination and report.

Malformed Peach Blossom.—A malformed Peach blossom, formed on the shoot of the year, was referred to Dr. Masters for examination and report.

Malformed Fritillary.—Rev. George Henslow showed drawings of flowers of Fritillaries, in which one side of the flower, including the perianth and stamens on that side of the flower, were arrested in development; thus showing an approximation to what occurs in Pontedera, various Commelynaceæ, &c.

Double Calceolaria.—Dr. Masters showed drawings by Mr. W. G. Smith of malformed Calceolarias received from Mr. Burbidge, and in which supernumerary stamens were developed in the shape of petal-like tubes or bags enclosed within the true corolla.

Hybrid Ismenes.—Col. Trevor Clark showed two hybrids, one a cross between Elisena longipetala and Ismene calathina, the result of which was a plant identical with Ismene deflexa; the other a cross between Ismene Amancæs and I. calathina, the result of which was a plant known formerly as the "sulphurescent mule." A First-class Certificate had been awarded by the Floral Committee to the latter plant.

Lilium nitidum.—A plant was shown under this name, and referred to Mr. Elwes for examination and report.

Phylloxera.—Some conversation took place on this subject, in the course of which Dr. Masters alluded to the steps taken by the Society, as well as by various foreign societies, to obtain some modification of the needlessly oppressive regulations adopted by the Berne Convention.

FLORAL COMMITTEE.—Dr. Denny in the chair. The number of subjects brought under notice of the committee was considerable, but few were considered worthy of certificates. The most notable object was a magnificent specimen of Cattleya gigas with forty flowers, no doubt the finest plant of this species which has yet been seen; it was recommended to the Council as being worthy the award of a Gold Medal, and reflected the highest credit on Mr. Spyers, gr. to Sir Trevor Lawrence, by whom it was grown and exhibited. Messrs. Veitch & Sons, of Chelsea, showed one or two interesting forms of Japanese Maples, but they were scarcely sufficiently developed, and the request was made that they might be sent again later on. The same exhibitors had a pretty variegated Japanese Oak, Quercus cuspidata argenteo-variegata, in the form of small plants with neat ovate cuspidate leaves, freely edged with creamy white; they were considered too small to justify an opinion on their merits, the more so as the hardiness of the plants had not yet been fully tested. Mr. King, gr., Wray Park, Reigate, again exhibited his fringed Coleus, Adelaide Baxter, a very pretty sort, with the midrib and veins crimson on a maroon ground, and the marginal teeth edged with green; it was much admired, and is no doubt a variety that will give satisfaction to those who take an interest in this now numerous family. Several interesting varieties of Nerium Oleander were contributed from the gardens at Chiswick, some of which deserved a better fate than to have been sent back undecorated. A large number of so-called decorative Pelargoniums, from Messrs. F. & A. Smith and others, were staged, but the few justifiable awards made to this class of varieties earlier in the season appears to have stimulated growers to bring out all the ragged and bizarre-looking flowers they can muster, so long as they are exuberant of blossom.

NEW PLANTS CERTIFICATED.

M. V. Lemoine, of Nancy, received a First-class Certificate for double-flowered Ivy-leaved Pelargonium Mons. Dubois, which had been grown at Chiswick. It is a variety of good habit, with fine double blossoms of a lively rose-pink, and will prove quite an acquisition. A similar award was made to Mr. W. Bull, Chelsea, for Spiræa Aruncus astilboides, a beautiful hardy Japanese plant from the alpine province of Nambu, in the north of Nippon. It grows about 2 feet high, and has ternately bipinnate-toothed leaves the terminal leaflets of which are larger, ovate-acuminate, the lateral ones smaller and rounder; the plumy white infloresence forms a twice-branched spicate panicle, and is very showy and attractive. This new Spiræa may be popularly described as a dwarfer and more refined form of the grand S. Aruncus. Colonel Clarke received a Certificate of the same value for an interesting hybrid Ismene, bred between I. Amancæs and I. calathina, a showy bulbous plant of rather tall growth, remarkable for the prettily-fringed pale lemon-coloured cup of its showy blossoms. The plant, Colonel Clarke explained, was interesting as being an exact reproduction of the sulphur-coloured mule bred by Herbert. Two Pelargoniums gained First-class Certificates, a Decorative and a Silver Tricolor variety respectively. The first-named, Eclipse, came from Mr. W. W. Brown, Brent Nurseries, Hendon, and was a free-blooming sort, with crimson flowers of good form, bearing a black spot on each petal, those on the upper larger, and those on the lower petals of smaller size. The second, named Mrs. G. Garraway, was a very bright-coloured sort, with a broad well-defined crimson zone, here and there splashed with dark, a mottled-green centre and a creamy edge, altogether a very pleasing and attractive novelty, and apparently a free grower, and was shown by Mr. G. Garraway, Lower Swainswick, Bath.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. At this meeting Mr. Wildsmith, Heckfield, showed a dish of President Strawberries of extra fine quality; and Mr. Ross, gr. to C. Eyre, Esq., Walford Park, Newbury, sent a splendid dish of Bourjassotte Grise Figs—the finest flavoured of all cultivated varieties. An excellent dish of Mushrooms came from Mr. Lyon, gr. to E. H. Scott, Esq., Sundridge Court, Kent; and Mr. Miles, gr. to Lord Carington, sent a good sample of Laxton's Minimum Pea, short and almost straight in the pods, and well filled. Seedling scarlet-fleshed Melons were exhibited by Mr. Charles Howe, The Gardens, Benham Park, and Mr. J. Allsop, The Gardens, Dalton Hall, Hull—the variety from the former named Benham Park Gem, and that from the latter Allsop's Scarlet-flesh; no award was made in either case. Chilton's Hybrid Hero of Bath, a scarlet-fleshed variety, shown by Mr. J. Chilton, The Gardens, Aston Rowant, Tetworth, also failed to get an award. From Mr. R. Dean, Ealing, came a sample of a seedling Potato (between Fenn's Early Market and Porter's Excelsior), named Early Cluster, which had been grown in an 8-inch pot, and produced about 1 lb. weight of tubers. It appears to possess considerable merit for pot culture, and will no doubt be well tried for this work another season. Mr. Watson, of St. Albans, showed a black-spine Cucumber named Antagonist; and Mr. Gardiner, gr., Ettington Park, Stratford-on-Avon, showed an Apricot branch well set with fruits.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
FOR THE WEEK ENDING WEDNESDAY, JUNE 9, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity: Sat = 100	Wind: Average Direction.	Rainfall.
June	In.	In.	°	°	°	°	°	°	°		In.
3	29.70	−0.10	57.2	47.6	9.6	50.7	−6.2	48.9	94	N.E.: N.	0.00
4	29.75	−0.05	59.6	44.0	15.6	49.2	−7.9	45.0	86	N.: N.E.	0.13
5	29.82	+0.02	61.0	38.9	22.1	49.1	−8.2	44.7	85	NNE: W.	0.02
6	29.72	−0.08	61.0	49.0	12.0	53.6	−3.9	48.5	82	W.	0.17
7	29.53	−0.27	66.0	47.4	18.6	53.2	−4.4	49.4	87	WNW	0.12
8	29.58	−0.21	61.2	43.8	17.4	51.3	−6.4	45.6	81	WSW	0.09
9	29.63	−0.17	59.1	41.7	17.4	48.5	−9.4	45.6	90	W.: WNW	0.07
Mean	29.68	−0.12	60.7	44.6	16.1	50.8	−6.6	46.8	86	N.E.: W.	sum 0.60

June 3.—A dull, overcast day. Cold. A little rain fell after 11 P.M.
— 4.—Overcast and dull till 1 P.M.; fine and bright after. Cloudless at night. Cold. Rain fell in early morning.
— 5.—Fine till evening, then overcast and wet. Strong wind. Cold day.
— 6.—Generally dull and cloudy till evening, then fine. Frequent rain in morning. Cold and windy.
— 7.—Fine, but frequently dull, cloudy and showery. Strong wind.
— 8.—Fine, but occasionally dull with heavy showers. Cloudless after 7 P.M. Cold. Strong wind.
— 9.—A dull day, steady rain fell from 11 A.M. to 6 P.M. Fine and cloudless at night. Cold day.

LONDON: *Barometer.*—During the week ending Saturday, June 5, in the suburbs of London the reading of the barometer at the level of the sea decreased from 30.44 inches at the beginning of the week to 30.11 inches by the afternoon of May 31, increased to 30.15 inches by the morning of June 1, decreased to 29.88 inches by the afternoon of the 3d, increased to 30.02 inches by noon on the 5th, and was 30.01 inches at the end of the week. The mean reading for the week at sea level was 30.06 inches, being the same as that of the preceding week, and 0.08 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 65¾° on May 30 to 54½°

on the 31st; the mean value for the week was 60½°. The lowest temperatures of the air observed by night varied from 39° both on May 30 and June 5 to 47½° on June 3; the mean value for the week was 43°. The mean daily range of temperature in the week was 17½°, the greatest range in the day being 26¾°, on May 30, and the least 9½°, both on May 31 and June 3.

The mean daily temperatures of the air and the departures from their respective averages were as follows:—May 30, 52°, − 4°; 31st, 48°.8, − 7°.5; June 1, 50°.2, − 6°.3; 2d, 52°.7, − 4°; 3d, 50°.7, − 6°.2; 4th, 49°.2, − 7°.9; 5th, 49°.1, − 8°.2. The mean temperature of the air for the week was 50°.4, being 6°.3 below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 140° on May 30, and above 120° on June 1, 2, and 4; on May 31 the reading did not rise above 60°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 26½° on May 30, and 30½° on June 5; the mean of the seven lowest readings was 37°.

Wind.—The direction of the wind was variable, and its strength during the latter part of the week strong.

The weather during the week was generally dull, though at times fine, cold, and showery.

Rain fell on five days; the amount measured was 0.64 inch.

England: *Temperature.*—During the week ending Saturday, June 5, the highest temperatures of the air observed by day were above 70° at Cambridge, Nottingham, and Sunderland, and below 64° at Bristol and Norwich; the mean value from all stations was 66½°. The lowest temperatures of the air observed by night were below 38¼° at Truro, Brighton, Leicester, Cambridge, Nottingham, and Sheffield; and above 43° at Liverpool and Sunderland; the general mean from all places was 39¼°. The extreme range of temperature in the week was above 33° at Truro, Cambridge, and Nottingham, and below 23° at Norwich, Birmingham, and Liverpool; the mean range of temperature from all stations was 27¼°.

The mean of the seven high day temperatures was above 62° at Brighton, Cambridge, and Sunderland, and below 57½° at both Leicester and Wolverhampton; the mean from all places was 60°. The mean of the seven low night temperatures was below 44° at Bristol, London, Wolverhampton, Nottingham and Sheffield, and above 47° at Plymouth and Liverpool; the mean value from all stations was 45°. The mean daily range of temperature in the week was above 17½° at Brighton, London, and Cambridge, and below 13° at Leicester, Norwich, and Liverpool; the mean daily range of temperature from all places was 15°.

The mean temperature of the air for the week from all stations was 50¼°, being 1° lower than the value for the corresponding week in 1879. The mean temperature was above 51½° at Truro, Plymouth, Cambridge, and Sunderland, and below 49½° at Bristol, Leicester, Wolverhampton, and Sheffield.

Rain.—Rain fell on every day in the week at Leicester, Hull, and Bradford, and on five or six days at most other places. The heaviest falls were at Nottingham, 1 inch. Leicester, 0.95 inch, and Wolverhampton, 0.91 inch; and the least falls were at Sunderland, 0.17 inch, and Brighton, 0.27 inch; the average fall over the country was 0.65 inch.

The weather during the week was generally dull and cold, with frequent rain.

Scotland: *Temperature.* — During the week ending Saturday, June 5, the highest temperatures of the air observed by day varied from 72½° at Edinburgh to 63½° at Aberdeen; the mean value from all places was 69¾°. The lowest temperatures of the air observed by night varied from 39° at both Aberdeen and Perth to 42° at Leith; the general mean from all stations was 40¼°. The mean range of temperature in the week from all places was 29¼°.

The mean temperature of the air for the week from all stations was 52½°, being 3¼° higher than the value for the corresponding week in 1879. The highest was at Dundee, 53½°, and the lowest at Aberdeen, 50½°.

Rain.—The amounts of rain measured varied from 0.60 inch at Greenock, and 0.56 inch at Perth, to 0.10 inch at Aberdeen. The average fall over the country was 0.35 inch.

Dublin.—The highest temperature of the air was 66½°, the lowest 37½°, the extreme range 29°, the mean 52¾°, and the fall of rain 0.68 inch.

JAMES GLAISHER, F.R.S.

Publications Received:—*Dyrkningaof Artiskok i Danmark*, ved Tyghe Rothe. *Afplukning og almindelig Opbevaring af Traefrugt i Haverne*, ved Tyghe Rothe. Copenhagen; Hoffensberg & Traps.

Enquiries.

He that questioneth much shall learn much.—Bacon.

Garden Walks. — What is the best material for making garden walks, combining cheapness and durability? *A. B.*

Puddling the Sides of a Pond.—I have a pond in a leaky state, and wish to gain some practical information as to the best and cheapest manner by which the sides and bottom could be rendered water-tight. Will some one who has had experience in pond work be so good as to describe the best system of puddling to adopt in such a case? *Urania.*

Scale on Plum Trees.—Three years since I found my wall Plum Trees infested by a brown bug or scale about the size of a split Pea, soft and pulpy at first, and afterwards becoming dried up. It was accompanied by an oblong diaphanous white scale, about $\frac{1}{16}$th of an inch long—whether the same "beast" in another stage I know not, as I am not entomological. The first year I handpicked (and a dirty job it was); next year I removed trees from wall, and washed them and it with Gishurst Compound; this year I removed the trees from wall (a good brick one), filled up all nail-holes, and syringed wall and trees with a cream of hot lime. Wall and trees are still a brilliant white, yet the nasty beasts are as numerous as ever. What must I try next? *Perth.*

Answers to Correspondents.

Azaleas: *J. F. M.* The practice you mention is followed by the Ghent nurserymen with their stock plants, but their summers are warmer than ours, and consequently the necessary stimulus and subsequent ripening off are secured. It would not succeed here except in exceptionally warm seasons. Besides, as we understand, the plants in the case alluded to are planted out—not merely stood out. They should have a gentle stimulus to excite growth and ripen up the buds, and may then be set out for a short period in a moderately sheltered place, so as to give them rest, with advantage.

Books: *J. F. C.* Paxton's *Botanical Dictionary* (Bradbury & Co.). The price is 25*s.*

Celery: *J. C.* Your Celery leaves are attacked by the maggot of the Celery Fly, which was very troublesome last year, and has already commenced its attacks this season. The only remedies are to crush the maggot by pressing it between the fingers before it becomes too abundant, or to pick off the affected leaves and burn them. Instant action is necessary. The attack has nothing to do with the seeds.

Cyclamens: *W. C.* We do not know anything about "planting out" Cyclamens in the way you refer to, and cannot recommend the practice. The best plan of culture is to sow afresh every year, to grow on the plants freely without any break in their development, and to throw the exhausted ones away, or, if larger plants are required, to shift them on for the second year's bloom. The utmost care should be taken to prevent greenfly from settling upon them.

Corrigendum—M. Jean Verschaffelt. — We are pleased to be able to correct an error into which we fell when speaking of M. Nuytens Verschaffelt in our last issue. M. Jean Verschaffelt is still alive and well, though much afflicted at the loss of his adopted son. May it be long before we have occasion to speak in the past tense of M. Jean Verschaffelt.

Edelweiss: *R. T.* It has appeared at some of the shows this year, but is nevertheless rare.

Indiarubber Plant: *R. T.* With care to avoid over-watering, you might strike the Ficus elastica in a greenhouse during the hot summer months. If your plant has outgrown your convenience, why not try to induce the top to root by cutting away a ring of the bark and tying some damp moss around it, or cutting it half-through, and fixing a pot or box of earth for it to root into while still attached to the parent?

Insects: *I. H., Jamaica.* The beetles you have sent, which you found boring into your young Mahogany trees, are two of the largest species of the wood-boring genus Apate, A. muricatus and terebrans. They are natives of Africa, as well as of the West Indies. In the larva state they are white, fat, fleshy grubs, which generally lie in a semicircular position feeding in the trunks of the trees. One of the smaller species, Apate capricana (figured, with its history, in an early volume of the *Gardeners' Chronicle*), bores into the Oak, and occasionally does much injury in our dockyards. *I. O. W.*

Names of Plants: *W. P., Epping.* Rosa Lawrenceana, fl.-pl.—*D. P.* 1, Centaurea montana; 2, Hesperis matronalis; 3, Claytonia alsinoides.—*G. S.* 1, Habenaria chlorantha; 2, Thalictrum flavum; 3, Polystichum capense; 4, Cephalotaxus Fortunei; 5, Pleopeltis Billardieri; 6, Alchemilla alpina. — *W. Adams.* 1, Oncidium Harrisonianum; 2, unnamable without flowers; 3, Lycaste aromatica var. retusa.—*Fitz.* 1, Paris quadrifolia; 2, Listera ovata; 3, Poterium sanguisorba. — *T. F., Kidderminster.* Alonsoa incisæfolia.—*J. W.* 1, Veronica chamædrys; 2, Saxifraga granulata flore-pleno.—*Connon & Reid.* Erysimum ochroleucum.—*J. Lodge, Mill Hill.* Polygonum bistorta.—*Francis C.* 2, Saxifraga Andrewsii; 3, S. Geum; 4, S. umbrosa; 9, S. cuneifolia; 10, S. hypnoides.—*F. Ferguson.* 1, Viburnum opulus; 2, Centaurea nigra; 3, Chærophyllum sylvestre; 4, Barbarea vulgaris.—*W. Roberts.* Lilium pyrenaicum.—*R. L.* 1, too young, perhaps the seedling state of Dicksonia squarrosa; 2, Hypolepis distans; 3, Struthiopteris germanica; 4, Pteris scaberula; 5, Hypolepis tenuifolia; 6, Polystichum capense.—*J. Downie.* Celsia cretica.—*R. A.* It is impossible to name such wretched scraps satisfactorily, besides which you send far beyond our specified limit of six subjects at one time. 1, is probably Asplenium Fabianum; 2, Asplenium bulbiferum; 4, Pteris hastata major; 7, Lastrea dilatata collina; 8, Polystichum angulare proliferum; 13, Onychium japonicum. The tips of miserably-grown fronds are the worst possible specimens to send. — *W. B.* 23. Lycaste aromatica; 24, Maxillaria Harrisonæ; 25, Lælia purpurata; 26, Cypripedium barbatum. We do not recognise the Dendrobium.—*R. L.* 1, Tilia alba; 2, Magnolia acuminata; 3, probably some Gleditschia, but too imperfect; 4, not recognisable.

Orchard-house Trees: *Graizly.* With Peaches trained over the roof nearly to the top, the others, plunged in pots, have but a poor chance of success. Your treatment does not seem to be sufficiently discriminative. You had better get, and carefully read, Mr. Rivers' little book on *Orchard Houses.*

Pachyphyton: *R. T.* The leaves certainly do root, and subsequently form plants; so that we can only say "wait on." Perhaps you have not helped them on by any extra warmth or enclosure.

Communications Received:—G. M.—M. D.—W. C.—H. A.—J. W. & Co.—H. W.—G. W.—E. W. F.—E. B.—C. L.—G. Engelmann.—D. T. F.—W. H.—W. R.—J. H.—T. E.—C. W.—A Novitiate.—T. H.—H. L. & Co.—W. G. K.—J. B.—G. P. S. (enclosure).—W. B.—G. M.—J. M.—J. C. S.—W. G. S.—J. H. P. O.—J. H.—J. B. & Sons.—C. W. D.—J. D. L.—J. Peed & Sons.—W. F.

Markets.

COVENT GARDEN, June 10.

Grapes are selling freely at a slight reduction on last week's prices, and Strawberries have met with a serious decline, some fair samples of outdoor fruit making their appearance. Vegetables, since the recent rain, are in plentiful supply. *James Webber, Wholesale Apple Market.*

Fruit.—Retail Prices.

	s. d. s. d.		s. d. s. d.
Apples, ½-sieve	2 0– 6 0	Grapes, per lb.	1 6– 5 0
— American, barrl.	18 0–30 0	Lemons, per 100	6 0–10 0
Apricots, per box	1 0– 1 9	Melons, each	3 6– 7 0
Cherries, per box	1 6– 2 6	Oranges, per 100	6 0–12 0
Cob Nuts, per lb.	1 0– 1 6	Peaches, per doz.	12 0–18 0
Gooseberries, green, per ½-sieve	4 6– 5 0	Pine-apples, per lb.	1 0– 3 0
		Strawberries, per lb.	3 0– 9 0

Vegetables.—Retail Prices.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, per bundle	1 0– ..	Horse Radish, p. bun.	4 0– ..
— English, p. 100	5 0– 6 0	Lettuces, Cabbage, per doz.	1 0– 2 0
— French, per bun.	3 0– 6 0	Mint, green, bunch	0 4– ..
Beans, French, p. lb.	1 6– ..	Mushrooms, p. baskt.	1 6– 2 0
Beet, per doz.	2 0– 4 0	Onions, per bushel	10 0–12 0
Cabbages, per doz.	1 0– 2 0	— Spring, per bun.	0 6– ..
Carrots, per bunch	0 8– ..	Parsley, per lb.	0 9– ..
— French, per lb.	0 6– ..	Peas, English, per qt.	4 0– ..
— New, per bunch	1 6– ..	— French, per qt.	2 6– ..
Cauliflors, new, each	0 9– ..	Potatos (new), per lb.	0 2– 0 6
— English, each	1 0– ..	Radishes, per bun.	0 2– ..
Celery, per bundle	1 6– 2 0	Rhubarb (Leeds), per bundle	0 4– 0 9
Chilis, per 100	3 0– ..	Small salading, pun.	0 4– ..
Cucumbers, per doz.	8 0–12 0	Spinach, per bushel	2 6– ..
Endive, per 2 doz.	1 6– 3 0	Tomatos, per dozen	4 0– 6 0
Garlic, per lb.	1 0– ..	Turnips, new, bunch	1 0– 1 6
Herbs, per bunch	0 2– 0 4		

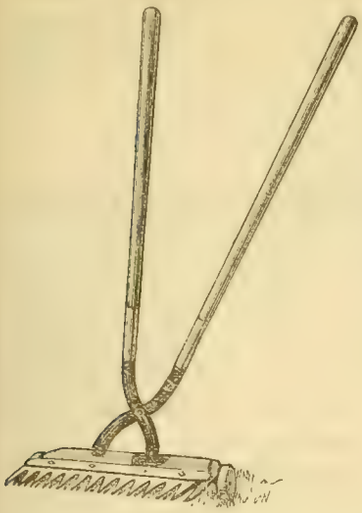
New Potatos:—Jersey Kidney, 16*s.* to 18*s.* per cwt.; Round 11*s.* to 12*s.*; French Round, 11*s.* to 12*s.*

Plants in Pots.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Hydrangea, per doz.	12 0–24 0
Bedding Plants, various, per doz.	1 6– 2 6	Lilium eximium, doz.	30 0–60 0
Begonias, per doz.	6 0–18 0	Lobelia, per dozen	4 0– 8 0
Bouvardias, per doz.	12 0–24 0	Mignonette, per doz.	5 0– 9 0
Calceolaria, per doz.	6 0–12 0	Musk, per dozen	2 6– 6 0
— Herbaceous, doz.	6 0– 9 0	Myrtles, per doz.	6 0–12 0
Cinerarias, per doz.	6 0–12 0	Nasturtiums, dozen	4 0– 6 0
Cyperus, per dozen	4 0– 9 0	Palms in variety, each	2 6–21 0
Dracæna terminalis	30 0–60 0	Pelargoniums, dozen	9 0–24 0
— viridis, per doz.	12 0–24 0	— Ivy-leaved, doz.	4 0– 8 0
Erica various, per dozen	12 0–30 0	— Tricolor	4 0–12 0
Euonymus, various, per dozen	6 0–18 0	— scarlet, per doz.	4 0– 9 0
Ferns, in var., doz.	4 0–18 0	Roses, Hybrid Perpetual, per doz.	18 0–36 0
Ficus elasticus, each	1 6– 7 6	— Fancy, per dozen	6 0–10 0
Foliage Plants, various each	2 0–10 6	Spiræa, per doz.	6 0–18 0
Fuchsias, per dozen	9 0–15 0	— palmata, doz.	18 0–30 0
		Stocks, per dozen	4 0– 8 0

Cut Flowers.—Wholesale Prices.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Pansies, 12 bunches	2 0– 6 0
Anemone, 12 bun.	3 0– 6 0	Pelargoniums, 12 sprays	0 6– 1 0
Arum Lilies, per dozen	3 0– 6 0	— zonal, 12 sprays	0 3– 0 9
Azalea, 12 sprays	0 6– 1 0	Pinks, white, 12 bun.	3 0– 9 0
Bouvardias, per bun.	1 0– 4 0	Polyanthus, 12 bun.	1 6– 4 0
Calceolaria, p. bunch	0 9– 1 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	Ranunculus, p. doz.	4 0– 8 0
Cornflower, per doz.	6 0– 9 0	Roses (indoor), doz.	1 0– 9 0
Eucharis, per doz.	4 0– 6 0	— Roses, Fr., doz.	2 0– 6 0
Forget-me-not, 12 bunches	3 0– 9 0	Spiræa, 12 sprays	0 6– 1 0
Gardenias, 12 blms.	2 0– 8 0	Stephanotis, 12 spr.	3 0– 6 0
Heliotropes, 12 sp.	0 6– 1 0	Tropæolum, 12 bun.	1 0– 3 0
Lily of the Valley, per bunch	1 6– 2 6	Tuberoses, per dozen	2 0– 4 0
Mignonette, 12 bun.	6 0– 9 0	Wallflowers	4 0– 9 0



NEW PATENT GRASS-CUTTERS

(PATRONISED BY THE BOARD OF WORKS).

W. CLARK, 232, Oxford Street, London, W.,

Begs to call public attention to a Patent Grass-Cutter he has just invented for use in the Garden and Farm, based upon the principle of the well-known "Clark's" Horse-clipping Machine, and which is, by its lightness of construction and rapidity of action, far preferable to the existing implements in use, and supplies a want long felt by every one who possesses a garden, namely, an instrument which will mow grass where inaccessible to the lawn mower, trim grass plot edges, clip Ivy and other creepers, also shrubs and trees, and keep in order Box borders and fancy Trees, &c.; all which this ingenious little instrument is capable of doing.

It is made in three sizes, to cut in breadth 8 inches, 12 inches, and 16 inches respectively; and is so easy in working, and at the same time so effective, that even ladies can work it without feeling fatigued, there being no occasion to stoop on account of the long wooden handles attached to the machine, and a greater quantity of work can be done in a given time than by any other method.

This invention is also applicable for Farm purposes—Reaping Corn and other Crops, Clover, Rye, &c., equally as well as accomplishing the objects for which it is required in the garden; and the cost being so small in proportion to the saving in time and quality of finish effected, it is placed within the reach of all, and needs but a trial to prove its superiority.

PRICES.

The 8-inch Machine, complete with Rollers and Tray	21*s.*
Ditto, without Rollers and Tray	18*s.*
The 12-inch Machine, complete with Rollers and Tray	28*s.*
Ditto, without Rollers and Tray	24*s.*
The 16-inch Machine, complete with Rollers and Tray	38*s.*
Ditto, without Rollers and Tray	33*s.*

To be obtained of all Ironmongers, Horticultural and Agricultural Implement Manufacturers throughout the Kingdom, and of the Patentee,

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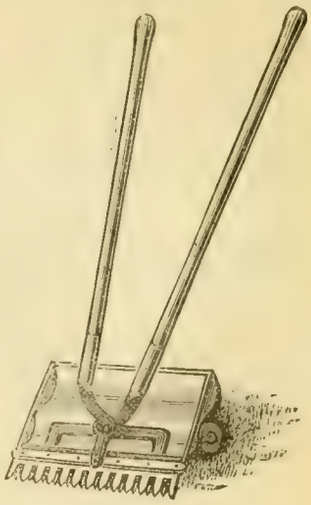

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SIMPLE, EFFECTIVE, EASY TO WORK.

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25 Gallons	6 5 0
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12 Gallons, with Registered Spreader	£3 15 0
16 Gallons, with Registered Spreader	4 0 0
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If with larger Pump, as attached to No. 200.

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NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1*s.* per yard; ¼-inch mesh, 4 yards wide, 1*s.* 6*d.* per yard.
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STRONG, 30 yards by 4 yards, 10*s.*; 24 yards by 8 yards, 16*s.*; 30 yards by 12 yards, £1 10*s.*
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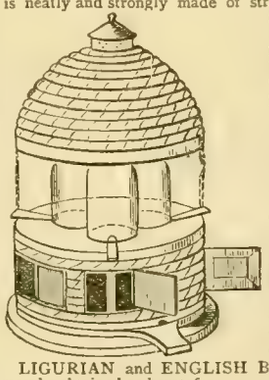

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"*Piercefield Park, June* 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Piercefield Park, Chepstow.—I am, Sirs, yours respectfully, Wm. Cox."

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H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

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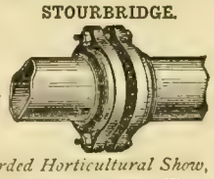

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X PIPES.—PIPES.—PIPES. X
The Cheapest House in the Trade for
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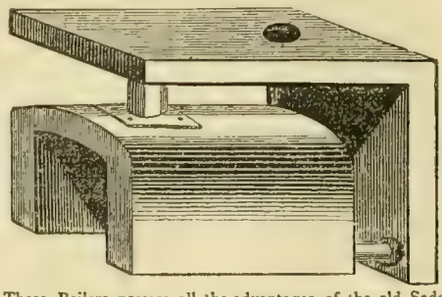
SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1000	16	0	0
24 ,,	24 ,,	48 ,,	1400	20	0	0
28 ,,	28 ,,	60 ,,	1800	25	0	0

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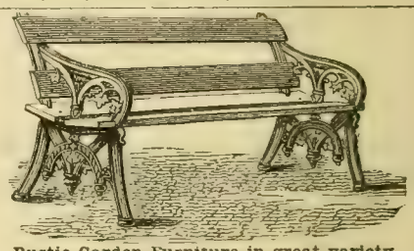

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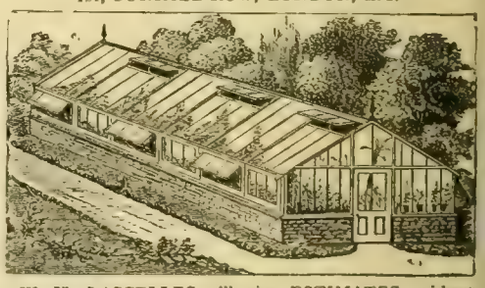

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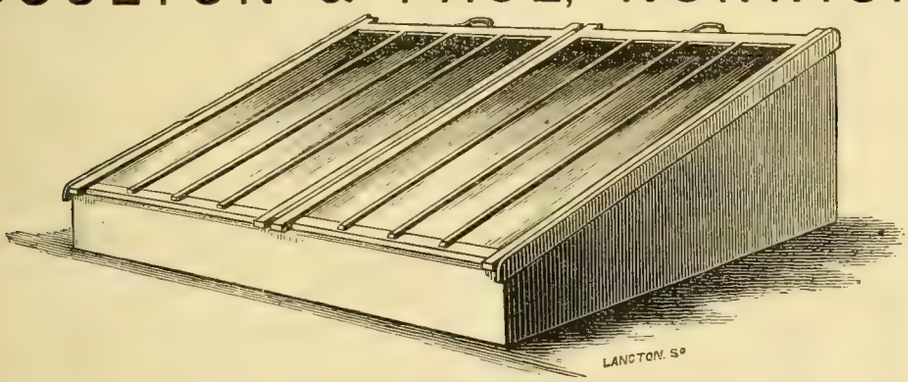

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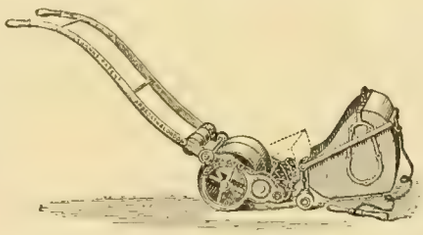

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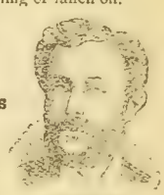

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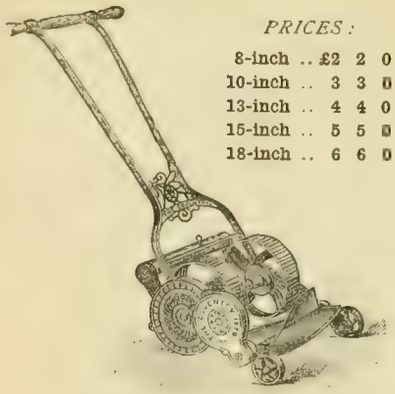

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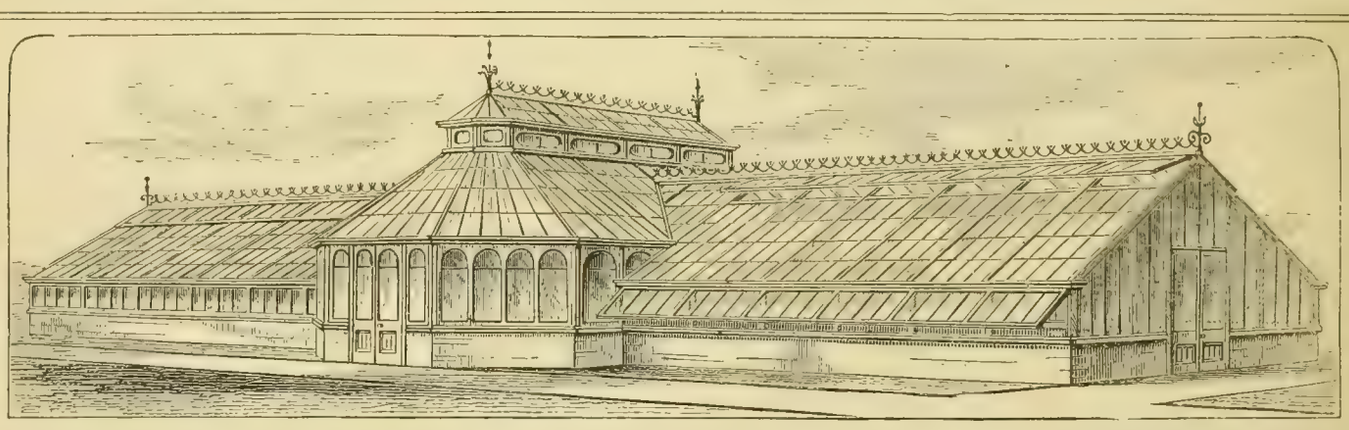

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THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 338.—Vol. XIII. { New Series. } SATURDAY, JUNE 19, 1880. { Registered at the General Post-office as a Newspaper. } Price 5d. { Post Free, 5½d.

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SELECT INDEX OF PLANTS.

The Publisher of the "Gardeners' Chronicle" recommends Subscribers who wish to have extra Copies of the Numbers containing the "Select Index of Plants from 1841 to the end of 1878," to secure them at once.

The following is a List of those already published:—

1879.—October 11.	1879.—Dec. 13.	1880.—Mar 20, 27.
,, .. 25.	1880.—January 10.	April 3.
Nov. .. 8.	,, .. 24.	May 8, 29.
,, 15, 29	Feb. 7, 21.	June 19.

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IMPORTANT NOTICE.—Advertisers are cautioned against having Letters addressed to INITIALS, or to FICTITIOUS NAMES, at Post-offices, as Letters so addressed are not taken in, but are sent at once to the Returned Letter Office.

ROYAL HORTICULTURAL SOCIETY, South Kensington, S.W.
NOTICE.—COMMITTEES' MEETINGS. Fruit and Floral at 11 A.M., Scientific at 1 o'Clock—Ordinary Meeting for Election of Fellows at 3 P.M., and Band of Royal Horse Guards at 4 o'Clock, on TUESDAY NEXT, June 22. Admission, 1s.

ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, S.W.
GREAT ROSE SHOW and EXHIBITION by the Pelargonium Society, TUESDAY, June 29. Band of the Royal Horse Guards (Blue). Doors open at 1 o'clock. Admission, 2s. 6d., or by Tickets purchased before the day by Fellows, 2s. Tickets at the usual Agents, and at the Office and Entrances of the Garden.
N.B.—The SPECIAL PRIZES offered by Messrs. John Laing & Co., for Begonias; Messrs James Carter & Co., Messrs. Sutton & Sons, and Messrs. Webb & Sons, for Vegetables; and Messrs. Webber & Co. for Fruit, will be competed for at this Show.
Schedules and full particulars on application at the Secretary's Office, South Kensington, S.W.

ALEXANDRA PALACE, Muswell Hill, N.
The GREAT ROSE SHOW will be held in the Central Hall, SATURDAY, July 10. ENTRIES CLOSE—SATURDAY, July 3. Schedule of Prizes, Rules, &c., may be had on application to Mr. J. S. COOKE, Sec.
Alexandra Palace, London, N.

FARNINGHAM ROSE and HORTICULTURAL SOCIETY.—The ANNUAL EXHIBITION will be held at Farningham, on WEDNESDAY, June 30. Entries close June 25. Schedules may be obtained on application to
Farningham. F. BURNSIDE, Esq., Hon. Sec.

THE WIRRAL ROSE SOCIETY will hold their ANNUAL EXHIBITION of CUT ROSES in Birkenhead Park, on July 24, when Prizes to the value of over £100 will be offered. Schedules and further information may be obtained from the Honorary Secretary,
J. SMITH, Woodhey, Rock Ferry, Cheshire.

CARTER'S GREAT EXHIBITION of FLOWERING and ORNAMENTAL FOLIAGED ANNUALS will be ON VIEW DAILY, in the Long Corridor of the Royal Botanic Society's Gardens, Regent's Park, N.W., and continue until further notice. Great display of 25,000 pots.
N.B.—The Exhibition is expected to be at its best from June 25 to 30.
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E. COOLING, Mile Ash Nurseries, Derby.

To the Trade.
CALCEOLARIA and PANSY SEED, our own saving, from the finest strains. Price on application to
DOWNIE AND LAIRD, 17, Frederick Street, Edinburgh.

Orchids.
THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.
Lion Walk, Colchester.

To the Trade.
DAHLIAS—40,000, in 400 varieties, now ready. CATALOGUE and Price on application to KELWAY AND SON, Langport, Somerset.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit.
CARTERS, the Queen's Seedsmen, High Holborn, London.

Myosotis elegantissima.
The new Silver-edged, Blue-flowered Forget-me-not.
RODGER, McCLELLAND AND CO. are now sending out this superb Novelty for the Spring Garden. Good plants 3s 6d. each, 36s. per dozen. Can be sent by post. 64, Hill Street, Newry.

Now is the Best Time to Transplant Hollies.
HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d. to 31s. 6d. each. Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HEREFORD. (Established 1785.)
Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

To the Trade and Amateur Rosarians.
NEW ROSES in POTS. TEA and NOISETTE ROSES in Pots.—One of the most extensive, most select, and perhaps the most thriving stock of young plants in the country.
Special LIST will be sent gratis and post-free to applicants.
EWING AND CO., Eaton, near Norwich.

BEDDING CLEMATIS, mixed colours.—A great bargain is offered in very fine plants—25 for 20s., 50 for 30s., 100 for 50s., package included. Cash with order. A magnificent stock of CLEMATIS LANUGINOSA on offer. CHARLES NOBLE, Bagshot.

J. GRANT AND CO., COMMISSION AGENTS, 33, Catherine Street, Covent Garden, W.C., receive all kinds of FRUIT, FLOWERS, VEGETABLES, PLANTS, BULBS, SEEDS, &c., for immediate SALE. Cash remitted same day as sold.

To Nurserymen, Florists, and others Cultivating MARKET PRODUCE.
SALE of SAME UNDERTAKEN, at moderate Commission, by
WISE AND RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

EXHIBITION PLANTS.—The Advertiser, who is giving up Exhibiting, wishes to EXCHANGE his COLLECTION of SPECIMEN PLANTS for ORCHIDS of equal value. For full particulars, apply to
HEAD GARDENER, Aelybryn, Llanelly, Carmarthenshire.

WANTED, MARÉCHAL NIEL and RED ROSES, GARDENIAS, STEPHANOTIS, and CARNATIONS. Letters and Consignments to
W. CALE, 4, Tavistock Row, Covent Garden, W.C.

WANTED, a Large Quantity of ROSE BUDS and MAIDENHAIR FERNS, for NEXT TUESDAY. State lowest price to
G. W. JUBB, Beech Grove Gardens, College Road, Leeds.

WANTED, rooted CUTTINGS of TREE CARNATIONS, named sorts. Send List and lowest price to
FLORIST, 41, Wellington Street, Strand, London, W.C.

WANTED, TREE FERNS, large enough to walk under. State lowest price.
ALPHA, *Gardeners' Chronicle* Office, W.C.

WANTED, some extra strong plants of PAMPAS GRASS, for immediate planting; also a fruiting plant of PSIDIUM CATTLEYANUM (GUAVA). Apply, with prices and particulars, to
BELL AND SON, 10 and 11, Exchange Street, Norwich.

WANTED, DRACÆNA TERMINALIS, saleable plants, or plants for cutting up. State cash price (or Exchange).—W. HOWARD, Southgate, N.

SUTTON'S PAMPHLET on Laying Down and Improving LAWNS, CROQUET GROUNDS, and CRICKET GROUNDS.
May be had gratis, post-free, of
SUTTON AND SONS, The Queen's Seedsmen, Reading.

Gardenias.
MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

NEW PALMS, CAMELLIAS, and AZALEAS.
JACQUES COENE, St. Pierre-Alost Nursery, Ghent.

Seeds—Seeds—Seeds.
WM. CUTBUSH AND SON draw special attention to their Choice Stocks of the above. For description, see CATALOGUE, post-free on application.—Highgate, London, N.; and Barnet, Herts.

DOWNIE AND LAIRD, Edinburgh, are now EXHIBITING a Grand Strain of CALCEOLARIAS in their Winter Garden, West Coates. They have also, in FULL FLOWER, over 40,000 PANSIES and VIOLAS, at their Pinkhill Nursery. Inspection invited.

THE BEST of the New GERANIUMS and the New Tuberous BEGONIAS, in cuttings, very cheap. Denny's, Postans', and Pearson's new GERANIUMS (1879), 24 varieties for 8s., older varieties, but all new recently, 50 varieties for 4s. Aquantity of the New Tuberous BEGONIAS, in cuttings, cheap. All post-free. CATALOGUES on application
RICHARD PANNETT, Nurseryman, Chailey, Sussex.

Stocks and Asters.
MESSRS. BIDDLES AND CO. are offering fine plants of the above, best varieties, at 6d per score, carriage paid.
The PENNY PACKET SEED COMPANY, Loughborough.

Rhododendrons
JOHN WATERER AND SON'S Exhibition of the above Plants is NOW ON VIEW daily, in the Gardens of Cadogan Place, Sloane Street, S.W.

FOR SALE, Two fine ALOES, about 5 feet high. Enquire of
Mr. E. COOKE, Statham Hall, Statham, Norwich.

Pyrethrums, Double-flowered, in Pots.
ROBERT PARKER begs to announce that he can supply the above-named, by the dozen, hundred, or thousand, in nearly 100 named varieties, from 9s. per dozen upwards. Descriptive LISTS, with New General CATALOGUE of Hardy Greenhouse and Stove Plants, forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

To the Trade.
YELLOW and WHITE BANKSIAN ROSES, good, in 4½-inch pots, 75s. per 100; MABEL MORRISON, REINE MARIE HENRIETTA, 12s. per dozen; MARÉCHAL NIEL, extra size, in 7-inch pots, 24s. per dozen.
GEORGE COOLING, The Nurseries, Bath.

Primulas — Primulas — Primulas.
Eleventh Year of Distribution.
WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100; package and carriage free.
CINERARIAS, choicest assortment, same size and price.
The above are quite equal to those I have sent out in previous years. Cash with order.
JOHN STEVENS, The Nurseries, Coventry.

Illustrated Catalogue of Ferns.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

Vines for Present Planting.
JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.
CATALOGUES free. The Trade supplied.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

To the Trade.
ENGLISH SOWING RAPE SEED and WHITE MUSTARD.
H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application.
Seed Growing Establishment, Wisbech.

SALES BY AUCTION.

Brentwood.

To FLORISTS and OTHERS.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, at the "White Hart" Hotel, Brentwood, on THURSDAY Evening next, June 24, at half-past 6 o'Clock precisely, the Detached FREEHOLD RESIDENCE and SHOP, with the Garden and several Greenhouses in the rear, now in the occupation of Mr. Mann; also the GOODWILL of the old-established Business of a Nurseryman and Florist, which has been carried on upon the Premises for many years past. Possession will be given on completion of the purchase. Stock optional.

Particulars and Plans may be had at the Auctioneers' Offices, 98, Gracechurch Street, E.C., and Leytonstone, E.

Cattleya Mossiæ.

MR. J. C. STEVENS has received instructions from Mr. F. Sander, St. Albans, to SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, June 24, at half-past 12 o'Clock precisely, a grand importation of CATTLEYA MOSSIÆ, in splendid masses, and in finest possible condition, well furnished with green leaves, breaks, and plump eyes. Owing to its ever-varying character, its easy culture, and fine habit, this splendid Cattleya is undoubtedly one of the very best.

May be viewed the morning of Sale, and Catalogues had.

Importation from Borneo, Received Direct.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, on THURSDAY, June 24, at half-past 12 o'Clock precisely, SACCOLABIUM HARRISONI, fine semi-established plants; AERIDES AFFINE ROSEUM, VANDA LAMELLATA, about 500 plants of CYPRIPEDIUM NIVEUM, a new ANÆCTOCHILUS, with green leaf; 6 cases of PHALÆNOPSIS GRANDIFLORA, about 1000 plants; also about 200 lots of ESTABLISHED ORCHIDS, &c.

May be viewed the morning of Sale, and Catalogues had.

The "Moat," Eltham, Kent.

MR. J. C. STEVENS has received instructions from the Executors of the late — Mills, Esq., to SELL by AUCTION, on the Premises, as above, on SATURDAY, June 26, at half-past 12 o'Clock precisely, a small Collection of ESTABLISHED ORCHIDS, including most of the known varieties, a very fine specimen of ANTHURIUM SCHERZERIANUM, STOVE and GREENHOUSE LANTS, FERNS, &c.

May be viewed the day prior and morning of Sale. Catalogues had on the Premises, and of the Auctioneer, 38, King Street, Covent Garden, London, W.C.

City of Ely, Cambridgeshire.

MESSRS. BIDWELL will SELL by AUCTION, at the Reading Room, Ely, on WEDNESDAY, June 23, at 2 o'Clock punctually, in 22 or more lots, by direction of the Executors of the late Mrs. Sherard, VALUABLE FREEHOLD and COPYHOLD ESTATES, situate in the parishes of Ely Trinity and Ely St. Mary, containing in all 151a. 0r. 23p. of Accommodation, Pasture and Arable Land, close to the City, and the exceedingly valuable property known as "The Vineyards," in the occupation of Mr. T. Pashler, comprising 14a. 1r. 21p. of most fertile and productive Garden Ground, in a high state of cultivation, planted with a choice selection of Apple, Pear, Plum and other Trees in full profit and bearing; a large portion of the ground is also well planted with Gooseberry and Currant Bushes, also about 3 acres of Asparagus Beds. Along the West and North boundaries are high Garden Walls for a distance of about 950 feet, facing East and South, well covered with Wall Fruit Trees, and a substantially built Residence, with Lawn and Pleasure Garden, which stands very pleasantly and commands "The Vineyards," with necessary Offices, Fruit House and Stable.

Particulars, with Plans and Conditions of Sale, may be had at the "Lion" Hotel, Cambridge; the "George" Hotel, Huntingdon; "Great Northern" Hotel, Peterborough; the "Estate Exchange," Tokenhouse Yard, London, E.C.; of E. C. SHERARD, Esq., Solicitor, Oundle, Northamptonshire; and of Messrs. BIDWELL, Land Agents and Surveyors, Ely, and 12, Mill Lane, Cambridge.

WANTED to RENT, a GARDEN with some GLASS on it, within 10 miles of London, suitable for Growing Fruit, Flowers, &c., for market; or a COTTAGE and PIECE of LAND, not less than 1 acre or more than 5 acres, suitable for same purpose. Suitable offers gladly received by GARDENER, 10, Little Chester Street, Belgrave Square, S.W.

FOR SALE, the LEASE of an old-established NURSERY, in the North of London; about 9000 feet of Glass, with first-class Home Trade and Jobbing Connection. Cottage, long Lease, and every convenience, with immediate possession. Apply,

1, Hanley Road West, Upper Holloway, London, N.

Thousand-Head Kale.

S. BIDE can supply, from a fine Stock, Strong Plants of Thousand-Head KALE (invaluable to Farmers for Sheep feed). Also Sutton's Early Drumhead, Enfield Market, Early Battersea, Improved Nonpareil, and Savoy CABBAGE PLANTS, at 4s. per 1000, free on rail, and package free for cash with order, to

S. BIDE, Alma Nursery, Farnham, Surrey.

New Coleus, Petunias, and Fuchsias of 1879 and 1880.

THE EXECUTORS of H. WALTON beg to offer the following NEW COLEUS of 1880:—Duchess of Teck, Empress of Germany, James Barnshaw, Juno, Lovely, Royal Purple, and Sensation, 1s. each. New Varieties of 1879:—Aurora, Butterfly, Firefly, Glow, Magic, and Sparkler, 8d. each, strong, well rooted plants; the thirteen varieties, 10s.

New Double Fringed PETUNIAS of 1880. These have been selected with great care from an extensive collection, and can be confidently recommended as being a great advance on anything hitherto offered. Strong, well-rooted plants, 2s. 6d. each, 24s per dozen varieties, post-free.

New Double Fringed PETUNIAS of 1879, 1s. each, 9s. per dozen varieties.

New FUCHSIAS, 1879 and 1878, very choice sorts, 9d each, all post-free, for cash with order.

A fine collection of BEGONIAS, Tuberous-rooted and Ornamental-leaved, Half Specimen ERICAS, &c., the best exhibition varieties.

For descriptions of the above see CATALOGUE, sent post-free, on application.

Edge End Nursery, Brierfield, near Burnley.

"Special Reduced Offer."

Extra Fine Spring-sown CABBAGE and other Plants, &c.

GEE'S superior Bedfordshire-grown Plants, &c., grown from his far-famed selected stocks, can now be supplied in any quantities, as follows, for cash with orders:—

CABBAGE PLANTS.—Early Enfield, Nonpareil, Large Drumhead and Thousand-head. SAVOY.—Large Drumhead, and Dwarf Green Curled. SCOTCH KALE, BRUSSELS SPROUTS, finest. KOHL RABI.—Large Green. All the foregoing at 3s. per 1000.

BROCCOLI.—Purple Sprouting, Adams' Early White, Knight's Protecting, and Wilcoves' Large Late White, 5s. p. 1000.

CAULIFLOWER.—Veitch's Giant, true, 7s. 6d. per 1000; Early London and Walcheren, 5s.

LETTUCE.—Old Brown Cos, Victoria, Drumhead, and Paris Green Cos, all at 5s. per 1000.

Packages charged lowest prices, which can be returned, and full price allowed. For quality and price, F. GEE will defy the competition of any grower in England.

F. GEE, Seed and Plant Grower, Biggleswade, Beds.

Hyacinths, Tulips, &c.

BUDDENBORG BROS., Bulb Growers, House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application.

Veitch's Autumn Giant Cauliflower.

FOR SALE, a large quantity of Veitch's AUTUMN GIANT CAULIFLOWER, BRUSSELS SPROUTS, SAVOYS and SCOTCH KALE. Apply,

JOSIAH H. BATH, 1 and 3, York Street, Borough Market, London, S.E.

STRONG SPRING SOWN PLANTS.—Varieties for succession: Cauliflowers, Broccoli, Brussels Sprouts, Savoy, Kale, Cabbage, Red Pickling Cabbage, Lettuce, &c. Best kinds at very low prices, in any quantities.

Mr. EDWARD LEIGH, Norcote Farm, near Guildford.

PLANTS of GIANT SAVOYS, fit for Market or Feed; BRUSSELS SPROUTS, and KOHL RABI, strong, 2s. 6d per 1000, wholesale.

B. SLOCOCK, Upton Court Farm, Slough, Bucks.

CHRYSANTHEMUM, "FAIR MAID of GUERNSEY."

The best and latest white.

Strong plants, in 60-pots, 12s. per 100.

G. FISCHER, Rose Nursery, High Street, Clapham, S.W.

MESSRS. BECKWITH AND SON can now supply a few thousands of PELARGONIUMS in all the best late varieties, just bursting into bloom, at 75s. per 100. Packing free.—Tottenham Nursery, London.

GERANIUMS. — 20,000 good Bedding Geraniums, including many good varieties, 15s. and 18s per 100; New White Vesuvius, 20s. per 100. Special prices for large quantities. For Dahlias, Lobelias, Alternantheras, Centaureas, Chrysanthemums, Echeverias, and Fuchsias, &c., see CATALOGUE, free on application.

GEO. GUMMOW, 114, Loughborough Road, Brixton, S.W.

KOHL RABI and ROBINSON'S CHAMPION DRUMHEAD CABBAGE PLANTS.—5,000,000, selected, price 2s. per 1000, in quantities to suit purchasers, by sending Post-office Orders. Apply,

W. COLVIN, Money Bridge Gardens, Pinchbeck, Spalding.

POLYSTICHUM LONCHITIS (the Holly Fern), 500 good plants, 7s per dozen; 45s. per 100. ASPLENIUM VIRIDE, ALLOSORUS CRISPUS, and SCOLOPENDRIUM VULGARE, at 16s. per 100.

Cash with order.

J. B. YOUNG, Landscape Gardener, Bridge of Allan.

Begonias.

JOHN LAING AND CO.'S unrivalled Gold Medal Collection is now in bloom. Inspection invited. Young plants, free by post, 4s. and 6s. per dozen. The "coming flower" for Conservatory, Window Decoration, and Bedding-out. LISTS free on application.

The Nurseries, Forest Hill, London, S.E.

LEEKS.—Several thousands for Sale, strong healthy plants, for planting out immediately. Apply to WILLIAM GODDARD, Mrs. Forward, Blue Ball Yard, St. James's Street, London, W.

Special Offer to Clear Out of

GERANIUMS, CALCEOLARIAS (crimson and yellow), IRESINE BRILLIANTISSIMA, LOBELIA, PERILLA NANKINENSIS, PYRETHRUM, ASTERS, PETUNIAS, and choice VIOLAS, at per dozen, 100, or 1000.

WANTED, a pair of large plants of White CACTUS (in bloom preferred); would EXCHANGE GREENHOUSE PLANTS, or pay cash.

T. L. MAYOS, Nurseryman, Hereford.

ALTERNANTHERAS, COLEUS, and other CARPET BEDDING PLANTS, at clearance prices.

ALTERNANTHERAS, of sorts, very good, 10s. per 100.
COLEUS, Verschaffeltii, very good, 12s. per 100.
MESEMBRYANTHEMUM, cordifolium, very good, 8s. per 100.
" " variegatum, 10s. per 100.
GERANIUM, Vesuvius, spring struck, in 60's, 14s. per 100.
" Ivy-leaved, strong plants, of sorts, 16s. per 100.
" Silver-edged, strong plants, of sorts, 18s. per 100.
Pink VERBENAS, 10s., HELIOTROPES, 10s., AGERATUMS, 8s., HOLLYHOCKS, 20s., per 100, &c.

WOOD AND INGRAM, The Nurseries, Huntingdon and St. Neots.

Cabbage Plants—Cabbage Plants.

W. VIRGO can now supply in any quantity good strong well rooted spring-sown plants of the following:—Robinson's Champion Drumhead Cabbage, Early Oxheart, Early Enfield Market, Wheeler's Imperial, and Drumhead Savoy. All at 4s. per 1000. Also Broccoli, Cauliflower, Brussels Sprouts, Winter Kales, Green Curled Savoy and Early Cabbage. The above in any quantity at 6s. per 1000, made up of different kinds. Cash or reference from unknown correspondents. Delivered free on rail.

Wonersh Nurseries, near Guildford, Surrey.

SPIRÆA ULMARIA VARIEGATA.—Beautiful golden variegated foliage (see the *Garden*, of June 12, 1880, p. 513).

Messrs. BUDDENBORG BROS., Hillegom, near Haarlem, Holland, offer fine plants of the above at 20s. per 100.

LEE and BLACKHEATH HORTICULTURAL SOCIETY.

President: JOHN PENN, Esq.

The ANNUAL SUMMER EXHIBITION will, by kind permission, be held in the grounds of Mrs. Penn, The Cedars, Lee, on WEDNESDAY and THURSDAY, June 23 and 24. All particulars may be obtained of the Secretary,

Mr. C. HELMER, 5, Boones Road, Lee, S.E.

CANTERBURY and EAST KENT ROSE SOCIETY.

The ANNUAL EXHIBITION of ROSES will be held in the Corn Exchange, Canterbury, on THURSDAY, July 1, 1880.

OPEN CLASSES.

CLASS 8.—NURSERYMEN ONLY.

	1st Prize.	2d Prize.	3d Prize.
Thirty-six varieties, any kinds ..	£8 0 0	£5 0 0	£3 0 0

CLASS 9.—AMATEURS AND NURSERYMEN.

Twelve Teas and Noisettes ..	£3 0 0	£2 0 0	£1 0 0

CLASS 10.—AMATEURS ONLY.

Twenty-four varieties, any kinds	£5 0 0	£3 0 0	£2 0 0

CLASS 11.—AMATEURS ONLY.

Twelve varieties, any kinds ..	£2 2 0	£1 1 0	£0 10 6

The Prizes in this Class are given by Messrs. Kinnmot & Kidd, of Canterbury, and will be paid in Rose Trees to be selected by the winners from Messrs. K. & K.'s Catalogue, and will be delivered package and carriage free.

Entries close Monday, June 28. Schedules of the

HON. SEC., 2, Palace Street, Canterbury.

THE TORQUAY HORTICULTURAL SOCIETY.

The ROSE and TABLE DECORATION SHOW of the above Society will be held in the Bath Saloon, Torquay, on JULY 9. Prizes for Roses amount to over £100; for Table Decorations and Bouquets to over £25. Entries close July 2. Schedules on application to

W. FANE TUCKER, Capt., Hon. Sec. T.H.S.

Braddon Tor, Torquay.

CARLISLE and BORDER COUNTIES HORTICULTURAL SOCIETY'S EXHIBITION.—JULY 13 to 16. Same time and adjoining Royal Agricultura Exhibition. Entries close for Dinner-table Decoration, June 26; other Exhibits, June 28.

GEO. EDMONDSON, Sec.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.

The PROVINCIAL EXHIBITION of the NATIONAL ROSE SOCIETY will be held in the above Society's Gardens, Old Trafford, on SATURDAY, July 17. Open from 12 o'Clock at noon till 7 P.M. Admission 1s. For Schedules apply to the undersigned,

BRUCE FINDLAY.

Royal Botanic Gardens, Manchester.

LUDLOW ROSE SHOW.—The ANNUAL EXHIBITION of ROSES will be held at the Assembly Rooms, Ludlow, on WEDNESDAY, July 14. Liberal Open Prizes will be given to Nurserymen, Amateurs and Cottagers. Schedules of Prizes and Regulations may be obtained from the

Rev. V. T. T. ORGILL, Hon. Sec.

Ludlow.

THE ROYAL SOUTHAMPTON HORTICULTURAL SOCIETY.—JULY 31 and AUGUST 2. THREE HUNDRED POUNDS in PRIZES, including the following:—12 Stove or Greenhouse Plants, £20, £15, £10; 6 Dishes of Fruit, distinct, £5 5s., £3, £2, £1. Free to Subscribers of not less than 5s. Schedules of

C. S. FUIDGE, Secretary.

Exhibition of Rhododendrons, Royal Botanic Gardens,

Regent's Park, N.W.

ANTHONY WATERER'S EXHIBITION of RHODODENDRONS in these Gardens is NOW ON VIEW daily. Admission may be obtained by Orders of Fellows, or from the Exhibitor,

ANTHONY WATERER, Knap Hill Nursery, Woking, Surrey.

☞ The fine Standard and other Rhododendrons and Azaleas in Rotten Row, Hyde Park, are from Anthony Waterer.

TO EXHIBITORS.—Several Specimen ERICAS, best kinds; ANTHURIUM SCHERZERIANUM, two, 3 feet across; IXORAS, PHÆNOCOMA PROLIFERA BARNESII, &c. For sizes, particulars, and price, which is low,

W. JACKSON, Blakedown, Kidderminster.

ENFIELD MARKET CABBAGE. 7 Acres for Sale: 5 minutes from Baldock Station, G.N.R. Apply, WM. SALE, Baldock.

To the Seed Trade.

W. CROWDER, The Thimbleby Nurseries, Horncastle, has still on hand some of his selected GREEN GLOBE TURNIP, also WHITE GLOBE and LINCOLNSHIRE RED, which he will offer on reasonable terms.

BARLEY.—Seventy quarters of MALTING for Sale, nearly new. Close to a station in a first-rate Barley district.—Mr. TOMLINSON, Asgarby, Sleaford.

ALTERNANTHERA AMABILIS and PARONYCHIOIDES, SEDUM GLAUCUM, strong, all at 5s. per 100, cash.—W. ROWE, Sawston, Cambs.

CABBAGE PLANTS, Champion Ox, 2s. per 1000.

BROCCOLI, Perkins' Champion, 5s. per 1000.
BRUSSELS SPROUTS, Scrymger and Covent Garden, 3s. per 1000.
SAVOY and KALE, in variety, 2s. 6d. per 1000.

All strong plants, for cash.

THOS. PERKINS AND SONS, 34, Drapery, Northampton.

DR. DENNY'S Zonal PELARGONIUMS. "SEVENTH SET."—Consists of 8 splendid and distinct varieties, all of which were staged in the First Prize-taking Exhibits of the Pelargonium Society's Show of 1879. Five of the varieties were also awarded First-class Certificates of Merit.

DR. DENNY'S "SIXTH SET" can now be supplied at 12s. per dozen, good plants. For particulars and CATALOGUES, apply to

JOHN BALAAM, The Vine Nursery, Downs Road, Lower Clapton, E.

CHRYSANTHEMUM ETOILE D'OR.

A splendid Conservatory Plant, blooming profusely all the year; flowers excellent for cutting.

Equally adapted for Bedding in the Flower Garden in Summer.

Now being sent out, 24s. and 36s. per dozen, strong plants, in flower and bud.

W. HOWARD,

FLORIST, SOUTHGATE, LONDON, N.

Orders to be accompanied by a Cheque or Post-office Order.

NEW ENGLISH ROSES for 1880.

WM. PAUL & SON

(SUCCESSORS TO THE LATE A. PAUL AND SON—ESTABLISHED 1806),

PAUL'S NURSERIES, WALTHAM CROSS, HERTS,

BEG TO OFFER

The following NEW ROSES, strong plants, 7s. 6d. and 10s. 6d. each:—

MASTERPIECE (H.P.)—Magnificent bright rosy-crimson blooms; large, full, and of perfect globular shape. A seedling from "Beauty of Waltham." Growth vigorous, habit good, and foliage fine.

"Probably the finest Rose of the year."—*Gardeners' Magazine.*
"A very full rosy-pink flower, of excellent form."—*Gardeners' Chronicle.*

CROWN PRINCE (H.P.)—Flowers bright purple, centres shaded with lurid crimson, very large and double, petals fine; excellent growth and habit. A most effective garden Rose, yielding large quantities of fine flowers, either for decoration or cutting, of a colour very scarce amongst Roses of its quality.

"Crown Prince, also raised at Waltham, claims special attention."—*Gardeners' Magazine.*

LITTLE GEM (Moss).—A miniature Moss Rose, which may be described as a crimson Mossy de Meaux. It forms compact bushes densely covered with small, double, crimson flowers, beautifully mossed. It is of charming effect in the garden, and most valuable for bouquets or vases.

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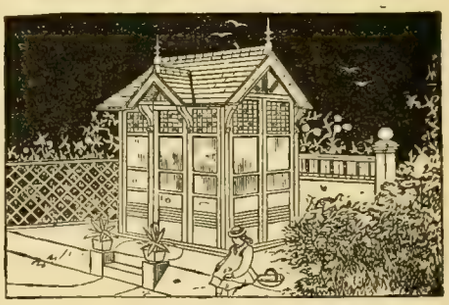

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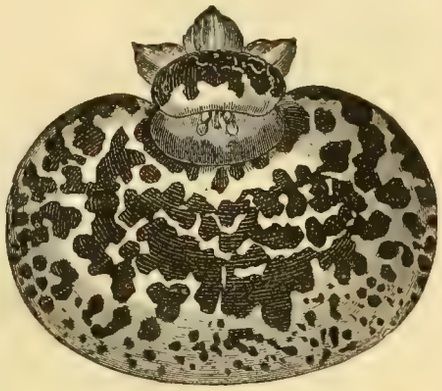
AURICULA, Show, finest mixed	1	
AURICULA, Alpine	1	0
CARNATIONS, finest mixed	1	6
CALCEOLARIA, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d. and	1	6



From Mr. R. CAMPBELL, *Utica, U.S.A., July* 28, 1879.
"Sir,—I may state that the Calceolarias and Cinerarias, from seed imported from you, turned out more than what I expected of them. I may say that each flower was perfect, and not a poor or inferior one to be found."

CINERARIA, Weatherill's Extra Choice Strain, 5s., 3s. 6d., 2s. 6d. and	1	6
CYCLAMEN PERSICUM, Brilliant (New) 5s. and	3	6
CYCLAMEN PERSICUM GIGANTEUM, 5s., 3s. 6d. &	2	6
CYCLAMEN PERSICUM GIGANTEUM RUBRUM (New) 5s. and	3	6
CYCLAMEN PERSICUM, Williams' Superb Strain, 5s., 3s. 6d., 2s. 6d., and	1	6
PANSY, English Show 2s. 6d. and	1	0
PANSY, Belgian or Fancy 2s. 6d. and	1	0

From Mr. A. ANDERSON, *Gardener to* His Grace the Duke of Grafton, *Wakefield Lodge, March* 24, 1880.
"Sir,—I have had some very fine Primulas this winter from your seed. I enclose some blooms, which are nearly 3 inches across.

PRIMULA SINENSIS FIMBRIATA COCCINEA (New) 5s., 3s. 6d., and	2	6
PRIMULA SINENSIS FIMBRIATA, Williams' Superb Strain, Red, White, or Mixed, 5s., 3s. 6d., 2s. 6d. &	1	6
POLYANTHUS, Wiggins' Prize Strain	1	0
PICOTEES, finest Mixed	1	6

Illustrated Seed, also New Plant Catalogues, now ready, post-free.

VICTORIA AND PARADISE NURSERIES,
UPPER HOLLOWAY, LONDON, N.

THE
Gardeners' Chronicle.
SATURDAY, JUNE 19, 1880.

EASTWELL PARK.

TWO adjoining parishes lie east and west of some springs of water, or, as the Saxons called them, "wells"—one of these is now called Eastwell, the other Westwell. Eastwell Park lies on the left side of the valley of the Stour between Ashford and Canterbury, and by running down the slopes into the river valley it has embraced within its limits some fertile land for Oak, as well as some Beeches on the higher ground. An old author said of the wooded hills above Eastwell that they are much addicted to chalk! The chalk of the Down is reported by geologists 1000 feet in depth.

In the valley we have mentioned there are three parks side by side—Chilham, Godmersham, and Eastwell, the last named being a park of 1600 acres, and by far the noblest in the county of Kent. A writer on deer parks mentions this one among several others. Tatton, he says, belonging to Lord Egerton, is the largest deer park in England; Eridge, the property of Lord Abergavenny, is the oldest; and the Earl of Winchelsea's at Eastwell, the most varied in surface and in scenery. By the addition of timber to any of the slopes and jutting promontories of the South or North Downs, you may have a park of smooth turf and noble outline, such as Arundel, Goodwood, Eastwell, and others in the same formation. The loftiest landmark in Eastwell Park is an octagonal knoll, flat at top, and covered thick with trees, through which eight avenues, named the Star Walks, radiate from the centre to the outside and open a wide view, or series of views, including the course of the Medway to Sheerness, the Nore light-ship, and the coast of Kent from the North Foreland to Romney Marsh, with, on clear days, the shores of France in the distance.

Eastwell has always been a famous park for deer, and the fattest bucks in Kent were those which used to be selected here and carefully fed in small lots, in paddocks set apart for the purpose. About sixty deer were annually caught for the purpose of fattening, and Lord Winchelsea has himself described the process in these words:—"To catch deer artistically two dogs are required, one to each side. When the keeper has pointed out the deer he wishes to be taken up, a horseman rides into the herd in order to separate him from the others. This operation requires a horse well in hand and well on his haunches, so as to turn quickly as the deer turns. The dogs must also be well trained and under perfect command; they are loose and follow the keeper's horse. As soon as the deer is singled out he lays them on by giving the signal—'Hold him up.' This may be done with steady dogs, even if a few does should break away with the buck, as the dogs will take no notice of them, but stick to the male deer."

The hunted bucks of Eastwell were generally brought to bay within a mile. They were "pinioned" by the Earl's trained dogs, that is,

fastened and held by the ear, and the ear only, till the arrival of the first horseman, who, on dismounting, caught hold of the buck's hind legs below the houghs and flung him on his side or back, in which position he is easily held down even by one man.

There was no park here previous to the year 1550. In that year, at the age of eighty-one, in a small cottage, subsequently enclosed by the park fence, died Richard Plantagenet, luckless son of Richard III. The hut was a house of his own building, erected by permission of the proprietor of Eastwell Place, on his seeking refuge here after the battle of Bosworth. It stood in a field near the mansion, and here its builder died, and against the entry of his burial in the parish register is the letter "V." which denoted that the deceased was a person of noble birth. The entry is "V. Richard Plantagenet, Desembur 22d, 1555." The hut was pulled down by Heneage, Earl of Winchelsea, who died 1689.

The ancient family of Finch obtained Eastwell by marriage with the heiress of Sir Thomas Moyle, who granted Richard Plantagenet ground and materials for his hut. Sir Moyle Finch of this family was one of the first of the then new order of baronets, who died in 1614, after forming the park and enlarging the house. His widow was created Viscountess Maidstone, in her own right, by James I., and Countess of Winchelsea, by Charles I., and she must be regarded as the founder of the house of Winchelsea. Her son succeeded, and after breaks and jolts through failure of heirs male, and much tossings of the fortunes of the house, almost to the point of foundering sometimes, the titles of the Earls of Winchelsea and Nottingham still survive. Eastwell Park is now the residence of the Duke of Edinburgh; and a description of the gardens, with figures, appeared in a former volume.

New Garden Plants.

Patemannia Wallisii, *Rchb. f.*

Two magnificent flowers of this, coming very near the great sketch prepared by Señor Roezl, are at hand. The lateral sepals are nearly one decimeter in length, and are rather broad. They are light greenish-yellow outside, olive-green to horse-chestnut brown inside, with some yellow at the base surrounding a few large brown areas; the petals have scarlet stripes at the very base, but, excepting this, they are coloured like the sepals. Bristles of callus greenish. Lip blade greenish with a brownish hue at the anterior part. Column white, the keel on its back, top, and the wings, and the base of the part under the fovea, are of a fresh and light green.

Whether or not the plant is a species in our sense I am a little doubtful. I called it formerly B. Burtii var. Wallisii. My actual reason for considering it now as a separate species is simply the total absence of any warts on the interior of the sepals and petals, and the curious tendency to lengthen the sepals. Then this species reaches an enormous length. The rhizome runs upwards to the height of 40 feet, according to my friend F. C. Lehmann's observations, who likewise declares it very distinct.

I had never seen good fresh flowers; so that I feel the more grateful to Messrs. Veitch for a double supply of excellent materials. *H. G. Rchb. f.*

Cattleya Mardellii, *Rchb. f.*

A glorious two-flowered inflorescence at hand shows the indications of a third flower, so that this proves an extraordinary beauty. It was sent me by Messrs. Veitch. *H. G. Rchb. f.*

Bulbophyllum iners, *n. sp.**

This is a gracious little thing, having a brownish bulb, from ½—¾ inch high, one-leaved. Leaf cuneate, ligulate, blunt, acute, green above, purple beneath, very thick, up to 3 inches long, ¾ wide. A slender red peduncle bears a nodding umbel of small white flowers, which have very unequal sepals, the lateral ones extending, and thus resembling the Cirrhopetalums. It stands near B. radiatum and psychoon and oligoglossum. There can be little doubt of its being of Assamese origin. I have to thank for it Mr. Bull, who has usually mercy on such tiny little creatures, allowing them light and room for flowering. It is no commercial plant of course. *H. G. Rchb. f.*

* *Bulbophyllum iners*, n. sp.—Aff. B. radiato, oligoglosso et psychoon: pseudobulbis pyriformibus; foliis cuneato ligulatis acutiusculis crassis, superne viridulis, inferne purpureis; pedunculo gracilento apice nutante, subumbellifero corymboso; bracteis linearibus acutis; ovaria pedicellata subæquantibus; sepalis trinerviis, lateralibus ligulatis attenuatis acutis extensis, quam sepalum impar triangulum longioribus; tepalis triangulis trinerviis bene brevioribus; labello cordato triangulo; columna apice tridentato. *H. G. Rchb. f.*

MR. HARDY'S ORCHIDS.

There are certain localities in the kingdom that become famed for particular descriptions of plants which are there cultivated more extensively than elsewhere. In this way Manchester has earned a reputation or the numerous and valuable collections of Orchids that from time to time by so many individuals have been formed in the neighbourhood. Many suppose that bringing together a comprehensive assemblage of Orchids is simply a question of money, but although they cost more than most plants, still to possess a really good collection, or, what is much more preferable, a selection of the most meritorious, requires time and judgment. Nothing is more common with people when first they take a liking to these fascinating plants, than to buy everything that is new, rare, and dear, without ever taking a common-sense view of the matter, which would suggest the desirability of confining the selection to such representatives of the respective genera as produce flowers possessing a combination of colour and form that would commend them to any real lover of flowers generally, be they Orchids or others.

If this latter course had been followed, many who form collections would not so often find themselves in possession of plants which, when they cease to be new, have nothing to render them worthy of notice. Forty years ago, when the known species of Orchids stood in the proportion of not more than one to a score of what they are at the present day, there was some semblance of reason in buying a plant simply on account of its being a new species, but it is not so now. Not by any means that singularity of form or habit should be set down for nothing—the elegant drooping racemes of Dendrochilum filiforme will always make the plant deserving of a place in even the most select company in spite of its unattractive greenish-yellow colour. The same holds good of a few other kinds, but those poor washy Dendrobiums, Cypripediums, Epidendrums, and Odontoglossums bearing flowers that are a combination of dirty white, yellow, and rusty brown, are simply so much objectionable company amongst the many grand species with which they are associated.

Mr. Hardy, of Timporley, appears to have steered

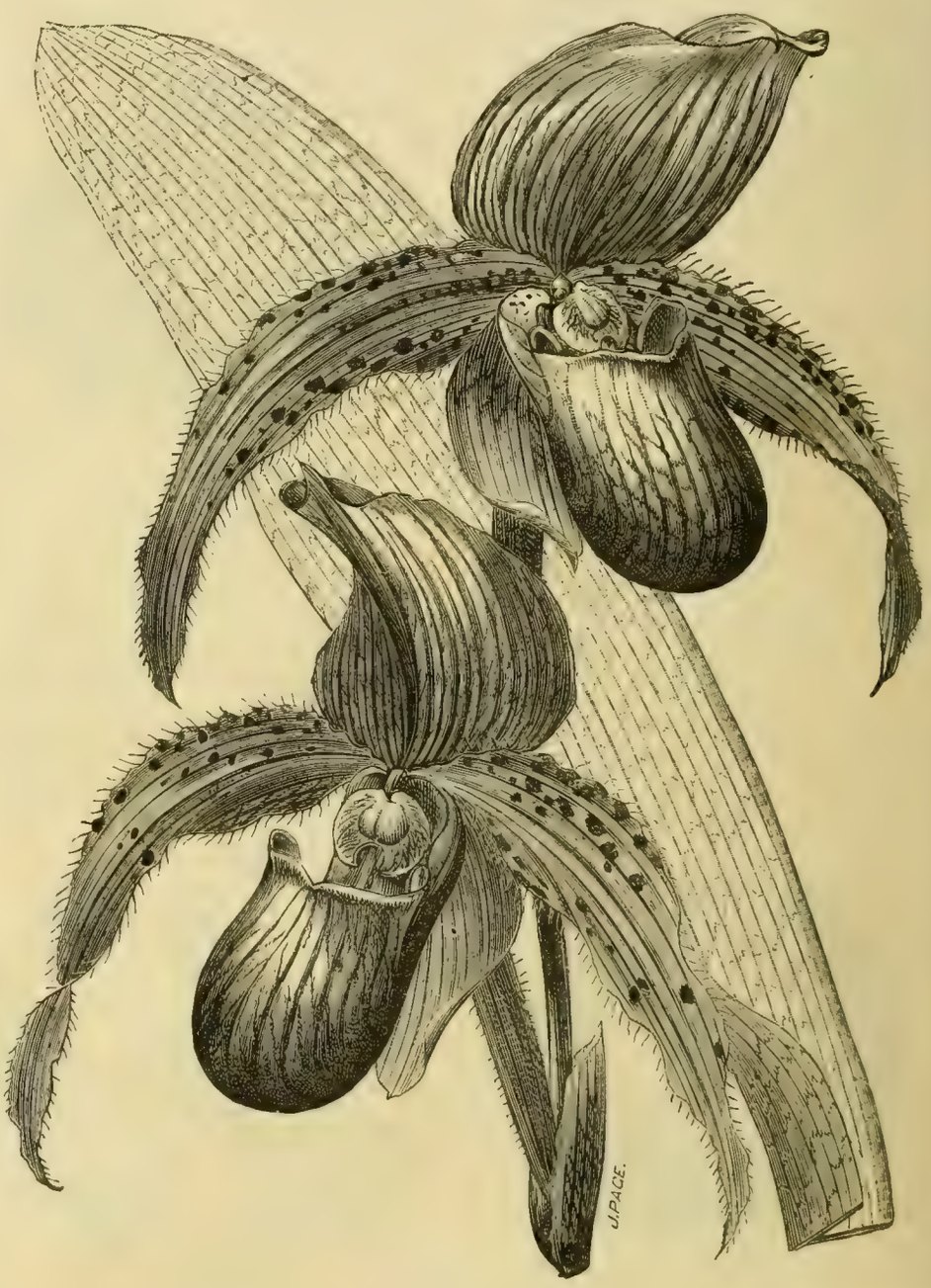


Fig. 133.—Cypripedium selligerum. (see p. 780.)

clear of the above mistake, for the collection, although its formation was only commenced about four years ago, contains a large number of most of the best species in cultivation, with very few of the worthless varieties. This was fully evident at the last Manchester Whitsuntide exhibition, where Mr. Hardy took the 1st prize easily in the principal class for fifteen plants—a more than ordinary performance when it is taken into account that he was competing in a locality where there exists such a wealth of Orchids in the possession of those who are practised hands at both growing and exhibiting.

Fig. 134.—Cypripedium lawrenceanum. (see p. 780.)

Those kinds which thrive in a cool and intermediate temperature constitute the greater portion of the collection. The following are a few of the most noticeable plants. Amongst the now numerous representatives of the most intensely coloured of all Orchids, the Masdevallias, is a grand plant of the very large flowered highly coloured M. sanguinea; a fitting companion to the above is M. violacea, an extra form of M. Lindeni, the singular M. bella and M. Benedicta, a very large-bloomed form of M. ignea, and an equally large-flowered, highly tinted variety of M. Harryana. These, in addition to the different species to which they are allied, were in bloom, and exhibited the variation which this handsome group of Orchids affords—two examples especially, M. Veitchii and M. Harryana, were in grand condition, bearing some forty flowers each. There were also one or two new kinds, not in flower, described as bearing immense blooms.

Odontoglossums are represented by numbers of plants of all the best species, many of which were in flower. O. vexillarium, O. cirrosum, with eleven large spikes; O. Cervantesi, one large example of which, half a yard across, was a complete carpet of flowers: of this beautiful free-flowering genus there are good specimens of O. Rossii majus, O. Dawsonianum, O. Hallii, O. triumphans, O. nebulosum, O. roseum, O. Roezlii by the score, and several hundred O. Alexandræ.

Amongst Cattleyas there were some twenty-five distinct varieties of C. Mossiæ, one in particular, C. Hardyana, which may be described as having a labellum as finely coloured as that of C. Warneri, and twice the size; C. Reineckiana, C. Wagneri, C. Ruckeriana, six or eight examples of C. exoniensis, one with immense broad leaves and large bulbs; C. Warneri, C. gigas, different forms of C. labiata, C. Dawsoni, C. Schilleriana, C. maxima, C. Mendelli, C. Trianæ, and others; all the best Lælias, a couple of very fine specimens of Anguloa Clowesii, and A. uniflora.

In Dendrobiums was the handsome D. thyrsiflorum, bearing sixteen fine racemes of bloom; D. devonianum and D. crassinode, D. suavissimum, D. infundibulum, D. cucullatum giganteum, D. Falconeri, D. lituiflorum, D. Ainsworthii, both varieties; Angræcum Ellisii, A. sesquipedale, Grammatophyllum Ellisii, Vanda Denisoniana, V. cœrulescens, V. lamellata. These are a few out of the many fine plants in the Timperley collection, where, in addition to those already named in flower, there was also blooming Aerides Warneri, A. Fieldingi, A. virens, A. crispum, Cypripedium Stonei, C. caudatum, C. lævigatum, C. Lowii, C. niveum; Vanda insignis; Cattleya Warneri, C. citrina, C. Mendelli; Lælia cinnabarina, L. grandis; Dendrobium crepidatum, D. Findleyanum; Lycaste Skinneri, several fine varieties; Cypripedium villosum, C. barbatum; Restrepia antennifera, Odontoglossum phalænopsis, O. gloriosum, O. citrosmum roseum; Oncidium Reichenbachii, and O. Marshallianum.

A word about the houses in which the plants are grown: they are span-roofed, wider than generally employed in Orchid culture, substantial, the stages iron and slate covered with spar, and resting on this, but elevated above the surface, trelliswork, on which the plants are stood. The plants collectively are in rude health, the Cattleyas and kindred species exhibiting the peculiar bronzy tinge at the edge of the leaves indicative of abundant light and enough air, with an absence of the coddling which produces soft, flabby, overgrown leaves that do not last. The construction of the houses is such as to afford all the light possible, in addition to their standing away from anything that can lessen the amount of light; the shading is movable, fixed on rollers in the ordinary way; the material used is no thicker than requisite to break the force of the sun. Mr. Hill, the gardener here, is not, I believe, a very old hand at Orchid growing, but he has every reason to be satisfied with the plants under his charge. There are a good many houses devoted to the cultivation of other plants and to fruit—Grapes in particular, which are very promising. All the houses are unusually well built, and the general keeping of the place is a model of neatness and order. *T. Baines.*

DAFFODIL AND AFFODIL.

The Daffodils of the garden, of which so much has been, and remains to be written, are not Daffodils, but Narcissi. Daffodils proper are Asphodels, and Asphodels are [in a broad sense] Lilies. The Daffodils of the garden are Amaryllids, and between these and Lilyworts there is a world of difference. The etymology of Daffodil has become complicated through the mixing in the mind of two tribes of plants, and the result is that both the Asphodel and the Narcissus have been called Daffodils. The flower of Ovid (*Met.* iii.) was wholly or partly yellow. The Narcissus poeticus, now regarded as the flower of remembrance, has a purple or sanguineous girdle, encompassing a yellowish or orange cup. In other sections of the Narciss family yellow is the predominant colour. The history of the word Daffodil suggests that by modern usage it is altogether misapplied, and we are perhaps not wholly without means of determining when the transference or expansion took place. The Greek ἀσφόδελος refers doubtless to such a flower as we should call Asphodel, and not to any kind of Narcissus. It is by no means certain that νάρκισσος refers to a Narcissus, for it may as well mean Poison-ivy or headache-provoking Cistus. Richardson derives Daffodil from F. *aspodille* and *des asphodilles*, Cotgrave from Asphodill, and Skeat (*Etymological Dictionary*, 1879) from F. *fleur d'affrodille.* The last-named author recognises two difficulties in the initial *d* and the subsequent *r*. In respect of the first he suggests that it is "prefixed much in the same way as the *t* in Ted for Edward . . . it is just possible that it is a contraction from the F. *fleur d'affrodille.*" In respect of the second he says, "The French have inserted *r*, which is no real part of the word, and is a mere corruption. It is clear that the E. word was borrowed from the French before this *r* was inserted." Cotgrave (1632) gives it both with and without the *r*.

There can be no doubt whatever that the *d* in Daffodil is an escape or survival of the preposition in *d'affrodille.* There can also, I think, be no doubt

that the *r* has crept in through some peculiarity of penmanship, which has led the printer astray, or is a perpetuated blunder of the printer himself. And further, it seems probable that the term was restricted to the Asphodel down to about the end of the fifteenth century or later, the Narcissus having since then acquired its name of Daffodil. In "*De Historia Stirpium Commentarii insignes*, Leonharto Fuchsio medico autore, Lvgdvni, 1547," under "De Asphodelo," p. 138, we read that the Greek and Latin, "Officinis corrupta voce Affodilius, Germanis Goldwurtz (Gallice, Haste Royall) nominatur." The Haste royall is the Hastula regia of Dodoens, Gerard, Parkinson, and others. It is the King's Spear, or Asphodel. This term is never applied to a Narciss. Moreover it cannot be, because the Narcissi produce their flowers singly, or in terminal umbels, whereas the Asphodels produce their flowers in a raceme, and this may be likened to a little spear.

In Lyte's translation of Dodoens (1578, pp. 210-12), occur descriptions of four kinds of Narcissi, which are not classed as Daffodils, and in connection with these the term is used once only. In the paragraph devoted to "the names," he says, "These pleasant flowers are called . . . in Englishe Narcissus, white Daffodil, or Primerose pierlesse." As a genus, class, family, or tribe, they are not Daffodils, because they are not Asphodels. At p. 647 is a chapter "Of Affodyll," beginning "There be three kindes of Affodyll," and descriptions of three species of Asphodel follow. Under "the names" in this section we read, "This herbe is called in Greke ἀσφόδελος, in Latin Albucus and Hastula regia; in shops Affodilus; in French Hache royale, or Asphodel; of the common Herboristes of Brabant Affodilen. The flower with his stemme is called in Greeke ἀνθέρικος, Anthericos; and in Latine, as Plinie sayth, Albucum; in English also Affodyl, and Daffodyll."

From the older English botanists may be derived the suggestion that the Bog Asphodel (Narthecium ossifragum) may be attached to at least the fringe of the story of Narcissus. It is more of a water plant than the Narcissus of the botanist, and its geographical distribution answers all the requirements of the case. Gerard says it "groweth in moist and marish places," and in Watson's *Compendium of the Cybele Britannica* (p. 335) it is assigned to "Europe all, except Turkey and Finmark." And there is yet another possible claimant in the Spanish Fritillary, which at p. 44 of Parkinson's *Paradisus* is referred to as commonly but erroneously regarded as a Daffodil. He says the misnomer is an "erroure growne strong by custome of continuance." To accommodate the story of Narcissus we need a plant that grows in or near the water, and the Narcissi of the modern botanist, though for the most part partial to water, are insufficiently aquatic in their habits to be properly known either as Narcissi or Daffodils. *Shirley Hibberd, in "Notes and Queries."*

CEYLON SOILS SUITABLE FOR CINCHONA.

At the present time, when the attention of Ceylon planters is so generally directed to the growth of Cinchona, it may be convenient to suggest that the ultimate success will largely depend upon the character of the soil selected. Indeed already some practical men have pointed out in letters to the *Ceylon Observer* that it is not so much altitude as climate and soil that influence the success or failure of the several varieties of Cinchona. Thus Mr. Russell Grant, writing from Harmony estate, Pusselawa, under date of September 19, 1879, states that he has been planting C. succirubra at an elevation of 2000 to 2600 feet for two or three years, and that those planted in 1878 had reached the height of from 7 to 8 feet, and were all healthy and vigorous. On the other hand Mr. P. R. Shand, *Ceylon Observer*, September, 1879, gives his opinion against C. succirubra being grown successfully under 2500 feet. Now it appears only reasonable to allow that the nature of the soil has a most important bearing from the growth of these trees, and capitalists would doubtless be quite prepared to make the necessary advances on a recently planted estate of Cinchona, if it could be practically shown that the local conditions of soil and climate were of a favourable character. It is much to be regretted that the Indian Government authorities at Madras have not published any analyses of the soils of the Nilgiris plantations. This is the more to be regretted because the Ceylon planters have hitherto received so much valuable information from the publication of the official reports made to the Madras Government by the late Mr. McIvor. Strange as it may appear, the planters, although representing the most important element in the European population of Ceylon, have had to look to the Indian authorities for all information respecting Cinchona culture, rather than to their own local representatives of the home authorities. My friend Mr. Robertson, the Government Superintendent of the Madras agricultural stations, informs me that he is not aware that any analysis of Cinchona soil has been officially published, though he believes that the late Mr. Broughton made some prior to his sudden disappearance. It is to be hoped that something will be done in this direction, for to my mind it appears most necessary that before opening up land for such new products some definite details should be ascertained as to the particular kind of soil most suitable, as well as information respecting those descriptions of soil that have been found specially inimical to Cinchona.

I submit that capitalists will very properly require some more definite statement than that of the agent, who reports in general terms that the soil is friable or stiff. During my official tour through the principal Coffee districts of the island in 1877 and 1878, I observed the description of soil in which Cinchona appeared to do best, and from the reports I have since read, the opinion then formed, that a friable soil rich in nitrogenous organic matter was the most desirable for Cinchona, has been fully confirmed. Further, the dying off of Cinchona during the second year, which unfortunately has been too common in some of the districts, must be due to the stiff impervious nature of the subsoil, which does not allow the water to pass off. An accumulation of water causing a natural sourness of soil, seems as injurious to Cinchona as it is to Coffee. The following analysis represents the composition of a stiff impervious clay, which I personally selected during my tour. It occurred in a layer, 2 feet below the surface, and some 3 feet thick, and has been duly described in my official report to the Planters' Association, p. 151, but I think it would be interesting to give the details, with a view of pointing out the kind of soil that should be very emphatically avoided in the selection of new land intended for Cinchona.

Subsoil Injurious to Cinchona (air-dried samples).

Water lost at 212° Fahr.	2.580
*Combined water with a little organic matter	20.220
Oxides of iron and traces of manganese	22.206
Alumina	30.356
Lime	.084
Magnesia	.063
Potash	.077
Soda	.094
Phosphoric acid	Trace
Sulphuric acid, carbonic acid, chlorine, &c.	Not determined.
**Insoluble silicates	24.320
	100.000
*Containing nitrogen	.048
**Yielding on subsequent fusion potash	.482

This analysis shows us a soil containing over 50 per cent. of clay with 30 per cent. of alumina. There is a total absence of quartz crystals, which form so prominent a part in the majority of good Ceylon Coffee soils; moreover, there is a marked poverty in lime, potash, magnesia, and soda.

The insoluble silicates, unlike the insoluble portion of granitic soils, do not yield much potash on subsequent fusion, and in this respect form a striking contrast to the soils presently to be mentioned.

Passing on from the examination of this dangerous subsoil to the consideration of those soils which appear likely to prove suitable to Cinchona, it may be remarked that this is a subject which so far appears to have received little official attention from the agents of the Government; so far as I am aware no analyses of the famous soils of the Hakgala Government Cinchona plantation have been made; and it is not known whether the several proportions of the valuable alkaloids produced from the bark have been systematically determined. Planters naturally look to Government for help and guidance in such matters, and at the present time of short Coffee crops Ceylon planters want all the assistance that can be given them with the aid of a Government chemist and botanist.

Soils naturally rich in decayed vegetable tissues, with a good friable texture and containing the important mineral elements in fair proportions, are those which doubtless abound in the mountain regions of South America, where Cinchona flourishes with such prolific luxuriance. We should therefore make a selection of such land as seems best calculated to supply these natural advantages, and with a stimulating climate and a heavy annual rainfall there is every reasonable prospect that Ceylon will eventually be found admirably adapted to the production of bark rich in quinine. I beg, therefore, to direct attention to certain representative soils taken from different districts, some of which have already proved well suited to Cinchona.

Ceylon Soils Suitable to Cinchona (air-dried samples).

Name of District .. Elevation	Haputale, 4700 ft.	Matale, 4000 to 4250 ft.	Dimbula, 4800 ft.	Dimbula, 3200 ft.
Water lost at 212° F. ..	3.850	3.680	5.950	3.680
*Organic matter and water of combination	8.750	11.860	13.444	8.380
Oxides of iron and some manganese ..	6.798	7.631	9.265	4.530
Alumina	6.502	8.969	12.108	4.993
Lime	.266	.257	.136	.350
Magnesia	.153	.576	.118	.216
Potash	.139	.212	.173	.115
Soda	.020	.003	.075	.062
Phosphoric acid	.185	.140	.099	.147
Sulphuric acid	.062	trace	.097	.003
Carbonic acid and chlorine	*	*	*	*
Pure quartz crystals ..	20.120	29.120	17.197	26.800
**Insoluble silicates ..	53.155	37.552	41.338	50.724
	100.000	100.000	100.000	100.000
*Containing nitrogen ..	.213	.328	.265	.219
**Yielding on subsequent fusion:—				
,, Potash	1.941	1.853	*	1.767
,, Soda	.246	.544	*	.754

If these analyses are carefully compared with that of the stiff clay already recorded, it will be seen where the differences in the composition exist.

Thus the free nature of the soil is very fairly indicated by the presence of quartz crystals, which varies from 17 to 29 per cent., as also by the relative low amount of alumina, the leading constituent of clay. The proportion of alumina in no case exceeds 12 per cent., as compared with 30 per cent. in the former analysis. The oxides of iron do not exceed 9 per cent., as opposed to 22 per cent., and we notice a much higher proportion of potash both in the quantity soluble in acid as well as a form ultimately rendered available by the decomposition of the at present insoluble silicates. Further, there is a relatively high proportion of phosphoric acid, of course not so high as in soil formed from sedimentary geological formations, but high as compared with poor quartz soils or stiff clays.

In the former analysis we could not expect much nitrogen, the clay being a specimen of subsoil taken at a depth of about 1½ to 2 feet below the surface; we cannot therefore compare the high amount of nitrogen which we see is present in these specimens rich in humus with the small quantity found in the clay. The comparison would not be a fair one, being a subsoil, and the others surface ones. We may remark that the percentage of nitrogen will be an important point for consideration in judging of the relative advantages of different samples of soil on new estates.

At a recent meeting of agriculturists held at the Society of Arts, Mr. Pell, M.P., remarked that in the selection of a farm he should inquire very closely into the character of the soil; while Mr. James Howard, M.P., stated that it was very remarkable how few people realised the importance which agricultural success had on the financial condition of a country. It is a melancholy reflection, when riding through an abandoned Coffee estate, to speculate on the number of valuable lives and fortunes that might have been saved had more attention been directed to the selection of really good land among the early pioneers in the hills of Ceylon.

Let us hope that, in the opening up of new land for Cinchona, men will first ascertain what kind of soil is the most suitable for this purpose, and that in order to enable them to gain such information, the Government will render every available assistance. *John Hughes, F.C.S., F.I.C., Analytical Laboratory, 79, Mark Lane.*

The Société Centrale d'Horticulture de France has obtained permission from the French Government to add another adjective to its already long title—that of "Nationale." The new title of the Society will therefore be Société Nationale et Centrale d'Horticulture de France.

* Not determined.

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PLANT GOSSIP.

Cypripediums. — We are indebted to Messrs. Veitch for permission to use illustrations of two hybrid Cypripediums raised in their establishment, and which are of interest scientifically as illustrating practically what in all probability occasionally occurs in Nature. The botanist dealing with native specimens has but few clues to guide him in such a case, but these artificially produced hybrids, by showing what is possible, and in what manner and to what extent variation is possible, may render great service. To be of use for this purpose, however, the process of fertilisation should be carefully and judiciously effected, with a definite object in view, and in all cases the parentage should be exactly recorded. As ornamental plants these hybrids afford a pleasing variety, but in this particular genus we cannot say that the offspring exceed the parent in beauty. The two varieties figured are—

Cypripedium selligerum × (fig. 133) is a very fine hybrid raised from C. barbatum and C. lævigatum, but quite distinct from either. The habit of the plant is bold and massive; the leaves are broader than in C. lævigatum, and show but faintly the markings and mottled appearance of C. barbatum. The scape is erect, and bears two and three flowers larger than those of either parent. The upper sepal is white, with broad blackish-crimson veins; the inferior sepal smaller and whitish. The petals are about 3 inches long, deflexed, with a partial twist, and traversed by crimson veins. The lip or pouch is nearly as in C. barbatum, but much lighter in colour.

Cypripedium vexillarium × (fig. 134) was described in our columns by Professor Reichenbach in 1870, p. 1373. It is a very beautiful and distinct hybrid Lady Slipper, raised at Messrs. Veitch's nursery by Mr. Dominy between C. barbatum and C. Fairieanum, the latter being the pollen parent. It is thus described by Professor Reichenbach:—"The flower is large, the upper sepal whitish, with port-wine coloured veins, washed with purple, a little green at its base, with some transverse ascending nervules; the inferior sepal much shorter, narrower, and more pallid; the petals deflexed, bluntly acute, with hairs around the limb and some warts, and the lip nearly as in C. Fairieanum. Messrs. Veitch remark that the habit of the plant is very dwarf, the large size of the flower very striking, while its distinct and beautiful markings cause it to be universally admired.

Cypripedium Lawrenceanum (fig. 135) is a species discovered by Mr. Burbidge in Borneo, and by him introduced into Messrs, Veitch's establishment. It was described by Professor Reichenbach in our columns in 1878, vol. x., p. 748. From that description we quote the following particulars:—"The leaves have on their upper surface a dark green mosaic on a light green nearly whitish ground. The flower is equal in size to that of C. barbatum majus. The upper sepal is white with purplish shining veins which run to the edge. The petals are narrow, purplish at the top, and with the usual fleshy dark worts on the limb. The lip is very large, purplish-brown above, yellowish below, covered with very numerous worts internally. The staminode is a special ornament." It is, according to Messrs. Veitch, very free blooming, and, whether for its distinctly marked foliage or its fine flowers, it must become a very popular Orchid.

—— Lilium longiflorum as a Market Plant. — Messrs. Beckwith & Sons, of Tottenham, are now sending into the market plants of Lilium longiflorum, growing in 48-sized pots, that are most admirable as examples of successful cultivation. Probably three bulbs are in each pot, and they have thrown up between three, four, and five main shoots, and on these can be counted from seven to ten flowers of large size. The flower-stalks are clothed with green leaves quite down to the base, and nothing more can be desired in the way of health and vigour. That such plants should command a ready sale at good prices is only natural. These Lilies are well adapted for the decoration of the greenhouse at this season of the year, and if well cared for will remain in flower for a considerable period.

—— Lilium umbellatum.—This also makes an excellent market plant; and, being well grown, the stout stems are crowned with large trusses of erect orange-brown flowers. But it does not sell like the white L. longiflorum. There is something peculiarly fascinating about the pearly delicacy of the white flowers that the orange form lacks, and yet it is very useful. The market growers do good work in that they are demonstrating the adaptability of the Lily as a pot plant for general decorative purposes. Hitherto gardeners have confined their attention mainly to L. auratum and the varieties of L. speciosum, but a much wider range is possible.

—— Rhodanthes in Pots. — The mode in which these are grown for market, and the admirable pot plants they make, was dwelt upon in these columns a short time since. The durability of the plants when kept in a house and carefully tended is deserving of record. Plants a month old look as fresh and attractive as when brought from market. It is simply necessary to give them a cool spot, to water sufficiently but not immoderately, and to cleanse the leaves from dust deposits so far as it can be done without injuring them. A good specimen, carefully preserved, has on it from sixty to seventy large flowers growing on some eight or nine plants in a 48-sized pot, and when the foliage shows signs of decay, and becomes unsightly, the flowers will be capable of further service, if they are cut off with stems 4 inches or so in length, tied into bundles, and allowed to hang heads downward till the stems become rigid. They can then be put away till autumn and winter cause flowers to be scarce, and the pretty everlastings will then do good service in the way of decorating vases, &c. R. maculata atrosanguinea, with the dark ring in the centre of the flowers; and the pure white R. alba, are the two best for winter decoration, as they are two largely grown for market.

—— Ivy-leaved Pelargoniums for Conservatory Decoration. — No one visiting the Chiswick gardens at the present moment can fail to be struck with the beauty and fitness of these useful plants for conservatory and house decoration generally. In common with the market growers, Mr. Barron shows what can be done in a 48-sized pot, and, he produces nice and symmetrical plants 2 to 3 feet in height, tied out key-shaped, and loaded with leaves from top to the bottom. These Ivy-leaved Pelargoniums are very free and continuous in bloom, and, as far as the most desirable varieties are concerned, a visit to Chiswick for the purpose of making a selection would be time well spent. In the collection are several varieties of M. Lemoine's raising, to one of which a First-class Certificate of Merit was recently awarded. The new forms are characterised by flowers of large size and of greater depth of colour than has been seen previously. The double varieties are of great value for cutting from.

—— M. Vallerand's Gloxinias. — A French correspondent writes:—"I think the seedlings exhibited in Paris by this gentleman are well worthy of a special notice. They are all good, but to describe them all (over a hundred varieties) would take up too much of your space. I shall, therefore, only refer to the more striking varieties. All the plants shown, without exception, were very vigorous, and had large leaves and large flowers. Few are as yet named, the remainder being only numbered. On the opening day of the Paris show, Saturday, the 5th inst., when the President of the Republic inspected the flowers, his name was given, with his sanction, to one of them, and a second was named after his daughter, who accompanied him. We have, therefore, now a Gloxinia Jules Grévy, and one Mdlle. Grévy. A new large-flowered variety bears a name as well known as that of President Grévy — Baronne Alphonse de Rothschild, a fine pink variety, spotted with a darker shade. Mons. A. Lavallée, lilac, white margin; Charme de Lutèce, spotted pale lilac; Mdlle. Angéline Martin, dark pink, spotted white, and white margin; Feu Eternel, firey red, very bright, with the margin a shade paler; Cornelie, throat spotted lilac, margin lilac; Mons. Fritz Kœchlin, violet spots; Marcel, quite a new style in the way of the spots—petals dark red, spots darker shade, but with a white dot in the centre of the spot; Leopard, same thing, with the exception that it is violet instead of red. It is almost impossible to describe the extraordinary colours and markings of these novelties; a painter only could do justice to them.

—— Asplenium viride in Vermont.—Mr. Hart, King's House, Kingston, writes:—"It may interest your correspondent, Mr. Dod (see p. 469, vol. xiii.), to know, that this Asplenium and A. Trichomanes are both found on this side of the Atlantic—A. viride being found in Vermont, U.S.A., and A. Trichomanes in Jamaica, at an elevation of 4000 feet. As the two species are here considered to be very distinct, it may not be amiss to consider whether the species here found under these names may not differ in some degree, specifically, from those of the Old World, and I for one should be thankful to Mr. Dod for his description of the two species found by him. The following is Grisebach's description, quoted from his *Flora of the British West Indies*, of A. Trichomanes, for comparison:—'Leaf pinnate; leaflets oval, crenate, cuneate, or truncate at the oblique or upward produced base, lowest sub-distant, smaller; rachis scarious-margined, veins few, simple, lower (or most) forked; petiole, black; sori, oblong (or half oval), intermediate beween the margin and the flexuose midrib.' It should be added, that the lower leaflets are sometimes deltoid. Asplenium viride has, on the contrary, leaf pinnate, sometimes alternate, ovate, deeply crenate, cuneate at the base; rachis angular, furrowed on the upper side; petiole, bright green, darkening into brown at the base; sori, oval-oblong, intermediate between the margin and midrib. It will thus be seen that the two differ in a great degree by description, and more so in their general appearance, when the specimens are before us.

—— Lamium longiflorum. — Messrs. Backhouse send us specimens of this plant which has much the aspect of an improved edition of our common purple Dead Nettle. The stalks are rich claret coloured; the stem-leaves are on very long stalks, sub-cordate, ovate-acute, and coarsely crenate. The flowers are purple, and over 1 inch in length. The plant is a native of Southern Europe.

—— Odontoglossum vexillarium.—There is a grand plant of this fine Orchid in splendid flower just now in Dr. Paterson's choice collection at Bridge of Allan, N.B. It was quite a small plant with one bulb when Dr. Paterson got possession of it, about four years ago. It is now a fine plant, in vigorous health, with several large and well matured bulbs, showing that it has received treatment which suits it. One bulb bears four spikes, with twenty-nine blooms upon them. The plant bears fifteen spikes, having no less than 111 blooms in all, and presents such a display of flowers as has seldom or never been seen in cultivation on this beautiful Orchid. The flowers are large in size, of good substance, and of a rich dark colour. It is a sight worth a long journey to see. But to the lover of Orchids there are many other attractive and choice specimens to be seen in Dr. Paterson's collection. A fine branching variety of Aerides Fieldingii is bearing five splendid spikes of flowers, two of which, springing from opposite sides of a stem, measure from tip to tip 32 inches across. Chysis bractescens, just going out of flower, has some wonderful bulbs, measuring some 27 inches in length, by about 9 inches in circumference, with young growing bulbs promising to be even more robust. A small plant of the lovely Phalænopsis Parishii is bearing a profusion of its beautiful porcelain-like flowers. The best varieties of Masdevallias are also growing and flowering freely. Among other noteworthy plants a magnificent specimen of the Elk's-horn Fern, Platycerium grande, is throwing out a vigorous fertile frond, and likely to ripen a good crop of spores. The white-flowered Anthurium Williamsii is also in fine condition, the spathes large and pure white in colour. A grand plant of the best variety of Anthurium Scherzerianum has produced considerably over a hundred flowers this season, and is still in fine bloom. Disa grandiflora is also particularly vigorous and finely flowered.

SUBURBAN GARDENS.

It often makes me sad as I ride through the suburbs of the town where I live, and see, as I constantly do, how very little use is made of the plots of garden ground which are attached to most of the houses by which I pass. The railway on which I daily travel is high above these gardens, and so they are open to mine and every traveller's gaze. I often wish one could do something to teach their owners how to make the best of them. I have wished this so often that I have at length determined to make an attempt. I will try to tell what I have done myself, and others with wider experience may possibly be induced to follow my example. By persistent effort perhaps we may produce an impression, and these neglected plots may in time be brought under decent

cultivation. I also want to tell my experience of growing alpine plants. I have had so much pleasure in their cultivation, they are individually so beautiful and interesting, they are such subjects of admiration to all who see them growing in my garden, that in the hope of being useful to other suburban residents whose gardens, being small and near the dwelling-house, it is a matter of some importance to keep neat and tidy at all seasons of the year, I gladly give the details of my experience and practice.

I live in a road in a pleasant suburb, 3 miles from the centre of a town numbering more than a quarter of a million of inhabitants, and where of course smoke prevails, for besides the chimneys of the miles of houses there are innumerable stacks at many factories large and small, belching forth their black streams unceasingly. My suburb is on the south side of the town, and is less affected by the smoke than those situated on the other sides. I give these particulars, because I want to show that my success is not due to exceptionally favourable situation, though I at the same time acknowlege that I am favourably situated compared with residents in some neighbouring suburbs who get a larger supply of smoke than falls to my lot. My flower garden runs east and west, the house being at the east end. My house is so built, that the part of my garden nearest to the dining-room window is narrowed to about 20 feet wide for a length of 14 yards by the kitchen and other domestic offices; it then opens out to 30 feet wide. On the north side it is bounded by a wall 7 feet high; on the south by another rather lower.

It will thus be seen that the surroundings and circumstances of my garden are similar to those of thousands of others near large towns, where houses are built closely together, and where, land being dear, gardens are limited in extent. The soil is a sandy loam, with a gravelly subsoil running downwards for many feet and overlaying a bed of clay of varying density. I laid out the garden myself, and in doing so went to some expense in making the flower-garden part of my plot as capable of growing most sorts of hardy plants as possible by carting in many loads of the best turfy fibrous loam obtainable in the district. This cost money, but I am convinced that I acted wisely, and the vigorous healthy growth of a rather numerous and widely-diversified collection of the smaller Coniferæ, particularly Retinosporas of eight or nine sorts, Aucubas, deciduous flowering shrubs, many kinds of herbaceous plants, bulbs innumerable, and about a hundred sorts of alpines, are living and truth-telling witnesses to the fact.

FIG. 135.—CYPRIPEDIUM SELLIGERUM. (SEE P. 780.)

A gently winding walk runs from my house past the out-offices, planted on each side by a continuous border varying in width with the wind of the walk. The border on the left is mostly in shade all day long except in the height of summer time, when in the afterpart of the day some pleasant gleams of sunshine brighten it up. The right hand border is fully exposed to the south, except the part nearest the house, which is, of course, shaded by the opposite buildings, save when the sun has a good altitude and has reached the south; so that in the morning it is only a part of the south border which is sunny; the most eastern end is then in shade, but as the day advances the shade gets smaller and smaller, until at last the whole of that border is lit up with sunshine. I give these minute details because my experience has taught me that even what is often regarded as a disadvantage—I mean the nearness of overshadowing buildings—is capable of being turned to advantage if suitable plants are selected to fit into the circumstances of the position and its surroundings.

Supposing my readers to be traversing my little garden by my side, we shall have proceeded along the walk till we have passed the buildings and reached that part where the greatest width of my garden commences. The wind of the walk which inclines southwards then runs parallel to the wall on the south side, leaving a narrow border on the left hand with a due north aspect, which is most valuable to me, and where I raise a large quantity of Pansies from cuttings annually. The left-hand corner at the extreme east is occupied by a fernery, where I have some excellent specimens of common hardy Ferns. A very small grass plot runs from the right of the walk to the edge of the border made beneath the wall on the north side of the garden, and is somewhat Pear-shaped, the stalk end being of course towards the house. This shape is obtained by the border, which curves gently along its length, sweeping right across the lawn, with a nearly semicircular line on the side nearest the house up to within 9 inches of the walk, between which and the border (here about 14 feet wide) a narrow verge of turf runs on continuously, and joins the turf of a small croquet lawn 40 feet long, with straight flower borders on three sides and the walk on the other. I am afraid these details will prove tedious, but I give them because I think they will be found suggestive of how a narrow plot of garden behind a suburban house may be utilised to great advantage and made to appear, as seen from the house, to be very much larger than it really is, giving a sense of openness and extent most exhilarating in its effects, and affording scope, even in a limited area, for the judicious use of a considerable number of plants.

I will here, for the sake of plainness, recapitulate what spaces of border I have for growing plants in. First, then, I have a continuous border of varying width under the wall on the north side of my garden 120 feet long, running alongside the two grass-plots; at 66 feet from my house the border widens to 14 feet, and, as already stated, divides the Pear-shaped lawn and the croquet lawn. At the west end of the croquet lawn is a bed of Roses; beyond this is a plantation of pyramidal fruit trees, forming a background to the flower garden, and shutting off the kitchen garden, which lies beyond, but of which, not coming within the scope of this paper, I need say nothing further. Starting again from the house, I have on my left another border of varying width, almost always in shade, and a narrow north border running the entire length of the two grass-plots I have mentioned. On the Pear-shaped grass-plot I have two beds, one long and narrow at the stalk end of the plot, which in summer is either filled with carpet or ordinary bedding plants, and in autumn is planted with bulbs and other spring flowering plants—Daisies, Myosotis, Wallflowers, &c. The other bed is at the other end of the grass-plot, and is circular in shape, harmonising with the curved border. On this same grass-plot I have a fine clump of Pampas-grass.

After all this introduction I come now to how and where I grow my alpine plants. In order to save trouble in keeping the edge of the turf and to raise my border 12 inches above the level of the walk and grass-plots, I placed an edging of slabs of red sandstone broken smooth on the side nearest the turf, but irregular in its top surface line so as to avoid monotony in appearance. I then made triangular pockets in the border by pressing in other pieces of sandstone. Where the space was sufficient, I had two rows of these pockets placed one behind the other. The appearance before planting was somewhat thus, WWW where a single row is used; thus where a double row, WWW/WWW. The divisions between the pockets were made with pieces of sandstone 8 to 10 inches deep in the ground, and 2 to 4 inches above it. The whole of the border being filled with good turfy loam, I had simply to add sufficient to each pocket to nearly fill it to be ready for planting a very large proportion of the alpines I commenced with; and there being a depth of 18 inches of the good soil, I have never during the three years which have elapsed since I made the pockets had the least trouble in growing luxuriantly most of the alpines I started with. Where needful, I mixed peat, sand, broken sandstone, lime rubbish, limestone, &c., with

the soil in the pocket. Occasionally I have removed the soil and entirely filled pockets with a special compost suited to the plants I intended planting. These variations from my general plan were comparatively few in number, and I have found the turfy soil answer in most cases admirably. All through the spring and summer I occasionally sprinkle a little suitable soil among such plants as seem to need it, endeavouring thus to imitate what is done for them in their native homes on the mountain sides by every fall of rain. My pockets are now all filled with healthy plants; the stone is almost entirely hidden by the luxuriant growth of the plants, or where still uncovered by them has become weather-stained, while mosses and lichens are in many places adding to the beauty of its appearance. The pockets commence at the stalk end of the Pear-shaped grass-plot, and extend round its entire extent, along the side of the border dividing the two grass-plots and along three sides of the croquet lawn: thus by contrivance I have over 200 pockets. The circular bed is raised a foot or more above the grass-plot, and is edged all round with three tiers of pockets rising one above the other. These are filled with alpines in robust health. These diminutive plants are preserved from interfering with, or encroaching on, each other by the stone boundaries of the pockets, and when a plant has grown too big for its place by lifting out the separating stones it can easily be taken out, divided and replanted. This pretty fringe to my borders, consisting of a varied collection of low-growing plants, is a source of unceasing pleasure. It constitutes a lovely line of demarcation between the grass-plot and the border at the back, which is filled with shrubs and herbaceous plants, with climbers on the wall, Roses, Clematises, Ivies, &c.; it is always tidy, or easily made so; it gives me during many months of the year a succession of charming flowers of exquisite beauty; when the flowers are over the plants still adorn and beautify my little garden by the charms of their varied styles of growth. By making proper use of the different aspects—I have pockets exposed to all the points of the compass—I am able to meet the requirements of such plants as like shade partial or continuous, as well as those needing full exposure to the sun, so that no spot in my flower garden is or need be untenanted. I have among my plants many souvenirs of my annual holidays flourishing about me. Thus whenever I spend an hour in my garden I am constantly reminded of pleasant rambles in the lake-country, or Wales, or wherever else I have spent a holiday. It is beyond my purpose to say in what other way my flower-plot is furnished, except that by using the abundant resources cheaply available nowadays to every one, I have been enabled at no very great cost to make a piece of ground of limited area sufficiently tenanted with things of beauty that are also joys for ever, to afford me infinite pleasure during such leisure hours as I am able to devote to my garden. *Philanthes.*

Florists' Flowers.

Potting Auriculas. — There must needs be differences of opinion among Auricula cultivators as to the best time of the year for potting Auriculas. For my part I like to get as many of my largest plants as I can, and especially the late blooming varieties, potted as early as convenient. I repotted some eighty or ninety of my plants in Whit-week, a few more since, and the remainder will, I trust, be all potted by the end of July. I think it is of great advantage to the plants to get the roots that are put forth directly after repotting at work as soon as possible; and my experience leads me to believe that the more thoroughly the plants are established by October, the more safely are they carried through the winter, and the better do they flower in April. Perhaps it is best for me to pot early, as I have to winter plants in a north house where no gleam of sunshine visits them in their wintry quarters; and the surroundings are cold and cheerless during December, January, and February. The pots planted in May are now looking as well as one could desire them to look.

In the course of four or five years' culture of the Auricula, I have had to sustain losses, and I find they occur with more frequency between blooming and potting times than at any other period. Any one observant of the Auricula will know then there is always a tendency on the part of the plants to thrust themselves up out of the soil, and on that unburied part of the stem between the soil and the lowermost leaves many of the sorts show a tendency to put forth roots. This activity I find in many cases to be indicative of defective root-action below the soil, and it is of decided advantage to such plants to cut away the old roots or a good portion of them, and trust for their sustenance to those that will be newly made.

The fine plants Mr. Turner will often produce in quite small pots, serve to point an argument in favour of under rather than over potting. I have noticed that the finest quality of bloom is to be seen on such plants. The late George Lightbody once remarked, when giving seasonable advice to cultivators, "Pot in sizes suitable to the habit of the plants; a 6-inch pot is large enough for the most robust: plants of smaller growth should be in pots of lesser size." I never attend the exhibitions of the National Auricula Show at Manchester without being struck with the large size of the pots in which some of the Northern growers have their plants; and this is equally true of the Polyanthuses as well as Auriculas. No doubt the pots are well drained, but still the size of the pot in many instances appears to be disproportionate to that of the plants.

Another of the late Mr. Lightbody's items of advice and counsel was that "In potting arrange the fibres so that they may at once come into contact with the sides of the pots." To assist in giving effect to this advice it is well to make a slight mound with the soil, resting the base of the carrot on the apex of the mound, with the roots falling away slightly to the sides of the pots and reaching to them. When the roots are gathered together in the form of a mass or coil in the middle of the soil it takes time to force their way to the circumference of it, and we know by experience that when the roots are working vigorously about the sides of the pots the plants are doing well.

Who can sufficiently estimate the importance of good drainage? It should be provided by means of a piece of crock laid over the hole in the bottom of the pit and large enough to cover it, and then filling in to the depth of half an inch or more with pieces of broken crocks, decreasing in size till the quantity is provided. A thin layer of fibry turf placed next this prevents the soil from being carried down among the crocks and stopping up the free exit of water—for when this occurs a soddened and sour soil is inevitable. In regard to soil a good fibry loam, yellow and soft to the touch, pulled to pieces and not sifted, some coarse white sand, a little charcoal beaten small, and some well-decomposed manure from a spent hotbed makes an excellent compost. I have not mentioned leaf-soil, because it is not always easy to procure it, and bad leaf-soil will do much more harm than good. It is important to use clean pots, and if they are new and have been exposed to the air they should be well soaked in water before using.

My newly potted Auriculas are in a cold frame on a north aspect, having a cool ash bottom, on which the pots stand. It is a shallow frame, and therefore the plants are near the glass, but plenty of air is given by tilting them open towards the north. A little of the morning and evening sun falls on the plants, otherwise they are kept cool and shady. They are kept watered, but not drenched; the decaying leaves are picked off, the surface-soil is occasionally stirred, and if any greenfly put in an appearance they are brushed from the leaves. When the weather is cool and shady the lights are thrown open, and gentle showers are allowed to fall on the plants. *R. D.*

Natural History.

A White Rook.—It will no doubt be interesting to ornithologists to learn that a white rook was captured here a few days ago. It was a full-grown and strong young bird of the season. The whole of the body is pure white, with the exception of the larger feathers of the wings and tail, which are slightly and delicately shaded with light brown; beak and claws ivory-white. This singular freak of Nature is, I believe, of very rare occurrence. *Geo. Griffin, Slebech Park Gardens, Pembrokeshire.*

Garden Operations.

KITCHEN GARDEN.

Celery.—Although the season for this highly prized esculent can be advanced considerably by resorting to artificial means for the purpose of preparing the plants, yet when this is done, and the most generous treatment has been accorded to its cultivation, it is scarcely in a condition to be used in a raw state, though for culinary uses, however, it is indispensable. For practical reasons it may with propriety be divided into three sections or crops, which should be raised so as to come into use successively. The first crop being somewhat precarious in its nature and limited as to quantity, enough seed for the purpose can be raised by means of pots or a seed-pan. The seed should be sown about the end of February in rich soil which is light and fine, and be covered over very thinly with a like compost, which should be kept constantly moist by watering, and keeping it covered with a thin sheet of paper until such time as the seed vegetates, after which it should be exposed to light and placed in close proximity to the glass, in order to prevent the plants from drawing up weakly. As soon as these are fit they should be pricked out 2 or 3 inches apart into pans or boxes, or otherwise into a frame having a genial heat from fermenting matter, and be kept moderately warm until the plants are established, when a cooler temperature and more air should be given to them until the conditions out-of-doors will admit of their being placed in the trenches which have been prepared for them; this may safely be done about the middle of May.

The second crop is the main or general one and the most important of all, as from this the chief supply is drawn to meet the demands throughout the winter months. The time of sowing seed for this varies with different growers, as also does the method of rearing the plants afterwards. I maintain that in the case of an indigenous subject like this, when it is required for the purpose of being grown in a natural manner, that the plants should be reared under conditions as nearly normal as possible; I therefore advocate and practise this plan, by sowing the seed about March 25, in light rich soil in a warm and sheltered spot in the garden, and when the plants are fit for pricking-out—which is as soon as they can be handled—they should be done This operation is carried out likewise under the same conditions, on a flat or border which is suitable for the purpose. These are means which may be relied on to produce plants of a sturdy and hardy nature, and far preferable for the purpose to those which are raised under other and more luxurious circumstances. The third and last sowing should be made about April 1, as this crop is mainly intended to prolong the season, and more often than not is required almost entirely for culinary uses; for this reason, as well as on account of the lateness of the season, it never attains to a large size, and consequently less room for it is allowed in cultivation. Either shallow trenches, made about 2 feet apart, or deep drills made in rich ground with a hoe, will answer the object in view, of course assuming the plants have beforehand been prepared in a similar way to those of the foregoing section.

The chief element required in the cultivation of Celery is manure; this should be thoroughly decomposed, and of the strongest and best description, such as accumulates about the home-stalls where cattle are fed and fatted. If this material be thrown together, and permitted by the process of fermentation to become sweetened and purified, it is the best that can be had for this purpose. In addition to this, the plants will further, as growth proceeds, derive support from an occasional application of moderately strong manure-water in a diluted state. In order to obtain fine heads of Celery I prefer single rows, because the attention required afterwards can be more expeditiously and properly carried out, and, moreover, the plants are not liable to be drawn up too rapidly. Double rows are sometimes introduced into single trenches, which are made somewhat wider, and in this way a larger quantity is secured where only a limited area is available. Another plan is that of making a large trench 4 feet wide or more, the plants so placed as to be in lines every way at from 6 to 12 inches apart, so that in the process of earthing-up boards can be used; this method requires the soil to be made fine beforehand, and much care is needed to avoid the soil getting into the hearts of the plants. This observation is likewise applicable under any method of cultivation. One plan of earthing-up is to carefully gather the leaves of the plant, tie them loosely with soft matting, and then draw the soil round them carefully by hand, adding the rest afterwards in a general way; and where Celery is extensively grown this plan is chiefly adopted. In making trenches the soil should be taken out about 9 inches deep and 1 foot wide for individual rows, and proportionately for combined ones; this should be evenly spread over the intervening space between them, and a dressing of the sort of manure before described should be laid in them from 6 to 9 inches in thickness, and be turned in with a fork or spade before it becomes dry. After this the planting can be proceeded with by lifting the plants from the bed with a ball of

earth attached to them, and planting them firmly at from 6 to 12 inches apart according to circumstances. If very fine sticks are wanted, more space must of course be given to them for growth. When the planting is completed water at once in a manner to settle the soil well about the plants, and to saturate it completely around them. As far as practicable the planting-out should be done when the plants are about 4 inches in height, as they take to the soil much more readily at that stage, and moreover, when they are much larger it necessitates topping them, an operation which should be avoided if possible. In defining the distances apart between the rows regard must be had to the nature of the soil and other circumstances. In light friable soils more space is required than in retentive ones, because in the latter the ridges required in blanching it can be made more erect; as a rule they should range from 4 to 6 feet apart. During the early period of growth plentiful supplies of water should be given at all times when circumtances demand it.

The most destructive pests that infest the Celery crop during the growth are slugs and the Celery-fly; the devastation caused by the latter formidable enemy is appalling. The only sure means to arrest its progress is by keenly looking after it betimes, and picking off the affected parts. To mitigate the ravages of slugs, which are more or less damaging, a good dressing of soot, with a little salt intermixed, applied over the surface of the ground prior to its being used for the crop, will destroy all those with which it comes into contact. Out of many sorts of Celery which are in cultivation I may safely recommend Turner's Incomparable or Sandringham White, which are the same in my opinion; as a dwarf white kind Haywood's White Queen is also an excellent sort for certain localities, and so is Cole's Crystal White. In the red and pink section Leicester Red stands pre-eminent; Major Clarke's Red is undoubtedly the same; Williams' Matchless and Ivery's Nonsuch are likewise sterling sorts — Manchester Giant for a very large kind.

Ordinary Work.—Among other matters, the recent severe frost, which materially damaged the rows of Scarlet Runners, French Beans, and Vegetable Marrows, which were exposed, and likewise nipped the leaves of Potatos, will necessitate the planting of those to be sown to supplement them at the earliest period possible. The growth of stock plants should be fostered in every possible way, and every care and encouragement be afforded them when they are planted out. A visitation like this practically shows the caution that is necessary before fully exposing subjects like Gherkins, Cucumbers, Vegetable Marrows, &c., and points out the advantage of elevating hand-glasses, and similar contrivances which are placed on such subjects before finally removing them; where this has been done, merely the points of the plants have suffered, and the rest remains uninjured. Give regular attention to watering all succulent crops, as Lettuce, Endive, early Celery, &c., and to all seedling crops likewise. As late crops of Peas advance, stick them erectly, and for these employ stout sticks. If not already done, sow a breadth of Carrots in light friable soil, and of dwarf Beans for autumn use Lettuce seed should now be sown in drills thinly, to be thinned out afterwards to the requisite distance apart. Keep the hoe going over the surface of the ground as often as time and its condition will admit. *Geo. Thos. Miles, Wycombe Abbey.*

FRUIT HOUSES.

Vines.—The thinning of late Grapes of all kinds should be finished without delay. Hamburghs intended for use through November and December will require more thinning than is necessary or advisable where the Grapes are used before the leaves fall, and small or medium-sized bunches through which the air can pass freely will be found better keepers than large ones. When the berries begin to swell freely all weak laterals may be allowed to grow, but the strong ones will require close stopping and t ying down to keep the sap evenly distributed, and to secure firm, short-jointed wood that will be likely to ripen well. The most forward Lady Downe's, as well as the general crop of Muscats now about stoning, will require close attention to prevent what is termed scalding, a disease which frequently affects berries upon which the sun never shines. It is always the most troublesome in catching seasons, when we have sudden changes from heat to cold, and it is aggravated by a low temperature followed by a rapid rise before air is admitted on bright mornings, when, the berries having become cold through the night, moisture is condensed, and the cuticle on one side is injured. To counteract the evil a warm, dry, buoyant atmosphere should be maintained through the night with increased ventilation before the temperature begins to rise on fine mornings. Scalding extends over about fourteen days when Vines are in good health, and a little longer when the roots are in cold sluggish borders. The fine rains we have had in this part of England have been of great service to external borders which were not well mulched, moreover they have filled up our tanks, and, as a matter of course, the surplus water has been given to the inside roots in preference to allowing it to run into the drains. Vines in all stages carrying advancing crops will now take large quantities of water of a stimulating nature. The best for general watering is warm diluted liquid from the manure heap, but where this cannot be obtained Clay's Fertiliser or guano act upon the foliage in a most satisfactory way, and good foliage is an important aid to the production of good fruit. Where the earliest Vines, having the run of external and internal borders, require renovating, one or other of these may be taken out as soon as the crop has been cleared. An important point in the successful lifting and relaying of roots at this season is dispatch, and, to prevent delay, when the work is taken in hand new composts and drainage should be ready and within easy reach. The house should be kept moist and shaded to prevent the roots and foliage from suffering during the operation of lifting and re-arranging the borders. When all is finished the roof will require shading on bright days, and the Vines will be the better for frequent syringing, with a close moist heat from solar influence, in preference to firing until new growth is perceptible, when the ordinary treatment may be resumed, and they will be in a fit state for starting in December. If it is thought advisable to replant early houses, vigorous young Vines from this year's eyes may be planted, with every chance in favour of their filling the house. A narrow ridge of compost will be sufficient for the first year, plump buds for pruning back to will ripen near the base, and these will throw up strong fruiting canes next season. *W. Coleman, Eastnor Castle.*

Orchard House.

In the late house the trees are now going through the stoning period, and as they are also making young wood very freely it is necessary to pay attention to them daily. If the surface dressings have not been applied see to it at once; for vigorous roots are thrown out at this time, and unless they have fresh strong stimulants to run into this month the fruit will not be full sized. At p. 719 the most suitable compost for surface dressing was described, but we have not been able to obtain the malt or kiln dust, and have merely used good rotten stable manure and loam, in equal proportions, with a handful of Clay's Fertiliser to each bushel of the compost. Syringe the trees well twice daily, and shut up the house as soon as it is possible to do so in the afternoon. The Strawberries are nearly over; we have still Frogmore Late Pine and Loxford Hall Seedling, which we hope will not be over until Black Prince is ripe out-of-doors. As soon as the fruit is gathered from the Strawberry plants we turn them out-of doors, and either throw them away or plant them out in the open ground. In the early house syringing must be discontinued of course, as the ripening fruit would be injured thereby. If the trees have not been kept quite free from red-spider up to the time of leaving off the use of the syringe the pest will spread with the most amazing rapidity, and very much injure the leaves before the fruit can be gathered. Some persons leave the fruit on the trees until it drops off into nets or bags, but I question whether this is the most desirable plan. Those who are accustomed to gather the fruit know by its appearance when it is about the right stage to gather; the fruit should then be taken carefully from the trees and placed on a layer of cotton wadding which has been placed in the bottom of a flat basket. As soon as the fruit has been picked from the trees no time should be lost in giving them a thorough washing with the garden engine. *J. Douglas, Loxford Hall.*

PLANT HOUSES.

Orchids.—From now till the end of July, or perhaps even till the end of August, that section of Orchids termed "cool" will give the grower more anxiety than the "intermediate" and "hot" put together. The anxiety will be caused more by the supposition that these plants cannot stand the heat of our English summers, rather than by any facts that can be brought forward from past experience. It is quite an erroneous idea to suppose that loss and yellowness of foliage is caused by sun-heat; the two main causes of this are overflowering and atmospheric starvation. The latter is bound to take place if, during hot and dry days, the ventilators are so freely used that more air is admitted than can be kept properly moistened. Last summer was so mild and moist that many Odontoglossums and Masdevallias would have taken but little injury if unprotected by glass. For all this I fail to perceive that these plants have done any better than after a very hot and dry summer. The foliage certainly looked more green than usual, but that is never a sure sign of permanent well-doing. On the other hand, Odontoglossums, after carrying plenty of flower, are none the worse if during the hot weather they look a trifle less robust than usual. If well rooted the colour quickly returns when the nights commence to lengthen. As of late I have been more than once asked if it were possible to succeed with cool Orchids in any house not facing north, I may as well state that during the last ten years I have frequently seen them doing thoroughly well in houses facing north, east, west, and south, and that here we have no north house, but find the east answer in every respect. To pass these plants safely through six weeks of downright hot weather the grower must in the first place keep their roots undisturbed by potting; next, the atmosphere must be well charged with moisture by damping down three or four times a day, and by having the house rather heavily shaded. Finally, ventilate through the bottom ventilators during the day, but through the night use freely both bottom and top ventilators. Water must, of course, be given at the root often enough to keep the compost moist.

So soon as Cypripedium Lowii, C. Stonei, C. lævigatum, C. Pearcei, C. caudatum, C. Dayanum, C. Lawrenceanum, and Uropedium Lindeni have recovered from the effects of flowering, let them be examined as to root-room. None of these care to be long in a pot-bound state, and the present is a good time to give them a shift. A mixture of peat, sphagnum, broken crocks, and charcoal will suit them all. The pots should be about one-third full of drainage. Give abundance of water at all times, and keep the plants well up to the roof glass on the shadiest side of the house. C. Veitchii or superbiens we find do very well in a similar position in the intermediate house, where, along with Bolleas and Pescatorias, it daily receives a thorough overhead watering. When grown in a strong heat this fine species is apt to suffer greatly from yellow thrips; it will at no time stand the least clear sunshine. Any plants of C. Parishii that are flowering freely will also be greatly refreshed if the foliage receives a good sprinkling once a day. Another Orchid which feels greatly the task of flowering is the splendid Oncidium macranthum. At all times a damp and cool loving plant, it should at this season of the year, when in flower, be even more frequently watered. Where the imported plants of Grammatophyllum Ellisii have gained sufficient strength they will be pushing flower-spikes from the base of the young growth. In order to assist the plant to develope its bloom and also to make up a strong growth at the same time, give frequent and liberal supplies of water and maintain a hot and moist atmosphere. The plant should be grown with the tips of its leaves almost touching the roof glass in the hottest division. Owing to the cold nights we are now having it is still necessary to use a considerable amount of fire-heat in the warm and hot divisions. The Cattleya and intermediate-house should be about 65°, and the East Indian-house 70°, through the night. *J. C. Spyers, Burford Lodge, Dorking.*

TOWN GARDENING.

Lawns, Walks, and Shrubberies.—Lawns should be kept regularly mown. If there is one thing that gives more trouble than another on lawns at this season of the year, it is the Daisies; the mowing machine will not take them off clean, and if left they make the place look very untidy, therefore the scythe or what was formerly used, the Daisy rake, has to follow after. Walks should be neatly edged, kept free from weeds and moss, and well rolled after heavy rains. Shrubberries should have the hoe run through them to keep down the weeds, and be frequently raked over to put on a bright and neat appearance. Spring planted shrubs should be especially observed, and be well watered in dry weather, and a coating of newly mown grass placed on the top of the roots.

Flower Garden.—I have not planted out any Alternantheras or Coleus yet (June 15), and I fear those that have, in or near town, will have to do the work over again. I was tempted a week ago to plant out Mesembryanthemum cordifolium variegatum and Amaranthus melancholicus ruber, and both of them will be some time before they get over the check they have received. The flowering beds must now have every attention, in order to assist the plants as much as possible. It matters not how poor the plants may be when planted out, or how well they are arranged, if they are not well looked after subsequently. Plants that will allow the hoe being worked amongst them to loosen up the soil, should have this attention as soon as the final planting is finished, and trailing plants should be regulated and pegged down to cover the space allotted to them, and all blanks that have occurred since planting was commenced must be filled up. Cerastium tomentosum, Golden Feather, Golden Thyme, Golden Chickweed, and such-like plants should be picked or clipped before they get too far advanced. Doing this early improves their appearance hereafter. Dahlias should be staked, and all subtropical plants should be supported before they get too large, for the wind is apt to break them down if not done in time. Climbing plants are now growing fast. Clematis, Lophospermum, Maurandya, Tropæolum, Cobœa, Eccremocarpus, and all such-like plants on walls, trelliswork or fences, require to be nailed or tied before they get too far advanced. *Wm. Gibson, Chelsea, S.W.*

APPOINTMENTS FOR THE ENSUING WEEK.

Tuesday,	June 22	Grand Floral Exhibition at Portsmouth opens (four days). Royal Horticultural Society: Meeting of Fruit and Floral Committees, at 11 A.M.; Scientific Committee, at 1 P.M.
Wednesday,	June 23	Lee and Blackheath Horticultural Society's Show (two days). Leeds Flower Show (three days) Royal Jersey Horticultural Society's Show.

NO one will dispute the interest attaching to WEATHER RECORDS—no one will undervalue the statistics compiled with so much labour and accuracy by our official meteorologists and by private observers throughout the country. Nevertheless, for the practical purposes of the gardener, or the farmer, the hard dry facts revealed by thermometer and barometer are to some extent less valuable than observations made on growing plants. Rather should we say that the record of the meteorological observer needs to be co-related with the experience of the practical cultivator. A column of mercury, or spirit, may be extremely sensitive to atmospheric changes, but it is a simple substance compared with the complex and elaborate structure of a living plant. The record of the instruments may be compared to the analysis made by a chemist of a luscious fruit, or a delicious wine. Every element may be eliminated, and its quantity gauged, but the information so obtained is of little value to the merchant or the consumer. For him more concrete practical results are required. Thus it happens that observations on growing plants have, or might have, a greater value for practical purposes than mere records of the fluctuations of the barometer or thermometer, taken by themselves. We are obliged to say might have, because hitherto, with some exceptions, observations on plants and animals with reference to climatal variations—phenological observations as they are now called—have not been made with the accuracy and care with which they should have been. Owing to the complex and variable nature of the subject, a degree of accuracy even approaching to that of the tell-tale instruments is not to be expected, but at least such observations might be more useful and accurate than they are. An observer, we will say, jots down in his book—"Elms in leaf, Strawberries ripe, first Peas gathered," and so on. But of what use are such memoranda unless he observes the same Elm year after year, and tells us what he means by "in leaf," what variety of Strawberry he alludes to, what Peas he speaks of, and when and how he sowed them? All these little details seem to the amateur meteorologist of no particular moment, but the gardener will tell quite another story; and the record of his forcing-houses, properly kept, would to some extent furnish more trustworthy indications of the effect of climatal agencies on vegetation than do the ordinary meteorological records.

We have been led to these remarks from the perusal of a work, lately published under the title of the *Cobham Journals*.* The nature and purpose of this work are sufficiently indicated by its title. It is gracefully and appropriately dedicated to the President and Fellows of the Meteorological Society by their first Lady Fellow. We cannot but regret that the original compiler of these extensive notes of observation could not, from the circumstances of the case, have been honoured with a similar recognition on the part of the meteorologists of the day. The reasons to the contrary could not well have been more valid, but, for all that, there can be no question that, had such an honour been practicable at the time, it would have been well bestowed on Miss MOLESWORTH. It is fortunate for her reputation, as well as for meteorological science, that Miss MOLESWORTH'S voluminous manuscripts have fallen into the hands of so sympathetic and competent an editor. Not many persons, we suspect, would have been found at once willing enough, and intelligent enough, to wade through such a mass of detail, much of which must be unmanageable, and a great deal of relatively small value. Miss ORMEROD has not shrunk from the task, and she has given us within small compass abstracts and summaries representing for each month the general state of the weather, the dates of the appearance and departure of birds, the unfolding of flowers, the ripening of the fruit, and similar matters. Together with these summaries is given for each year a table showing the maximum and minimum temperatures, the rainfall and direction of the wind at Cobham, side by side with similar details taken from Mr. GLAISHER'S reduction of the Chiswick tables, and showing, not only the temperature and rainfall for each year, by way of comparison with those noted at Cobham, but also the averages from 1826 to 1869. A general summary of these several observations is given, and then a chapter, headed "Results of Observations," which are so interesting that we shall not venture to spoil them by fragmentary citation. We shall, if opportunity and space permit, transfer some portion of them to our pages, particularly as they have special interest in connection with the extraordinary seasons of 1879, of which we are this summer experiencing some of the effects.

The book ends with a table showing the date of flowering, early or late, of a great number of common plants during each one of sixteen years. Another column gives the mean date calculated from the foregoing data. The last column gives the "amplitude," or number of days between the earliest and the latest records of the first flowering of particular plants. These records are interesting as showing the great range of variation in these matters. For Daphne Mezereum an "amplitude" of 104 days is given, the earliest date being the 339th day of the year, *i.e.*, December 4; the latest the seventy-eighth (March 18)—a period of no less than 104 days, as the range within which the flowering of this shrub may be expected. If we take the mean between these two extremes the date of flowering would be on the fifty-second day (February 21), but the actual or observed mean of the observations gives the thirty-seventh day (February 6). The Daphne is a good plant to take as an illustration, from its shrubby habit and the probability that the same plant was examined each year. In the case of the Cherry Laurel, the earliest flowering is noted in 1834 on the twentieth day (January 20), the latest in 1827, on the 172d day of the year (June 20)—just six months' amplitude! We are not told whether the earliest or the latest observations referred to more than one shrub or more than one branch of a given shrub. From the facts cited we should infer that some exceptional or abnormal shoot may have been observed. The Wistaria is credited with an amplitude of twenty-seven days only (probably the plant was against a wall, and therefore less subject to violent changes), but the common Hawthorn, not likely to have been similarly protected, has an amplitude of twenty-two days. Elms show a range of forty days in the period in which their leaves have appeared, and twenty-one days in the period at which they are recorded to have been leafless. Valuable as these records are, they must, we imagine, be taken as indications only. So many disturbing causes—so many sources of error—so much partly unavoidable vagueness in the records—all suggest the necessity of treating them as approximations only; having, in fact, a considerable amplitude of their own.

* The "*Cobham Journals*: Abstracts and Summaries of Meteorological and Phenological Observations, made by Miss CAROLINE MOLESWORTH, at Cobham, Surrey, in the years 1825 to 1850; with Introduction, Tables, &c., by ELEANOR A. ORMEROD, F.M.S. STANFORD.

—— CANTUA DEPENDENS.—This lovely Peruvian shrub has lately been made the subject of comment in our pages, and although so lovely, is not so well known to cultivators as its great merits demand, on which account we have deemed that a figure of it may not be unacceptable (see fig. 136). The specimens sent to us for illustration were grown by our correspondent, Mr. SHEPPARD, who lately detailed his method of cultivation (see p. 661). The Cantuas belong to the same family with the Cobœas and the Phloxes—viz., the Polemoniaceæ, a comparatively small group, but one which, in proportion to its size, furnishes an unusually large number of ornamental plants.

—— ALLIUMS.—Mr. BARR sends us specimens of two species—A. Murrayanum, with a stout scape supporting an umbel of pale bluish-pink flowers, the spreading segments equal in size, ovate-lanceolate; and A. acuminatum, with a slender scape, bearing an umbel of violet flowers, with three outer oblong-ovate shortly acuminate recurved spreading segments, and three inner erect much narrower segments.

—— M. GUIHÉNEUF.—We are requested to state that this gentleman is no longer a member of the firm of ANDRÉ LEROY & Co., of Angers, but is established as a seed grower and seed merchant at Nantes.

—— RUBUS AUSTRALIS.—By an unfortunate oversight this name was attached to a very different plant in our last issue (p. 755). The plant intended was the old Fragaria indica, which was shown in the large tent at South Kensington last week, and which deserves the encomiums we passed on it. The true Rubus australis is a curiosity cherished by the lovers of oddities, and delighted in by the botanist. It is a true Bramble, but with the leaves reduced to a mere framework of prickly veins, with now and then a small leafy lobe at the extremity. We grew the plant for years out-of-doors, scrambling over a hedge, but sad to relate it was ruthlessly exterminated by an unappreciative gardener, who looked on it as a weed. The plant is a native of New Zealand, where, if we mistake not, others of its race display the same peculiarities.

—— HARICOT CHEVRIER.—This variety, obtained by M. CHEVRIER, whose name it bears, is the subject of the following report from a committee of the French Horticultural Society, in 1878:—"We have made sure that Haricot Chevrier is really a new variety of the well known Haricot Flageolet; the leaves, pods and Beans keep perfectly green when well ripened. The Bean is small, of good form, and of a fine green colour; when cooked it remains perfectly green; and if left boiling for a long time it does not get pulped, and is of a very good flavour; however, it will be well not to let it be exposed to rain when ripe." A French correspondent, who sends the above, adds:—"When kept over the winter the Beans still remain green. It is an early Bean, and a good cropper; and will prove a very useful vegetable, especially in France, where Beans are preserved dry and eaten during winter."

—— THE BEST METHOD OF PACKING FRUIT FOR MARKET.—We are requested to again direct the attention of gardeners and growers for market to the special prizes offered by Messrs. WEBBER & Co., of Covent Garden, for competition on the 29th inst., on the occasion of the Rose show to be held by the Royal Horticultural Society at South Kensington. The prizes are £7 7*s.* and £3 3*s.* for the best packed three boxes of fruit, to consist of one box of Grapes, not less than 14 lb.; and one box of Peaches, not less than twenty-four; one box of Strawberries, not less than 2 lb. To be booked, carriage paid, at any station over 20 miles from London, and delivered by railway company, addressed to the Superintendent, Royal Horticultural Society, South Kensington.

—— ODONTOGLOSSUM VEXILLARIUM.—We understand that a magnificent variety of Odontoglossum vexillarium, named floribundum, is now in bloom at the York Nurseries. It has nine flowers on the spike, and produced twelve on one spike last year. Grand as it was last season, the magnitude of the flowers this season surpasses anything perhaps ever heard of, the individual blossoms being 5½ inches across, in extreme measurement. The colour is a soft, rich purplish-rose. Another, named giganteum last season, is also now in bloom. It has shorter spikes (seven flowers on the spikes), but

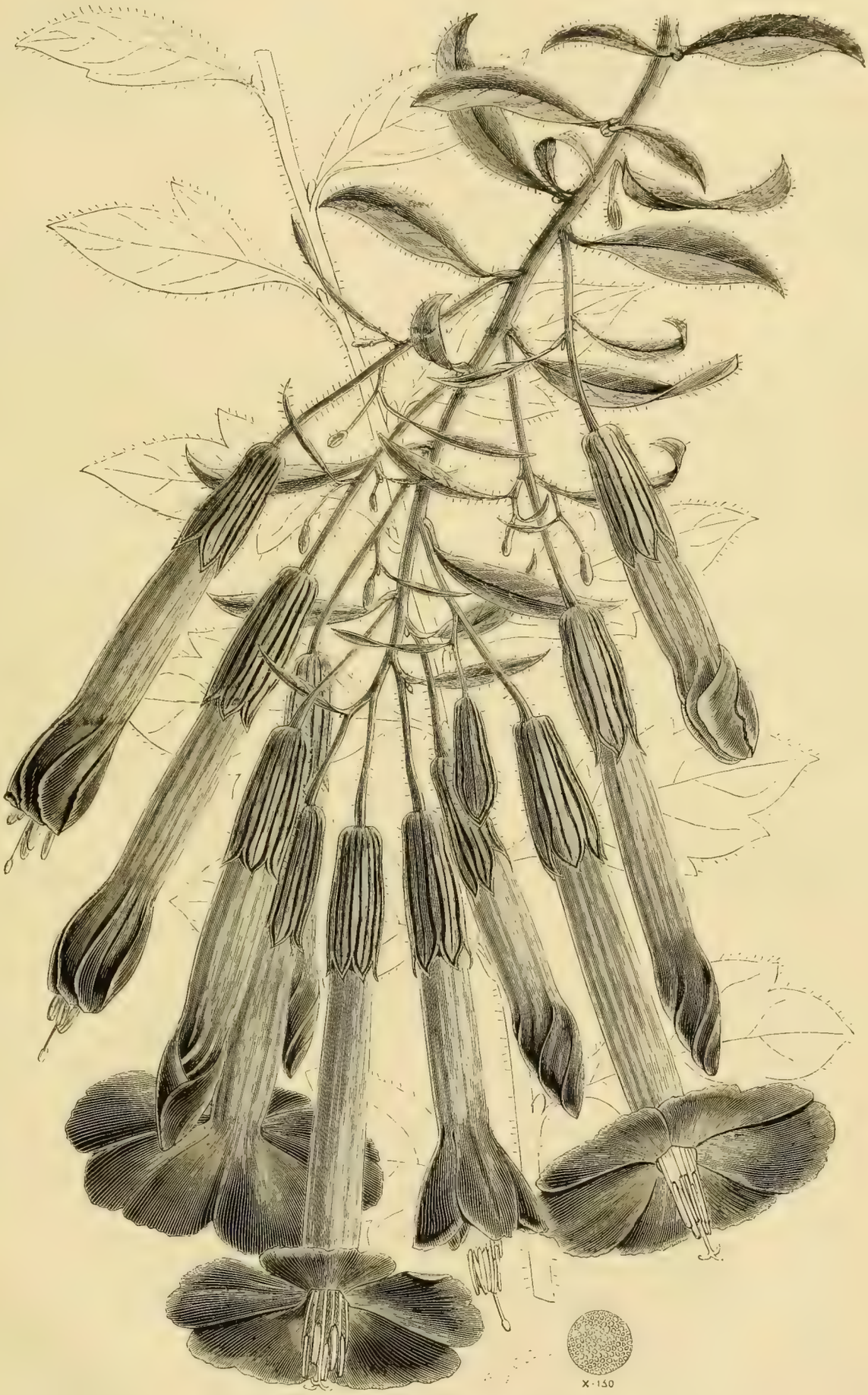


FIG. 136.—CANTUA DEPENDENS. (SEE P. 784.)

nearly equals the preceding in size, and almost surpasses in brightness of colour.

—— Wilts and Hants Agricultural College.—In our remarks last week as to the necessity of an extended education in the principles as well as the practice of agriculture and gardening, we had occasion to allude to the paucity of establishments in this country where such education could be obtained. We might have mentioned the newly established college at Downton, near Salisbury, which has been started with good prospects of success, and has a staff of teachers whose antecedents furnish a guarantee that the training they give will be thorough as well as practical.

—— Florists and Landscape Gardeners in America.—The editor of the American *Gardeners' Monthly* remarks, in his last number, that there never was a better time in the history of his country for men of general intelligence, gentlemanly deportment, with a thorough knowledge of the finer branches of their business, and a small capital, so that they can afford to hold on a little while till their talents become known.

—— Enormous Rhubarb.—We had lately an opportunity of examining three large stalks of the Stott's Monarch Rhubarb, grown at Edenhall by Mr. William Elliot, gardener there. The width of the largest leaf is 4 feet; length, 3 feet 8 inches; length of stalk, 24 inches; circumference, 9 inches. The weight of the largest leaf and stalk is 6¾ lb., and of stalk alone 3¾ lb. The weight of the three stalks, without the leaves, is 9½ lb. It must be acknowledged that this Rhubarb is well grown. This variety of Rhubarb is attracting considerable attention at present among gardeners, even the Americans and Australians sending to this country for roots. *Kelso Chronicle, June* 11.

—— Forcing Newly Planted Cherries.—As evidence of what can be done in the way of forcing newly-planted trees of this fruit, when they have been properly treated so as to prepare the roots for moving, and when, as in this case, the removal could be accomplished with the least possible breakage or injury to the roots, we instance some that were recently moved from an open wall to a house at Eastnor Castle. The house—a lean-to against an existing wall—was commenced last Christmas week, and the trees taken up and planted as soon as the frost broke. It is needless to say every root was preserved that could possibly be moved with them. The sorts were Bigarreau Napoleon, with a head 10 feet in diameter; an Elton, similar in size; and a Black Circassian, a little smaller. The house was, of course, started, and allowed to come on slowly. The trees have borne a nice crop, some of the fruit of the Elton reaching an inch in diameter, and the others proportionate in size.

—— The Scorpion Senna.—This old-fashioned showy flowering shrub (Coronilla Emerus) is now in bloom. Its flowers present some peculiarities to which it is desirable to call the attention of those who have the opportunity of watching the ways of flower-visiting insects. All the petals have unusually long stalks, and the blade of the back petal, or standard, being nearly orbicular, there is left between its stalk and those of the four other petals a gap, or hole, into which one could thrust a crow-quill, and which is very conspicuous when the flower is looked at from the side. It seems probable that this arrangement may have some relation to insect visitations, but we have not been hitherto able to ascertain whether this is so or not.

—— Æsthetic Wild Gardening.—The Board of Works has not been slow to take the hint we gave some time since with respect to the more general suitability of some kind of natural gardening around the new Natural History Museum at South Kensington, in preference to the stiff, formal arrangement laid out. Even the most enthusiastic adorer of wild gardening could desire nothing more wild, more natural, more inartistic, than is the display of natural plants now to be seen in the broad borders and huge beds of the Museum grounds. The common Dock makes a grand display. It is here the foliage plant *par excellence*. Its long tapering roots have penetrated deep into the rich freely-moved soil, and the leafage presents a degree of luxuriance rarely seen even on the muck-heaps of the rural fields. Varying the somewhat overpowering wealth of Dock foliage is seen in considerable abundance the prickly Thistle, so precious to asses, but so annoying to the cultivators of the soil for its persistence. There is a charm and elegance about the finely cut leafage and bristling points of this plant that imparts to it, in contrast to the broad plain leaves of the Dock, an amount of beauty as a decorative plant which we claim to have been the first to discover. Bloom also is not wanting, but in colour lacking variety. Wild gardening in the country can be here and there diversified by the rich hues of the scarlet Poppy, glorious beyond the art of the painter to depict. Abundant masses of Charlock will for the nonce convert the fields into carpets and cloth of gold, and the Corn-bottle will give breadths of the loveliest blue; but here, in South Kensington, and right under the windows of the aristocratic Cromwell Roadians, only the common hueless Mayweed cares to bloom, but that in great abundance. If the authorities would but away with the turf and gravel walks, plant the Thorn and the Bramble, the Gorse and the Bracken, and turn down to roam at will Nature's fitting living denizens of woods, wilds, and hedgerows, then would London rejoice in a genuine natural garden indeed. We ought to add, that this site has for years past furnished the botanist with some of his choicest "finds," as not only native Docks there flourish, but waifs and strays from many a foreign shore, imported with foreign goods for the Exhibitions which have been held on the site, and constituting an "Exhibition Flora."

—— Bananas, etc., at Ashridge.—In going through Lord Brownlow's kitchen garden at Ashridge, by Berkhamstead (writes a correspondent), and seeing how successful Mr. Sage is in the cultivation of the Banana, I was led to make a few inquiries, and obtained the following particulars, which may be of interest to your readers:—In January, 1879, through a break-down in the heating apparatus, Mr. Sage replanted the house with suckers about 2 feet high, and has since then cut four large bunches of fruit, the last of which was hanging in the fruit-room, and weighed 90 lb.: eight of the fruit ready for table weighed just 4 lb., and there were 183 fruit on the bunch, which was 2 feet 9 inches from the top of the fruit to the point, and measured 4 feet 9 inches in circumference. It first showed through, September 9, 1879. There are three other bunches coming on: one showed March 25, one May 1, and the last one May 22, which promises to be a beauty. They are grown in a border at the back of a lean-to house 50 feet by 11 feet, with a glass front about 2 feet 6 inches high, which is made use of for Strawberries in pots, while Passiflora edulis fruits freely the whole length of the house. In the next house is a wonderfully fine crop of Figs. On the back wall of a house used for early Strawberries the pot Vines are very fine, with eleven to thirteen bunches of good size and quality. Vines for dinner-table decoration promise to be a great success; they are arranged on iron stands, alternately pyramid and table-shape, and average eight to twelve bunches. To see them is to admire them. Mr. Sage has pots made expressly for the purpose of combining pot and stand in one, so that they cannot overbalance when placed on the table. Mr. Sage has a plentiful crop of Apricots on the outside walls, thanks to the curtains which he uses every year.

—— The Potato Crop.—Although the Potato tops are generally above ground, it is very obvious that cold nights and a remarkably dry spring have made the top growth very uneven, and there are far more vacant places in the rows than usual. It is now by no means unusual to note growth just pushing through, whilst adjoining are tops 12 inches high. It is long since we have had such a dry time from the planting period; and although rains have in some places fallen heavily and abundantly, there are other districts where the rainfall has been of the smallest, and the effects upon the soil merely temporary and transient. A heavy rain, sufficient to thoroughly saturate the soil for several inches deep ere the important work of earthing-up commences, would be of great value. On stiff lands the soil is still hard and impervious, defying the hoe, and rendering all attempts at good cultivation impossible. Where such is the case, the growth of the Potato seed is far more irregular than where the soil works freely, even though very dry. If the past few weeks indicate the nature of the weather for the next two months, then we shall expect to hear but little of the disease. Perhaps nothing would do more to help stamp out the Peronospora in Europe than several successive hot dry summers, but such seasons would affect the Potato crop largely in bulk, if not in quality. In gardens where the early growths escaped the effects of the late frosts, and where a deeply worked rich soil offers the best of places for the production of large crops of Potatos, the haulm is healthy, regular, and almost luxuriant. With a continuance of the comparative drought in such places there will be a healthy and early produce. If much moisture comes, then the usual disaster and decay will follow. We cannot plant for seasons until we can get forecasts of them that are reliable; but to none will such forecasts be of greater value than to cultivators of the Potato.

—— Herbaceous Plants at Kew.—Amongst the showiest of the herbaceous plants now in flower in the Kew collection are Veronica Teucrium, and some of its varieties, the following being the most desirable and distinct:—V. Teucrium satureiæfolium grows about a foot high, and is extremely floriferous, being literally covered with compact upright racemes of splendid blue flowers; V. latifolia has broader leaves and paler flowers than the last, grows to about the same height, but seems rather a later bloomer. V. alpestris is a smaller plant with denser racemes, the colour being the dark blue of the first-named variety; and V. rupestris is a still smaller form, of similar colour and habit. Nardostachys Jatamansi is growing and flowering very freely in the Valerian bed; although not a strictly handsome plant, it is certainly pretty and worthy of a place in any garden. It is of considerable interest from the fact of its now being generally regarded as having constituted the Spikenard of the ancients; it is a native of the Himalayas, where two varieties exist—one a smaller grower and with redder flowers than the Kew plant, which has heads of rather large Valerian-like flowers, which are suffused with a pale purplish colour. Lathyrus pisiformis—a Siberian Bitter Vetch—is a handsome border plant with large showy flowers, deep red in bud, changing to blue when open, the wings being two or three shades lighter in colour than the standard. Orobus canescens, a beautiful old-fashioned perennial, about a foot high, has charming foliage and long-stalked racemes of large purplish-blue blossoms. On the rockwork Saxifraga mutata is very conspicuous; it has a dense rosette of hairy, spathulate leaves and a pyramidal panicle of orange-yellow flowers—decidedly ornamental and also curious by reason of their rather long narrow petals. Gypsophila repens is a very free-flowering plant, and its much-branched cymes of starry white flowers, underlaid by the cushion of grey-green leaves and branches, are very charming. Eschscholtzia tenuifolia is a Californian annual of smaller size and more delicate habit than the common E. californica; the flowers, too, are smaller and of a pleasing soft lemon-yellow colour. Echium rubrum is a distinct and striking East European Bugloss, about 2 feet in height, with deep red flowers. One of the most attractive of the Labiates at the present moment is the Indian Salvia hians; it has long-stalked cordate acuminate leaves and very large blue flowers, the middle lobe of the lower lip being white, striped with purple: it grows from 12 to 18 inches high. Dracocephalum speciosum, another Himalayan Labiate, has whorls of purple-blue flowers; the root leaves are cordate, long-stalked, and the upper cauline ones are sessile—the Kew plant is about 1 foot in height. The East European D. austriacum, a neat-growing plant, about 18 inches high, has linear Rosemary-like foliage and spikes of large dark blue flowers.

—— Earl Cowper on Gardening.—Replying to an address presented to him last week by the Royal Horticultural Society of Ireland, Earl Cowper said:—"For my part I must be content, as regards horticulture, to admire the glorious spectacle of a garden full of rich and varied colours, or to wonder in silent ignorance at the different developments of which the same plant is capable under different treatment. Do not think, however, I undervalue the science which it is your business to encourage. I am well aware that no occupation requires more natural ability, information acquired by great study—more labour of body, or more anxious or incessant application of the mind than that of the head gardener of a large establish-

ment. I am well aware of the humanising effect produced by the cultivation of flowers upon the roughest and most uneducated men. I am aware also of the intimate manner in which all sciences are connected together, and that the peculiar study which is necessary for success in horticulture has done, and may be expected to do, as much towards solving the great problems of the universe as any other. I therefore wish you every success, and shall always be willing to assist and encourage you to the best of my ability."

—— PHELIPÆA COCCINEA IN CULTIVATION.—This handsome root parasite flowered last year in the Botanic Garden at Dresden for probably the first time under artificial conditions, and a representation of it is the subject of the thousandth plate of REGEL'S *Gartenflora*. The drawing, however, appears to have been made after the flower was past its best, and scarcely does justice to the plant. Phelipæa coccinea, or Anoplanthus coccineus, is the most brilliantly coloured, or one of the most brilliantly coloured, members of the Orobanchaceæ, and in addition to the two names cited it has received at least half-a-dozen others. It is a stout brown scaly plant, 2 or 3 inches to a foot high, each stem bearing one large scarlet flower, nearly 2 inches in diameter. Sometimes, according to BOISSIER, the stems are two-flowered: but this must be of rare occurrence, for all the specimens in the Kew Herbarium are one-flowered. It inhabits the Caucasus region both to the east and west of the mountains, and has always attracted the attention of travellers. KOTSCHY says "Planta formosissima Quercetorum fruticeta incolit." Mountainous and alpine situations up to 6000 feet are its favourite haunts, though it also occurs in the neighbourhood of Erzeroum. We have seen it attached to Achillea tanacetifolia only, but it likewise preys upon various species of Centaurea. The plant which M. POSCHARSKY, Curator of the Dresden Botanic Garden, succeeded in flowering, was sent as a herbarium specimen from the Caucasus by Dr. KOCH in 1876. M. POSCHARSKY, perceiving some signs of life in one of the specimens, planted it out-of-doors in a rock garden. The nurse plants were Centaurea dealbata and Achillea tanacetifolia, both of which grew, but the parasite itself did not appear until last June, when M. POSCHARSKY had nearly given up all hope. If the plant is a perennial, and it appears to be, it may prove a permanent acquisition to the Dresden garden, at least, just as Lathræa is in some of the Rhododendron beds at Kew. A noteworthy circumstance is the long time the parasite lay dormant. The seedlings of the perennial Orobanches are from one three years forming a root-stock sufficiently strong to produce flower-stems.

—— HORTICULTURAL PROGRESS IN AMERICA.—We take the following from an essay read by Mr. PETER HENDERSON before the New York Horticultural Society on March 9, and published in the current number of the American *Gardeners' Monthly*:

"It is estimated that there are 500 florist's establishments within a radius of 10 miles of the City Hall, New York, and that the capital invested in land, structures, and stock is not less than 8,000,000 dols., the product of which is mainly for New York City alone; and when we consider that New York contains only about one-fortieth part of the population of the United States, and that horticultural taste is certainly not higher here than the average of the country, it will be seen that the business of floriculture alone, without taking into consideration that of fruit and vegetables, is one of imposing dimensions. There is but little doubt that in nearly all the manual operations necessary in horticulture we are in advance of Europe, and no better evidence can be had in proof of this assertion than the fact that the cultivator gets one-third less for his products in the markets of New York or Philadelphia than the same products bring in London or Paris, though the price paid for labour is one-third higher here than there. Nor does it follow that the cultivator here works at less profit, for he does not; so that the only solution of the anomaly is that our necessities have compelled us to make such progress in our operations that our products are produced with less labour. For instance, when in London, in 1872, I saw twenty men in one squad, digging the ground in one of their market-gardens with spades. For the past thirty years there is not a market gardener on Long Island or New Jersey who would allow his ground to be dug with a spade, even if done for nothing, for he knows that the plough and harrow will pulverise the soil better; but JOHN BULL, in the neighbourhood of London at least, had not found that out in 1872, and it is no doubt the tenacious adherence to such primitive methods that is making Europe in many of the industries of the day play second to the United States. Yet it must be admitted that in some phases of horticultural progress we are yet far behind Europe, particularly in the ornamentation of our public grounds. We have nothing to compare with the Battersea Park, London; the Jardin des Plantes, of Paris; or the Phœnix Park, Dublin; and when comparison is made of the grounds surrounding the villas in the suburbs of these European cities with our suburbs here, the comparison is, if possible, more against us, for there it is rare to see a neat cottage without a well-kept lawn, and good taste shown in the planting of its flower beds, its well trimmed fruit trees and neat vegetable grounds. Here, as yet, we have hundreds of expensive mansions, particularly in the suburbs of New York, where the so-called garden surroundings tell all too plainly of the Mushroom wealth of its shoddy owner."

—— ODONTOGLOSSUM VEXILLARIUM.—We have received from F. YATES, Esq., Higher Feniscowle, Pleasington, some superb flowers of this beautiful Orchid. There are three well-marked varieties: one like the form called superbum with deep pink blossoms, which measure over 4½ inches across; another nearly white; and a third resembling that shown at the Regent's Park on Wednesday, by Mr. BULL, as picturatum, but with more rose colour on the sepals and petals, the lip being margined with white, and having a rich crimson tridentate spot at the base, the side lobes of which are much shorter than the centre one.

—— ROYAL AGRICULTURAL BENEVOLENT INSTITUTION.—The annual meeting of the Royal Agricultural Benevolent Institution was held on Wednesday week at Willis's Rooms, under the presidency of Mr. J. J. MECHI. The report stated that the donations and subscriptions to the Society had increased during the past year, notwithstanding the protracted and deplorable vicissitudes that had borne so heavily upon the agriculturists. The Council acknowledged the munificence of many of the City Companies, and the assistance rendered by the rural clergy, who had in many cases handed over to the Institution the whole or part of the collections resulting from their harvest thanksgiving services. The total receipts for the year ending December 31, 1879, amounted to £15,125 19*s.* 11*d.*, and the expenditure in respect of pension and school payments to £9782 15*s.* Seventy-three pensioners were elected; a considerable increase over the number previously elected. During the Society's twenty years' existence over £50,000 had been received in subscriptions and donations, and the Chairman hoped that that amount at no distant date would be doubled.

—— THE DALKEITH YOUNG MEN'S MUTUAL IMPROVEMENT SOCIETY.—The young men employed in Dalkeith Gardens having established a society for mutual improvement some time ago, it has been carried on with much success and great benefit to the members, most of whom have contributed excellent papers to the meetings on a well-chosen variety of practical subjects. Meetings are held weekly from September to April, at which papers are read by members in their turn, and the various points discussed and explained for mutual advantage and instruction. During the session of 1879-80, twenty-six meetings have been held, at which thirty papers have been read and discussed; besides various other useful and instructive subjects which have been casually brought forward. The papers have all been of a practical nature, upon such useful topics as "Grape Growing," and the "Cultivation of the Heath," by John McKinnon; "Early Forcing of Flowers," "The Violet," and "The Onion and Leek," by Nimrod Sherwood; "Garden Walks," and "The Ice Well," by James Dickie; "The Cultivation of Ferns," and "Garden Manures," by Charles Warwick; "Cultivation of the Peach," and "Planting Evergreens," by Charles Webster; "Cultivation of the Banana," and "Forcing Strawberries," by George Sage; "Ventilating Fruit and Plant Houses," and "Pruning," by Alexander Westland; "Culture of Asparagus," "The Potato" and "The Coxcomb," by William Hardy; "Spring and Summer Bedding," by William King; "Culture of Eucharis amazonica" and "The Tomato," by Thomas Lee; "The Cineraria," by James Grant; "The Fuchsia" and "The Gesnera," by Robert Davidson; "Celery Culture," by James McDonald; "The Carrot" and "Cabbage Cultivation," by Laurence Houston; and "French Beans and Scarlet Runners" and "Forcing Rhubarb and Seakale," by Stamford Cossar. The meetings have been punctually attended, and the subjects freely discussed in an instructive and intelligent manner. The business has been conducted in so harmonious a spirit that the session just closed has been highly successful. Occasional meetings are held during the summer, and the regular weekly meetings commence about the middle of September.

—— HARDY PLANTS.—Among the finest of hardy flowers in the Cambridge Botanic Garden is a plant labelled Lathyrus Sibthorpii. It is a somewhat rare species, but much to be commended for earliness and the beautiful rose-purple colour of its flowers. Few of its genus are more lovely, and though not yet requiring support, it is in full bloom. Erysimum pulchellum has been one of the finest of plants on the rockwork. Its colour is of the brightest yellow, and commencing to flower many weeks ago, with a height of perhaps only 3 inches, it has now reached a foot with the production of its last blossoms. Anthyllis montana is still charming, and for many weeks it has been so, with such silvery leaves and delicate pink flowers. Hippocrepis helvetica is valuable for creeping over stones, clothing them with dense foliage and lighting up with numerous yellow flowers. Lychnis Lagascæ is so well known as not to require putting forward, but the great beauty it has here will excuse a reference to it. The best plants are those grown from seed; they produce so much better flowers in size, and with greater profusion. Narcissus poeticus, fl.-pl., just going out of bloom, should be remembered for the value of its blossoms, which are almost equal—perhaps quite equal—to Gardenia. We have seen a beautiful wedding bouquet, of which its flowers constituted the greater part. Hyacinthus amethystinus and the white variety are extremely lovely and graceful. We have lately observed how valuable these and the Scillas are for lasting in water. S. campanulata and the white variety have bloomed in water from the opening of the earlier flowers till the forming of fruit nearly full-sized, and the fading of the last on the stem.

—— EALING, ACTON, AND HANWELL HORTICULTURAL SOCIETY.—The summer exhibition of this Society will take place in the grounds of the Manor House, Ealing Green, on Wednesday, July 7.

—— THE WEATHER.—General remarks on the weather during the week ending June 14, issued by the Meteorological Office, London:—The weather was rather cloudy in all parts of the kingdom, and at times very dull and showery. Thunderstorms were experienced at several stations during the first few days, and again in some places at the close of the period. The temperature was again below the mean in all districts. In "Scotland, E." the deficit was only 2°, but in all other parts of the country as much as 5° or 6°. The thermometer was highest in most places on the 12th or 13th, when 75° was reached at Nottingham and Cambridge; the lowest was on the 9th or 10th, when readings of 34° or 35° were registered over central England and Ireland. At some of the inland stations slight ground frosts occurred. The rainfall was a little more than the mean in "England, N.E.," "England, N.W.," and "Ireland, E.," and equal to the mean in "England, S.W.," but in all other districts the fall was slightly less than the average. Bright sunshine shows a decrease in Scotland, but an increase elsewhere. The sun was obscured most over the northern parts of England and east of Scotland, and least in Ireland and the south-west of England. The wind was generally south-westerly (except in the extreme north) during the first two days, very light and variable on the 10th and 11th, and southerly on the 12th and 13th, while on the 14th a northerly breeze sprang up in all parts of the country. In force the wind was generally light or moderate, but on the 12th and 13th the southerly breeze blew freshly or strongly on many parts of our western and northern coasts.

—— GARDENING APPOINTMENTS. — Mr. JOHN WAKEFIELD, late Gardener and Bailiff to H. BARCLAY, Esq., Middleton, has been appointed Gardener to Lord DE CLIFFORD, Hints Hall, Tamworth.—Mr. GEO. WYTHES, late Foreman and propagator at Alexandra Park, Manchester, has been appointed Head Gardener to H. W. FREEMAN, Esq., Thirlestaine Hall, Cheltenham.

AGAVE (LITTÆA) VICTORIÆ-REGINÆ, T. Moore.

Acaulescent; leaves 100 to 250 in a compact rosette, ovate-lanceolate, concave, 6—8 inches long, 2—2½ inches wide above the slightly dilated base, ½ to (towards the base) 1 inch thick, rigid, dull green, with white markings, and a horny, entire, at last detached border, which terminates in a rigid, often twisted, blackish spine, usually bearing a few teeth at its base, often with a similar horny border on the dorsal keel, similarly terminating in one or two teeth at the base of the terminal spine (which thus appears two- or three-crested); scape, 8—10 feet high, 1 inch thick; flowering-spike about one-third of its length, very dense, bearing in the axil of each bract three short-pedicelled flowers; flowers about 2 inches long; ovary over ½ inch; tube broadly funnel-shaped, only ½ line long, perigonial lobes oblong-linear, 8 lines long; filaments inserted at the base of the lobes, more than twice as long as these, and rather exceeding the style, which bears three orbicular, at last spreading, stigmas; capsule about 9 lines long, oblong, cuspidate; seeds, 2 lines long.—*Gard. Chron.* n.s., iv., p. 485, with woodcut (fig. 137); *Flore des Serres*, xxi., p. 169, with woodcut, Baker, in *Gard. Chron.*, vii., p. 528.—*A. Consideranti*, Carrière, in *Rev. Hort.* 1875, p. 429, fig. 68.

In coarse gravelly soil on steep hills near Monterey, Northern Mexico, flowering in autumn according to Dr. E. Palmer, who gathered fruiting specimens in February last. The largest plant which he sent to St. Louis has a diameter of 2 feet, a height of 14 inches, and bears about 250 leaves, 7 to 8 inches long and 2 to 2½ wide. The leaves of the older plants bear white streaks, which seem to correspond with and are probably produced by the pressure of the adjoining leaves, but other wavy, transverse marks on the leaves of younger plants can scarcely thus be accounted for. The inflorescence is that of a very dense-flowering Littæa, the flowers with an extremely short perigonial tube. The great morphological interest consists in the regularly (at least in my specimen) tri-flowered bunches, the third flower occupying the centre between the two normal twin flowers of this section; this is probably the primary flower, which in most or in all other Littæas is entirely absent, or is in a few species only indicated and represented by a bristle. Where I have seen more than two flowers in a Littæa (*e.g.*, often in A. utahensis) the third and fourth flowers are axillary to the bracts of the first and second one. *G. Engelmann, St. Louis, U.S., May*, 1880.

Fig. 137.—Agave victoriæ-reginæ.

Home Correspondence.

Preparations for Strawberry Potting.—We are now upon the advent of a new year in Strawberry forcing. No interval of rest for the weary gardener between gathering the last crops from the present season's plants and the preliminary preparations that weather and other circumstances press upon our notice as being indispensable in laying a good foundation for another year. Runners are both early and abundant upon young plants which were planted out of small pots last August, while there is not a score of runners upon forced plants which were planted upon trial early last April. We have, therefore, favourable prospects before us. Layering Strawberry runners is an uninviting piece of business, unless the workman has an interest in his work. It is best, therefore, to select nimble fingers as well as willing ones to execute the work if it is to proceed quickly and satisfactorily. All materials should be got in readiness beforehand, pots (large or small 60's) should be clean washed, and soil chopped down small enough to work conveniently into the pots. A piece of fibry turf with the fine earth shaken out of it will answer for drainage in the small pots. Then fill them with the prepared compost consisting of loam and a dash of horse-droppings, and put a thin covering of sifted leaf-mould on the surface of the soil in each pot to peg the runner upon, in order that it may take root quickly at the joint, and stop growth beyond the latter by pinching. Plunge the pots between every alternate row of plants, so that they may be easily reached with water, and if it can be arranged to have plants for producing runners near to a good supply of water, where a boy with the assistance of a hose-pipe can attend to their daily requirements in dry weather, it will be something saved in labour. Varieties.—A selection of suitable varieties is one of the most important points bearing upon success in Strawberry forcing. Identical varieties behave so differently under different conditions of soil and climate, that it requires the experience of a season or two to enable one to eliminate from the list such kinds as are not free croppers, or that inherit constitutional infirmities which appear to develope in some instances and to disappear altogether in others under circumstances already indicated. For the North of England half a dozen good kinds would be Vicomtesse Héricart de Thury, La Grosse Sucrée, Underhill's Sir Harry, President, Sir Charles Napier, and either Dr. Hogg or James Veitch, the former being the best cropper and the latter carrying off the palm in point of size. Six sorts for the South of England would be Keens' Seedling, Vicomtesse H. de Thury, Underhill's Sir Harry, President, Sir C. Napier, and Dr. Hogg. The best all-round Strawberry for forcing in this climate after the month of March is undoubtedly President, and for late crops Sir Charles Napier is one of the first in cultivation, but although a free cropper it wants skill to give it that brilliant gloss which is indicative of superior management. Hence we often

find the variety spoken of as a coarse sort by persons who do not or cannot observe individuality in different kinds of fruit. This latter variety should always be grown where fruit has to be sent a long distance by rail, it travels better than any other kind that I could mention. Soil for Potting.—Where loam has been stacked up in narrow ridges for some time the scorching winds of the past three months will have sucked every particle of moisture out of it. Last year being so wet it was found difficult to keep large bodies of soil in a working state, and this year having made our heaps less it is found to be too dry. It will, therefore, be advisable where this state exists to take the ridges of soil to pieces, and reconstruct the flakes in the shape of a square with a flat top, and to drench the whole thoroughly with water, repeating the application once or twice with some safe sewage liquid. When the soil is found to be sufficiently moist it should be chopped up to suitable size, adding about one-third of horse-droppings, bone meal, and wood ashes, to the whole compost, and after thoroughly incorporating the different parts together it should be placed in some sheltered niche and covered over with old mats or bags until it is required for use, when it will be found an advantage to have so much of the work accomplished beforehand. As soon as the young plants are found to have filled the small pots they may be severed from the parent plants, and if the weather is dry let them be set behind a north wall until they recover themselves from the effects of separation; on the other hand, in case of wet weather, they must have the protection of a glass covering, to keep them in proper condition for potting at any time. When runners are early, as is the case this year, there should be no hurry to get through the last potting, rather humour the plants so as not to starve them in the little pots, and give the final shift no earlier than the second week in July. A good many growers use large pots for Strawberries, in which case potting should be done in time to give the plants an opportunity of filling the pots with roots, and of making and ripening a crown (or crowns if the cultivator chooses) in proportion to the size of the pot. The last fortnight in July would be a good medium time for doing the bulk of the potting. I may, perhaps, observe here that we often go to the extreme of what is called in horticultural *parlance* ramming. The soil should certainly be made firm in the pots, but not pounded, as it often is, and there should be fully an inch of space left for the double purpose of top-dressing, with rough horse-droppings, the surface of the soil in each pot, and for giving abundant supplies of water to the roots of the plants. The refuse of an old Mushroom bed is capital material for top-dressing; it is a good retainer of moisture, owing to its spongy nature, and promotes vigorous root-action where it is most important to have roots in the greatest number. *W. Hinds.*

Edgings to Garden Walks.—There can, I think, be no question, that as a live edging to garden walks, Box forms the neatest and best looking, and is therefore in more frequent use than any other, but the great objection to it is that it harbours slugs, which find in it a secure hiding-place from whence they sally forth for their nightly depredations, and return again before sunrise gorged to repletion with the tender morsels of succulent seedling plants gleaned in their foraging expeditions. To break up the homes of these pests is a great gain, as when they have no retreat beyond the chance ones a clod or leaf affords, they are more at the mercy of birds whose preying eyes are ever on the alert, as may be seen in the diligent way they search such places after a shower, their instinct teaching them where to look to find food for themselves and young ones. A striking instance of this is before me now in front of the window I am writing at, where a thrush is busy at work turning over the *débris* among the grass, and having just secured the prize she or he was in search of, is now on the wing, and no doubt off to the nest to drop what is found in the gaping maw of one of the brood. Besides being diminished in this way, slugs in gardens when they have no dense wall-like mass of green edgings of Box to ensconce themselves in, are always abroad where they get disturbed by hoe or spade used in cultivating or stirring the land, when numbers are destroyed, and myriads of eggs, that, were they deposited anywhere else in a position like that mentioned, would escape and hatch, to crawl about and be a plague for months after. In addition to the slug nuisance, another disadvantage in having walks margined with Box is that they cannot be salted without running much risk of injury to the edging, which is a great drawback, as where there is much gravel surface the labour of hand weeding is something enormous and forms a serious item in garden expenses; besides which the walks, when the weeds have to be eradicated in that way, are always more or less loose through being broken up and disturbed, but if salted, not only will they be thoroughly cleansed from all mossy growth and conferva that accumulates during the winter, but they will also be considerably improved in solidity and brightness, the salt having a hardening and binding effect if the walks are rolled after wet weather. If dead edgings are used, salt can be applied at any time. The best manufactured article I have seen for the purpose is some cable-patterned tiles that Mr. Roberts was having put down at Baron Rothschild's at Gunnersbury, which tiles are made of Staffordshire clay, and burned to such a degree as to be almost as hard as iron. This hardness is a great point in their favour, as they do not chip or get broken and disfigured in the way others do, and as they have holes in the ends in which to insert short pieces of stout wire rod, they are by that means held together so rigidly as to always remain straight and immovable. The only objection to them is their colour, which is nearly black, but by running a brush over them a few times with some Portland cement, the improvement would be such, I think, as to leave little to be desired. Where formal edgings of this kind are not considered the right thing, more natural-looking ones may be formed with large pebbles or flints, and if the spaces between these are filled in with Gentiana acaulis or Thrift, the effect in spring will be most beautiful, especially if the former plant is used, as, being quite at home with its roots under the cool stones, it will flower with great freedom, and nearly cover them up with its neat little foliage. The leaves being small afford little harbour for slugs, and the Gentian may therefore be grown in any garden; but as it is fond of rather stiff soil, it is advisable before planting to work in some clay, which, buried, is very retentive of moisture. Managed in this way the plants keep healthy and strong, whereas in light land without this aid they suffer much in summer, but Thrift will keep alive and do almost anywhere. *J. S.*

Scale on Plum Trees.—I should strongly recommend "Perth" to let the next trial be with the fluid sold by Messrs. Killengrey & Jacques, Doncaster, as "Soluble Phenyle." I have not tried it myself for this purpose, but a neighbouring nurseryman informs me that he has found it answer perfectly in clearing scale from a more tender-barked tree than the Plum. The fluid should be used very dilute till your correspondent finds what strength is safe, but I think he might begin with three tablespoonfuls in a gallon of water to all the harder bark. It should be brushed in (an old tooth-brush is a good instrument) or rubbed in with a flannel; this takes off quantities of the scale, and the eggs, and the smell makes the rubbed bough very uninviting for insect deposit. It is necessary, however, to be careful, for if the fluid is allowed to drip about, it will kill the bit of the leaf that it lies on; a very little care, however, makes all safe. If your correspondent thinks fit, I would, with pleasure, on receipt of his address, forward him a small quantity for experiment, as I am anxious to gain any information of remedies found practically useful in counteracting insect injuries, and have not had opportunity of experimenting myself on this special form of attack. *O.*

The Herb Sorrel.—Referring to the notice on the "Herb Sorrel," at p. 757 of your issue of the 12th inst., "H. M. E." will find an account of Sorrel in John Evelyn's *Acetaria*, p. 138, art. 69. "Sorrel. *Acetosa* or *Oxalis*, of which there are divers kinds. The *broad German Acetosa maxima Germanica:* The *Roman* or *French Acetocella* with the *Round Leaf*, *Oxalis Franca* or *Romana* with the *repent Rounder Leaf* found by that accomplish'd *Botanist* the late Mr. *Ray* growing in *Cumberland* (as likewise in *Wales*). The barren *Sorrel* of *Russia* deservedly esteem'd by many: But after all the best is that of *Greenland*. *Sorrel* is by nature cold, abstersive, acid, sharpning the appetite—asswages Heat, cools the Liver, strengthens the Heart: is an *Antiscorbutic*, resisting Putrefaction and imparting so grateful a quickness to the rest, as supplies the want of *Orange*, *Limon*, and other *Omphacia:* and therefore never to be excluded. *Vide* Wood Sorrel." On turning to this, I find at p. 141, art. 82, "Wood Sorrel. *Trifolium Acetosum* or *Alleluja*, of the nature of other *Sorrels*." This extract is copied verbatim, the capitals as used by Evelyn, and the words in italics as in the original. *J. A. C., June* 13.

—— In reading "Notes from a Lancashire Garden" in your paper of June 5, I was surprised to find the writer wonder at any one making use of our common field Sorrel. It is very often used with boiled knuckle of veal, made just as you would make mint sauce. I have partaken of it in Yorkshire and Lancashire. *W. B., Eccles, June* 10.

—— A good deal of Sorrel is used in all large houses where French cooks are employed. It is also extensively eaten, even by children, in the North, or used to be, either with bread-and-butter, or alone. In France it forms a frequent and very pleasing addition to salads, and is cooked and used in a somewhat similar way to Spinach, as well as employed as a sauce and in several made dishes of tit-bits, as referred to by "H." It is used in salads in England, while the tender leaves in the spring are a mild and pleasant acid with bread-and-butter. Sorrel is supposed to be cooling for the blood as well as tempting to the appetite, either eaten alone or mixed with Watercress or Mustard-and-Cress. The heat of these two may be nicely toned down by the addition of Sorrel to please the palate of those who think the Mustard-and-Cress too hot. *D. T. Fish.*

Hardiness of Azalea Mrs. Carmichael.—Last autumn I planted out two plants of Mrs. Carmichael Azalea; I am happy to say they have withstood the winter, and are at present looking as lively as possible. The winter of 1879 and 1880 was as severe as nearly any on record. I don't know how many degrees of frost were prevalent in the good days of old, probably the severity of the frosts has degenerated with the same declension as everything else (?). The plants were put out in an exposed situation, and had no protection. I am fully confident that hybrids between Mrs. Carmichael Azalea and the large flowered greenhouse varieties will be hardy. Then let Rhododendrons look to their honours. A gentleman in America who had noticed a paragraph of Mr. Fish's anent hardy Indian Azaleas lately made a few favourable comments in the *Gardeners' Chronicle*. I hope if he sees this he will attempt to rear a large-flowered hardy Indian Azalea without the aid of Azalea mollis. *William Carmichael, Nowton Court, Bury St. Edmunds.*

Broccoli.—As the Broccoli season is fast drawing to a close, the present is a good time for deciding which is the best to grow. The two last winters have tried the Broccoli severely in this part of South Yorkshire. I grow chiefly Cattell's Eclipse, Carter's Champion, and Richmond Late White. Cattell's Eclipse is a well known good variety, but the two last winters here have proved too much both for it and Carter's Champion. Not more than five per cent. have stood, whilst Richmond Late has not suffered to the rate of 10 per cent. I have been cutting from it for about a month, and to all appearance it will last another fortnight; those who have not tried it should do so, and I don't think that they will regret it, as for hardiness and quality there is nothing to equal it in this part. *T. H.*

Abies Nordmanniana.—Has anybody noticed this pecularity in the growth of Abies Nordmanniana? In an avenue of this tree, leading to my house, each specimen has burst into growth and made shoots between 4 and 5 inches, on the south-west side, while on the north-east side the buds are only just pushing—not yet burst. Has this been observed elsewhere, or in other trees? *A Novice.* [Not uncommon. Eds.]

Lamium longiflorum.—A plant bought under this name in early spring in a 3-inch pot is now in full flower, and covers more than a square yard of ground on one of my rockeries. It is a showy plant, having large flowers, and its flowering shoots well raised, but its greediness for room detracts from its virtues; its habit is coarse and straggling, and the colour of its flowers, light purple, is not very attractive. In general appearance it is less ornamental than the old Lamium maculatum, the yellow variety of which is a most useful plant to fill gaps on a rockery, as I find it endures any amount of transplanting, and cutting into shape. *C. Wolley Dod, Edge Hall, Malpas.*

Asparagus plumosus.—I am pleased to see that this fine decorative plant is being brought into notice. I have known it for the last five years. I am working up a large stock of it for table and cut flower decoration. I have been using it for the last two years for all kinds of floral ornamentation. Plants of it, well grown in 5-inch pots, for dinner-table adornment, cause quite a sensation, while nothing can equal it as a green for ladies' head-dress, as it produces so many beautiful shades of green. *Richard Nisbet, Aswarby Park Gardens, June* 12.

Notes made at Kew.—Having spent an hour lately in the herbaceous garden at Kew, may I be allowed to mention a few plants with which I was most impressed? On the central rock beds the most striking Saxifrage seemed to be S. valdensis, in habit something between S. pyramidalis and Aizoon, and of very neat growth. Genista sagittalis and Orobus canescens were very ornamental amongst the stones on the next raised bed, where, I should have discovered, if I had not known it long ago, that the common British Trefoil, Lotus corniculatus, is one of the best of rockery plants. The bed of Thalictrum always looks well at Kew, though this year they are a little dwarfed by the drought in spring; this suits some of the stronger growers, like T. flavum and T. aquilegifolium. If I were judge, T. tuberosum would win the first prize. The next bed, assigned to Aquilegia, is always disappointing at Kew. Dry hungry soil is not suited to Columbines. On my strong and cold soil I could find single plants of A. fragrans or A. canadensis, to

say nothing of A. vulgaris, which could swallow every Columbine in the Kew bed without much inconvenience. I dare not criticise the names, but two-thirds of the bed seemed to be made up of very ordinary varieties of A. vulgaris. A charming little cruciferous annual, Ionopsidium acaule, making close cushions covered with white flowers, would probably sow itself and share vacant spots on the rockery with Saxifraga cymbalaria, and injure nothing. Amongst the Erigerons, E. glabellus and E. pulchellus are conspicuous by their large flowers combined with dwarf habit. Amongst larger showy border plants, not yet common in nursery catalogues, I noted Lindolepis spectabilis, Cirsium heterophyllum, Rhaponticum pulchrum, Chrysogonum virginianum, and Platystemon californicum. I should recommend a compact dwarf Œnothera, with white flowers as large as those of Œ. macrocarpa, named Œ. marginata, were it not that I find no white flowered Œnothera hardy. *C. Wolley Dod, Edge Hall, Malpas.*

Lilium giganteum.—This Lily has in a cool house here attained the height of 7 feet 6 inches, and has produced six well developed blooms from 6 to 6½ inches long, and nearly the same width across. The foliage, which is extremely perfect, is well set on the thick stem at intervals varying from 5 to 8 inches. The bulb is an offshoot of one I bloomed three years ago, and has been shifted when necessary until it now stands in a 10-inch pot. *C. W., Brighton.*

Early Peas.—The first show of English grown green Peas in our market in anything like quantity this season was on Wednesday, June 2, three weeks earlier than last year. The Improved Sangsters have fine pods; the plant being thin, they are larger and have more in them than last year. William I. does not seem to be so prolific as the Improved Sangsters. Some of the Prizetakers will be ready about the end of next week, the warm rains lately have helped them on considerably. Asparagus comes very thin and spare here this season: is this general? I suppose from lack of sunshine last summer the stalks did not ripen and wither early enough for the crowns to mature and set strong shoots. Strawberries look well, and promise an abundance of fruit; the Potato plant is strong, good in colour, and growing fast. All we want is bright summer sunshine and warmer nights. *H. Alexander, Totterdown, Bristol, June 8.*

Messrs. Paul's Protest.—Permit us to reply to "One of the Judges" in your last week's impression: we will do so as briefly as possible. We were quite right in protesting against a wrong judgment; of course the judges do not agree with us in doing this, but no other resource is open to us, as there is no appeal against their decision. His letter quite confirms our opinion, that the decision was arrived at rather by a consideration of the awards of the past three years than upon the merits of the plants. The supposed invincibility of our opponent was seemingly overpowering. "One of the Judges" seems to have forgotten that if the balance of awards for these big specimens had been against us the last three years, the previous two years the majority of the first prizes were ours, as at Oxford *v.* Cambridge fortune sometimes varies. We hold we fairly turned the tables on Saturday week, and we adhere to our opinion. There was no slur on the judges—we did not when writing the protest know who they were. We would suggest to flower show authorities, however, where pot Roses are amongst the classes, a good grower and exhibitor, past or present, of pot Roses should be "one of the judges." *Paul & Son.* [It does not always follow that "a good grower and exhibitor" makes a good judge. We should think most "showmen" could evidence to the contrary. Eds.]

Stephanotis floribunda.—This much esteemed and highly scented flowering hothouse climber has, I think, done well in most places this season, but nowhere have I seen it grown better than in a small span-roofed house in the Earl of Sydney's gardens at Frognal, Chislehurst, where I noticed a few days ago two splendidly flowered plants, which covered the south front of the house with their rich green foliage and pearly-white flowers, which were produced in great profusion from the axils of every leaf of the young growths, thus producing a continuous supply of these "never too plentiful flowers." These plants were growing in good-sized pots, and were standing on a slated stage, one at each end of the house, within a few inches of the flue—for it is an old-fashioned house—which is covered with a couple of inches of suitable soil, into which the roots have freely pushed, with unmistakable signs of having materially benefited the plants thereby, as was amply demonstrated by the display which I had the pleasure of seeing on the 9th inst. From these two plants Mr. Marsh, Lord Sydney's persevering gardener, informed me that he had been cutting freely for the last few months, and, judging from the evidence then adduced, he is likely to continue to do so for some considerable time to come. Perhaps whilst sounding the praises of the above favourite plant I may be allowed to say a word or two in favour of its compeer, the Gardenia, which was flourishing equally well in a hot-water pit adjoining the house above referred to, and in which was to be seen a fine example of Gardenia culture. The plants, which were planted out, were in a vigorous and perfectly clean and healthy state, not an insect of any kind being visible on them, and were, as they have been for some considerable time past, producing fine large flowers very freely. I may also state, in conclusion, that in front of Mr. Marsh's cottage, in a house (in two compartments) recently erected and heated by Messrs. Weeks & Co., of Chelsea, is a fine collection of new Coleus, Palms, and other decorative plants of that useful size usually employed for dinner-table decoration. Mr. Marsh has a considerable amount of labour throughout the year in this department of embellishment, if it can be called by that name, as useless as it is out of place, and one in which there are more flowers ruthlessly destroyed than in the embellishment of the boudoir and drawing-room combined. *H. W. Ward.*

Select Hardy Perennials, &c.—The following select hardy perennials were in flower at Southwood, Bickley, on June 12:—

Anchusa incarnata
Astragalus monspessulanus
,, Hypoglottis
Armeria maritima alba
,, ,, rosea
,, juncea
,, purpurea
Aquilegia Whitmanniana
,, glandulosa
,, grata
,, Burgeriana
,, cœrulea
,, ,, hybrida
,, chrysantha
Asphodelus subalpinus
Anthericum Liliastrum major
Allium azureum
,, cernuum
,, narcissiflorum
Allium Moly
Achillea aurea
,, subumbellata
Arenaria laricifolia
,, verna
,, cæspitosa
,, norvegica
Æthionema cordifolium
Anemone sulphurea
Ajuga alpina
Aubrietia Columnæ
,, Campbellæ
,, græca
,, croatica
Anthyllis montana
Alyssum spinosum
Astrantia carniolica
Aster ramosus
Bahia lanata
Borago laxiflora
Campanula carpatica
,, collina
,, muralis
,, isophylla
,, aggregata
,, glomerata
,, dahurica
,, Wanneri
,, pulla
Coronilla iberica
Cyclobothra pulchella
Claytonia sibirica
Cerastium Biebersteini
Cynoglossum apenninum
Crucianella stylosa
Cypripedium spectabile
Chrysobactron Hookerii
Centaurea montana
,, stricta
Caltha leptosella
Delphinium cashmirianum
,, Barlowi
,, nudicaule
Draba bruniæfolia
Dielytra eximia
Dianthus corsicus
,, mariscus
,, sylvestris
,, cæsius
,, neglectus
,, tymphrestus
,, petræus
,, fimbriatus
,, fragrans
,, floribundus
,, plumarius annulatus
,, atrorubens
,, deltoideus glaucus
,, suavis
Erinus hirsutus
,, albus
,, hispanicus
,, alpinus
Erigeron regalis
,, uniflorus
,, grandiflorus
,, alpinus
Erodium petræum
Erodium macradenium
,, cheilanthifolium
,, romanum
Epilobium angustifolium
Echium pyrenaicum
Erpetion reniforme
Geum triflorum
Gypsophila prostrata
,, repens
Hippocrepis comosa
,, helvetica
Houstonia cœrulea
Hieracium aurantiacum
Horminum pyrenaicum
Hutchinsia alpina
Hemerocallis Middendorfiana
,, flava
Iberis corifolia
Lamium longifolium
Linum narbonnense
Lilium bilingulosum
Lithospermum purpureo cœruleum
,, petræum
Linaria alpina
,, origanifolia
,, pilosa
,, purpurea var. aureo-reticulata
Lychnis Lagascæ
Lupinus polyphyllus
,, ,, Douglasii
Myosotis rupicola
Mertensia paniculata
Nepeta Reichenbachiana
Onosma taurica
Ornithogalum pyrenaicum
Omphalodes Luciliæ
Potentilla aurea
Phyteuma Charmellii
,, comosum
,, orbiculare
Papaver alpinum
,, orientale
,, nudicaule
,, croceum
,, pilosum
,, umbrosum
Phlox carolina
,, ovata
Primula farinosa
Polemonium reptans
,, cœruleum var. Richardsonianum
Pentstemon procerus
Reseda glauca
Rosa rugosa
,, pyrenaica
,, rubrifolia (curious)
,, pimpinellifolia
,, spinosissima
Saxifraga tridentata
,, cæsia
,, pubescens
,, ceratophylla
,, nervosa
,, cotyledon gracilis
,, ,, pyramidalis
,, lantoscana
,, nepalensis
,, Wallacei
Sarracenia flava
,, purpurea
Silene maritima rosea
,, alpestris
,, quadrifida
Salvia rubicunda
Saponaria ocymoides
Spergulia nodosa
Thymus lanuginosus
,, serpylloides
Veronica austriaca pinnatifida
,, amethystina
,, officinalis rosea
,, rupestris major
,, orientalis

T. D. H.

Double Fungi.—In the *Gardeners' Chronicle* for 1873, p. 218, I called attention to an enormous crop of double specimens of Agaricus cristatus growing in one of the houses at Gunnersbury. Every specimen in this instance had two caps, one inverted on the top of the other. I had almost forgotten the circumstance, but am reminded of it to-day by seeing a crop of Agaricus papilionaceus growing on some grass in front of my house—every individual plant of the crop being double. This new company of double specimens seems to indicate that the duplication must be inherent in the spawn. Now as double Mushrooms are by no means uncommon in Mushroom-houses, it seems possible (as I suggested in 1873) that a race of double Mushrooms might easily be secured, by isolating the spawn belonging to the double specimens. A race of Mushrooms of this class would be a valuable one, as each cap would be in duplicate, and the cap of the mushroom is really the only part esteemed for the table. *W. G. S.*

Araucaria imbricata.—I have this year an Araucaria imbricata about 15 feet high, with about seventy cones on it. Do you know if this is a general thing this season? I have much larger trees than the one with the cones, but never had a cone on them. *W. Fletcher, Ottershaw, Chertsey.*

Boilers. — The case of "Eromegnar" seems to present no very great difficulty. If boilers of sufficient strength be used, the fact of the houses being above the site intended for the boilers will be an advantage, as the circulation of the water will be very rapid; and the necessity for stokeholes, with their risk of flooding, will, if I read his question correctly, be quite obviated, while, if plenty of non-conducting material be packed round the piping between the boilers and the houses the loss of heat will be slight. *George Duffield, Winchmore Hill.*

Rumex sanguineus as a Rock Plant.—Probably one of the most beautiful and distinct species of the order Polygoneæ is Rumex sanguineus, and for foliage, as a rock plant, is surpassed by few. The stems and veins are of a blood-red colour, thus giving it a decidedly peculiar and interesting appearance. When planted in a garden it grows very much larger than when growing wild; I had one growing in my garden, the leaves of which grew over 1 foot long. Around Penzance it is nearly as common as the R. viridis. Are such beautiful plants excluded from our gardens and cast away, simply because they happen to be natives of our hedgerows, &c.? It seems so. *W. Roberts, 9, Chapel Street, Penzance.*

The Cuckoo.—The lines quoted at p. 758 are directly illustrated by the charming song at the conclusion of Shakespeare's "Love's Labour's Lost." The "slanderous" quality of the cuckoo's note is in part the product of a pun, and in part perhaps of its habit of conveying its young into a nest it has no legal right to. A *coucoul* in old French is a cuckold, and our word cuckoo has been modified by time and usage from *coucoul*, having the same meaning, a remoter root being the Latin *cuculus. S. H.*

The Winter and the Plants. — The following are some of the plants that have escaped the past winter around Penzance out-of-doors:—

Embothrium coccineum, unhurt
Abutilon Boule de Neige, ditto, protected
Aster argophyllus, slightly nipped
Dicksonia antarctica, unhurt, but protected
Eulalia japonica zebrina, unhurt
Phormium tenax Veitchii, unhurt
Iberis gibraltarica, ditto
Fabiana imbricata, ditto
Seaforthia elegans, nearly killed
Hedychium flavum, coming on very slowly, and no doubt slightly injured
Leycesteria formosa, unhurt
Aralia papyrifera, slightly hurt
,, heterophylla, unhurt
Colletia horrida, ditto
Desfontainea spinosa, ditto
Nandina domestica, ditto
Eucalyptus globulus, ditto
Lilium giganteum, ditto (7 feet)
Maurandya Barclayana, unhurt, and now in flower
Garrya elliptica, unhurt
Dracæna australis, unhurt

W. Roberts, 9, Chapel Street, Penzance.

Great Scarcity of Hawthorn Flowers in Cornwall.—Notwithstanding the very severe winter of 1878–79, the Hawthorn trees were laden with blooms last spring long ere this, but this year scarcely six bunches of bloom can be seen on one tree. Whether the overflowering last spring, the wet and gloomy summer, and the rather severe winter that followed, had anything to do with it I cannot tell, but I cannot account for it in any other way. Should next winter prove as severe as the two past our birds will have very hard times of it. *W. Roberts, 9, Chapel Street, Penzance.*

Stopping Laterals on Grape Vines (p. 691).—It appears to me from the evidence before me, as contained in the paragraph referred to, that Mr. Earley bases his arguments upon a somewhat vague assumption. Mr. Earley argues that as the activity of leaves and buds of the Vine is developed before that in the roots, which are formed in consequence of the latter, the practice of suppressing the young leaves is of doubtful utility. Now I think it can be clearly and satisfactorily proved that there need be no doubt whatever as to the advantage of stopping the growth of the Vine within certain defined rules under our artificial system of cultivation. To keep within bounds I propose to take a simple case as an illustration. When a Vine is planted it is of course grown on the long-rod principle the first year, and those who are fond of

catching at straws may say that as long as you extend the leader the first two or three years it is a mixture of both systems. I will not dispute the point, but leave it to some of those hair-splitting gentlemen who are expert at defining niceties to determine the question. There is a principle involved, and I want first to establish a certain fact in a simple way, and then to base the few remarks I have to make upon the existence of that fact. If we plant two Vines, say the present year, and allow them to grow as they will this season, and prune them back in the autumn to within a foot or so of the base, and take two rods away from one Vine next year and only one from the other, what will be the result? Simply this: there will be one extra strong canes in the latter case, and two of less vigorous growth in the former. If those Vines are fruited the following year, say at the rate of four bunches to each rod, the single rod will finish off its four bunches of fine berries as black as Sloes, while the two canes bearing eight bunches, perhaps quite as large in bunch but not in berry, will be sadly deficient in colour. This is the result of over-cropping, if in both cases the canes are composed of matter of equal quality; and it points conclusively to a fact which gardeners would do well to give more attention to than they do. There is manifestly a striking difference in the quality of fruit produced by a Vine which is cropped to extreme tension point and one that is moderately cropped; is it, then, too much to affirm that the Vine that is being drained of its resources by a useless crop of laterals is in any better position than the one that is being over-cropped? It is merely two ways of accomplishing the same end. The laterals are to a cultivated Vine what an overflow-pipe is to a cistern; they waste a good deal of the vigour of the Vine, but it would be a rash assertion to state that the Vine is none the worse for it. The statement is, however, made upon the assumption, that as the activity of leaves and buds of the Vine is developed before that in the roots, the advantage of stopping is of doubtful utility. But it must not be forgotten that this development takes place mainly upon the stores secreted in the tissues of the Vine, and that root-action, or rather the formation of young roots, never commences in earnest until the young wood begins to colour brown at the base, except in cases were Vines are unnaturally forced to make roots by the application of hotbeds, which is whipping Nature faster than she is willing to go. At this point it is a question whether we are to utilise the increased power infused into the Vine by the action of young roots, for the purpose of filling and consolidating the wood and eyes of the Vine, which, although formed, are as yet spongy and imperfect; or whether we are to allow it to expend itself in the shape of laterals, which are in due course cut away. This period is to me the most important of all the year in Vine culture. It is the period when not only the quantity of food that is supplied to the Vine, but also its quality, should be duly weighed and considered, because it is from this dormant supply that Nature first brings herself into play the following season. One of the mysteries of Vine growing is the not being able to estimate exactly the quality of the material of which a Vine is composed. Vines, like human heads, are very much alike, but like the heads there is often a vast difference in the quality of the matter they contain. For example, we find people who are not gifted with very strong powers of observation supposing that because a Vine produces big leaves it is an evidence of skill, whereas a condition the reverse of this is attested by a comparison of results, and the cause of the difference is in the quality and quantity of fruiting matter that the Vine contains, and I very much doubt if we should add to the stock of either by allowing the laterals to grow without restriction. *W. Hinds, Canford Gardens, Dorset.*

Schizanthus pinnatus.—I was pleased to notice Mr. Ellis' high commendation of this plant at p. 724. We used to grow it rather extensively, but somehow it has got crushed out of cultivation of late years. Mr. Ellis describes the best mode of managing it for spring flowering, but it is also a very useful plant for blooming in the autumn; for this purpose it may be sown in May or in June, grown on in cool pits, or even in the open air, till the middle of September or beginning of October. Placed on a light shelf in the conservatory it will continue flowering till Christmas in a temperature of 45° to 50°. It is extremely useful at that transitional season of the year, and the curiously marked and formed flowers afford a striking contrast to most of the flowers of autumn. The Schizanthus is also a useful plant for cutting for the decoration of small vases, and the flowers mounted singly, and skilfully used in bouquets, produce an effect different and distinct from almost any other. *D. T. Fish.*

—— Having grown the different varieties of Schizanthus for many years as pot plants, I can fully endorse all that was said in their favour in last week's issue, and would strongly recommend any one having a supply of cut flowers to keep up, or greenhouses or conservatories to render gay, to sow at once, and give these lovely annuals a trial; and if well grown and cared for they will be found among the most useful and showy plants that can be had for either of the above purposes. Just now we have a *jardinière* of the kind known as S. Grahami and Grahami alba, and very beautiful the group looks blended together, the different colours when associated in this way showing up in most pleasing contrast with each other. The same may be said of them used in a similar way in glasses when cut, where they look as aërial and choice as many of the Orchids; and an additional recommendation of them for this work is that they last fresh and in good condition for a considerable time. Sown now they will come in fine for the autumn, till when, after being potted off and nursed on in frames, they may be grown outdoors; but to keep them healthy and free from red-spider it is necessary to plunge the pots to ward off the sun from their sides, and so prevent a too rapid drying of the balls of earth, a thing inimical to vigorous root-action. To have a succession in spring, seed should be sown again towards the end of August, and the plants resulting from such sowing wintered on a light airy shelf near the glass, where they can he kept strong; and these, potted on in March or April, will be at their best at this season. The most floriferous of all the kinds is S. papilionaceus, a variety of the old S. pinnatus, the blossoms of which, as its name implies, resemble butterflies, and this likeness not only relates to the form of the individual blooms, but to their exquisite markings, the petals being spotted and blotched in the manner peculiar to those remarkably handsome insects. Although so distinct in habit to S. Grahami, S. papilionaceus succeeds under the same kind of treatment; but like all annuals, both require rich soil and plenty of liquid manure when growing and flowering. Not only are these Schizanthus valuable for pot culture, but in warm situations they are almost equally so outdoors, as they do well in beds or borders during the summer months, and when so used should be sown under glass and raised to planting-out size in the ordinary way. *J. S.*

German Gardeners in England.—There are several points in regard to this matter not adverted to in your abstract at p. 727. There are some good grounds for Englishmen — by which I mean the gardeners of Great Britain and Ireland — complaining of German competition. Wages are miserably low in Germany, and all young men are liable to conscription. The low wages and fear of forced military service drives many and keeps most of those so driven out of the country. There is hardly anything that many of these young men will not rather do than return to their Fatherland. I had a striking example of this some years since. A young German had the offer of a royal situation near Berlin. He declined to accept it, though only a journeyman at the time. On investigation I found the wages offered were only £50 a-year. The fear of the conscription was even more potent than the unwillingness to accept low wages. This fear arises less from the dread of military service than from the tyranny, as he expressed it, of the officers, who were apt to rule with a rod of iron over the rank and file. With such a dread of conscription, and perhaps of punishment far exceeding it, it is little wonder that the German gardeners prefer to remain in England. It is also quite possible that were more of them to come and stay, the effect on the wage question would be damaging to native gardeners. There is another point that our young men ought to lay to heart. Most of the German gardeners I have met with have more polish and better manners than many of our own countrymen; I have, in fact, heard of not a few German and other foreigners who have been almost shocked at the roughness of some of our young gardeners. Of course, in such a large profession as ours, there must needs be a few roughs, and no doubt the majority of our young men are, as they ought to be, gentlemen; but nevertheless not a few of them have a brusqueness of manner which renders them less agreeable than they might make themselves to their immediate superiors, and this also tells against their obtaining and keeping situations. Though no one could more sternly condemn anything in manner or voice approaching servility, yet there is no necessary connection between true independence of character and a brusqueness which may be mistaken for rudeness. Neither does mere ability or character compensate for the lack of manners. Gardeners, from the very nature of their profession, are brought much into direct contact with their employers. Their gentle art should also beget gentle manners. In this intensely utilitarian age it may be added that the latter also pays, for though manners may not make the man, the want of them leaves the best man very imperfectly furnished for the duties of a modern gardener. Other conditions also being equal, the man with the better manner will always have the pick of the best places, and will be likely to keep them the longest. There is nothing in this to alarm native gardeners, as there is no reason in the world why the English, Scotch, and Irish gardeners should not equal or excel the most accomplished foreigner in manners, as they mostly do in special knowledge and practical ability. A little more sweetness and light—that is, culture of the lighter graces of character—and our young men need not fear to hold their own in that foreign competition, which may probably become more keen and close as horticulture advances, and while wages continue lower on the Continent than in England. Possibly, however, as the gentler arts gain more power over men, they may begin to think less of war; and conscription and other hardships which it involves, such as low wages, may cease. Peace hath its victories as well as war, and among those of the future may be an international conservatory, extending from Paris to Berlin, furnished with the richest and most costly vegetation of the world, which might, so it was said, have been built with the money expended on the late Franco-German war. Should the future furnish us with such victories as these, all the foreign gardeners will be wanted at home, with a few pushing Scotchmen to boot. *D. T. Fish.*

Reports of Societies.

Royal Botanic: *June* 16.—The last and the best show of the season, held by the Royal Botanic Society, came off on Wednesday under the most deplorable circumstances as regards the weather. It rained hard almost the entire previous night, which did not appear, however, to have any effect in reducing the number of competitors, but from morn till night, when fine weather was most wanted, it rained incessantly—a drenching downpour that utterly spoilt the enjoyment of the visitors, of whom, notwithstanding the wet, there was a good muster. Every preparation had been made for the promenade on the wide stretch of grass on either side of the broad walk, which is so characteristic a feature of these summer shows; but promenading was entirely out of the question, and at 4 o'clock, when all should have been serene and gay, the grass was in the full possession of a flock of ducks from the neighbouring pond—a most tantalising sight for the authorities, who did all they could to make things pleasant. That such wretched weather should have prevailed is the more to be regretted, inasmuch as the show itself, for brilliancy of colour and general excellence of quality throughout, was of a higher order of merit than usual. The brightest and freshest masses of colour were furnished by the Orchids, and Show, Fancy, and Zonal Pelargoniums, all of which were abundantly represented. Of the sections devoted to stove and greenhouse flowering and fine-foliaged plants, exotic Ferns, and Heaths, we need say but little. Each section was well represented, but for the most part the plants shown were the same as were exhibited at South Kensington last week. Mr. Tudgey again took the lead with flowering plants, the next most successful competitors being Messrs. Jackson & Son; Mr. D. Donald, gr. to J. G. Barclay, Esq., Knott's Green, and Mr. Rann. Mr. Tudgey also beat the last-named exhibitor with fine-foliaged plants, and Mr. Rann likewise suffered defeat in the class for six exotic Ferns.

The Orchid classes were especially well contested. For twelve, amateurs, Mr. Spyers, Orchid grower to Sir Trevor Lawrence, M.P., came in 1st easily with a grand lot, consisting of Masdevallia bella, with twelve expanded blooms, Cattleya Warneri, a good dark variety; Oncidium macranthum, very strong and well bloomed; Lælia Brysiana, with three strong spikes; Oncidium phymatochilum, Odontoglossum vexillarium roseum, Cypripedium niveum, a mass about 18 inches over; Masdevallia Harryana violacea, grandly bloomed; Calanthe veratrifolia, with about eighteen spikes; a splendid specimen of Cypripedium Dominianum ×, with about sixteen spikes; Cattleya Mendelli, and Saccolabium retusum. Mr. Reeves, gr. to C. Hart, Esq., Lee, was 2d; and Mr. Heims, gr. to F. A. Philbrick, Esq., 3d. In the corresponding class for nurserymen, Mr. B. S. Williams as usual was at the top of the list with a group of large and well-flowered plants, most of which have been shown before. Mr. H. James was 2d. The same order prevailed in the trade class for six—Mr. Williams, 1st; Mr. James, 2d; and Messrs. Jackson & Son, 3d. The corresponding class for amateurs brought another nice fresh group from Sir Trevor Lawrence's collection, which came in 1st without any trouble, the other awards going to Mr. J. Child and Mr. Heims. The new tuberous-rooted Begonias were well shown by Messrs. John Laing & Co., Mr. James Tong, and others; Roses in pots by Messrs. Paul & Son, Cheshunt; Show and Fancy Pelargoniums by Mr. Wiggins, gr. to H. Little, Esq., and Mr. Turner; and Zonal Pelargoniums—a splendid half dozen—by Mr. Catlin, gr. to Mrs. Lermitte, Finchley, who was a long way 1st in this class. His plants were from 3 to 4 feet over, well clothed

with good foliage, and splendidly bloomed—especially a plant of the fine salmon-red Fanny Catlin, sent out by Messrs. James Carter & Co. about two years ago, and which, as shown, was a perfect model of a pot Pelargonium.

Miscellaneous collections were not quite so numerous as usual, but of very great excellence. The largest groups came from Mr. B. S. Williams and Messrs. James Veitch & Sons, the last-named firm especially showing a singularly interesting and beautiful lot of really good plants. Mr. Williams' group also, we think, contained a greater variety of subjects than usual, the plants were besides well grown and grouped most successfully. The most startling novelty in this department was a group of about 200 plants of Todea superba, the many shades of green in whose fronds were to some extent blended and relieved with a thin admixture of Orchids and small fine-foliaged plants, which seemed to have a setting of green velvet. Messrs. E. G. Henderson & Son were the exhibitors. Messrs. John Laing & Co. also contributed a large and varied assortment of well-grown plants.

The display of fruit, though much inferior to that at South Kensington last week, was nevertheless much better than has been seen here for some time. The class for a collection which used to bring out something like a competition, on this occasion only tempted two competitors—Mr. Wildsmith, gr. to Lord Eversley, and Mr. W. Robins, gr. to E. Dyke Lee, Esq., Hertwell House, Aylesbury. The former had no difficulty in winning the 1st prize, with excellent examples of Black Hamburgh Grapes, President Strawberries, Brown Turkey Figs, Royal George Peaches, Sutton's Lord Beaconsfield Melon, and a Smooth Cayenne Pine. Mr. Robins' strongest points were splendidly coloured Violette Hâtive Nectarines, Noblesse Peaches, Dr. Hogg Strawberries, and Eastnor Castle Melon, his weakest dish being his Grapes. The Pine classes were anything but good. For a single Queen, Mr. J. R. Stirling, gr. to H. H. Vivian, Esq., M.P., Park Wern, Swansea, was 1st with a well swelled fruit, whose only fault was an ugly crown. A handsome fruit, not named, shown by Mr. J. Muir, gr. to C. M. R. Talbot, Esq., Margam Park, was placed 1st in the class for any other variety; and the rest were poor indeed. The two best pairs of Melons, in a weak class, came from Mr. James Bolton, gr. to W. Spottiswoode, Esq., Combe Bank, Sevenoaks, and Mr. G. Holliday, gr. to J. Morris, Esq., Castle Hill, Bletchingly, and both had the same varieties—Golden Queen and Scarlet Gem. Of seven exceedingly good baskets of black Grapes, the best came from Mr. Woodbridge, gr. to the Duke of Northumberland at Syon House—a first-rate sample at all points. A capital sample, scarcely so large or so black as Mr. Woodbridge's, shown by Mr. J. Bashford, gr. to H. Brenchley, Esq., Charlton House, East Sutton, came in 2d; and Mr. W. Robins was 3d, with a sample noteworthy for good berries, but not so even as the foregoing. Two baskets only of white Grapes were shown, and Mr. Woodbridge again took the lead with a capital lot of Muscats; and the other exhibitor, Mr. W. Mowbray, gr. to the Earl of Leven and Melville, took the 2d prize with very good Buckland Sweetwater. There were also seven dishes of Black Hamburghs, and in this class Mr. Wildsmith secured the highest honours with a fine sample, large in bunch and berry, and well finished. Mr. W. Robins, who came in 2d, had smaller but well finished bunches; and a nice sample, wanting only a little more bloom, from Mr. P. Feist, gr. to R. J. Ashton, Esq., Bishopsgate House, Staines, was 3d. Mr. Bolton, Mr. Wildsmith, and Mr. Mowbray took the awards in the order named in the any other black Grape class, and all showed Black Prince. The best dish of Muscat of Alexandria came from Mr. John Maher, gr. to C. Alhusen, Esq., Stoke Court, Bucks; and in the other class Mr. Bolton was 1st with very good Buckland Sweetwater, Mr. Robins 2d with Foster's Seedling, and Mr. Mowbray 3d with Buckland Sweetwater. Peaches and Nectarines were not numerous, but all good. For the best two dishes of the former Mr. G. Osborne, manager, Kay's Nursery, Finchley, was 1st, with Royal George and Grosse Mignonne, of very fine quality. Mr. Bones came 2d, with excellent examples of Bellegarde and Violette Hâtive; and Mr. C. Goldsmith was 3d, with Grosse Mignonne and Early York, rather small but splendidly coloured. A magnificent dish of Elruge, and a splendidly coloured sample of Hunt's Tawny, shown by Mr. Kemp, gr. to the Duke of Northumberland at Albury Park, were the best Nectarines staged. The second best, beautifully coloured fruits of Downton and Violette Hâtive, came from Mr. Tucker, gr. to J. L. Lovibond, Esq., Farnborough; and the 3d from Mr. G. Halliday. The Strawberries call for no comment, being few in number, and not first-rate. In the miscellaneous class Mr. J. Hopkins, High Cross, Framfield, showed half-a-dozen fine fruits of a seedling Melon, named High Cross Hybrid, a large, oval, handsomely netted fruit, with thick green flesh, to which the judges awarded a First-class Certificate.

New Plants Certificated.

Botanical Certificates of Merit were awarded to Messrs. James Veitch & Sons for Pinanga Veitchii' a new Palm sent home from Borneo by Mr. Peter Veitch and Mr. Burbidge, with the broad bipartite leaves prettily blotched with olive-green; for Acer polymorphum septemlobum elegans, which has cuspidate serrate leaflets, quite a bright red, almost scarlet, while young; for Quercus cuspidata argenteo-variegata, a boldly variegated, small-leaved shrub as shown in a small state; for Lælia Philbrickiana, a hybrid between Cattleya Aclandiæ and Lælia elegans, with a very pretty rose-coloured lip; for Croton Nevilliæ, an erect-leaved form, with the leaves about a foot long, green, marbled with gold, brightly variegated and very effective; and for Pteris moluccana, a bold-habited pinnate species, likely to be useful amongst the larger growing stove Ferns. To Mr. William Bull for Ceratozamia fusco-viridis, a pinnate species with broad leaflets, in the way of Kusteriana; for Anthurium insigne, a striking plant, already described; for Croton insignis, a bold handsome looking plant, with arching leaves about 18 inches long and 2 inches in width, grass-green, mottled with yellow; for Adiantum aneitense, a free-growing species in the way of A. Cunninghamii, with gracefully arching fronds; for Oncidium crispum grandiflorum, a well-marked form, with large chocolate-brown flowers, yellow in the centre; for Selaginella involvens variegata, belonging to the rosulate type, and having the short flabellately-branched fronds here and there marked with white variegation; for Dieffenbachia rex, a noble-leaved plant, of a dark bottle-green freely mottled with paler green; and for Lilium nitidum, a pretty species growing from 1 to 2 feet high, with the leaves arranged in whorls, and the drooping flowers small, apricot-coloured, with black spots. To Messrs. E. G. Henderson & Son, for Crinum petiolatum, an evergreen species, with bold, well-formed white flowers — one of the finest of the genus; for Quercus cuspidata argentea variegata, the silvery variegated plant also shown by Messrs. Veitch; and for Freesia odorata, a charming greenhouse bulb, with distichous leaves and funnel-shaped, sweet-scented flowers, white, with a yellow spot. To Mr. B. S. Williams, for Croton Rodeckiana, a long, narrow-leaved form, variegated with green and pale yellow, and the midrib of a pale tint of crimson—in the matured leaves the ground colour is suffused with a creamy-pink tint; for Asplenium Baptistii, with leathery bipinnatifid fronds; for Nepenthes compacta, a close-growing plant, with short, broad leaves, and having the pitchers freely mottled with bright chocolate-red; for Pteris internata, an elegant little West Indian Fern, with erect bipinnate fronds; and for Cyphokentia robusta, a handsome Palm with bold pinnate fronds.

Floricultural Certificates were awarded to E. B. Foster, Esq., Clewer Manor, for Show Pelargonium Alice, soft rosy-scarlet, with dark maroon blotch and a white centre; Emperor William, a finely-shaped white-centred flower, with the lower petals salmon-red shaded with crimson, and the upper ones deep maroon edged with scarlet, and Minotaur, remarkable for its depth of colour, very dark maroon upper petals, and rosy-scarlet lower ones. To Mr. Turner, for Show Pelargonium Martial, one of M. Bréhaut's seedlings, which is much in the style of Emperor William, but with dark scarlet lower petals; and for Fancy Pelargonium Sarah Bernhardt, a smooth, good-shaped, bright rose flower with a white centre, and the petals margined with white. To the Rev. A. Matthews, Gumley, Market Harborough, for Pelargonium Russell, also much in the style of Emperor William, but with the colour of the lower petals intermediate between the former and Martial. They are all good additions to the dark-coloured section. To Messrs. J. Peed & Son, for Pelargonium Duchess of Connaught, which appeared to be of somewhat intermediate character between the Show and Fancy types, both in habit and size of flowers, which are white, with dark puce-coloured spots. To Messrs. J. Veitch & Sons, for Coleus Acme and C. Pharo, both novelties of a striking character. The former has leaves of a rich shade of maroon, with bold crimson midribs, and a yellow blotch at the base; the latter has claret-coloured leaves, also yellow at the base, and the centre of the growing points yellow, with the tips of the young leaves of the prevailing ground colour. To Mr. Chambers, Westlake Nursery, Isleworth, for Lobelia magnifica alba, a very compact-growing and free-flowering plant, with large white flowers. To Messrs. Osborn & Sons for Begonia Madame Triquanneaux, a fine-leaved variety of the Rex type, with dark, silvery metallic leaves, with a well-defined edge of bronzy-green spotted with the same silvery hue as the centre. To Messrs. E. G. Henderson & Son for Begonia argenteo-zebrina and Begonia Comtesse de Thellusson—the latter with very dark green leaves, and the former a very distinct plant, with bronzy-green leaves heavily spotted with silver-grey. To Mr. B. S. Williams for Coleus Mrs. G. Simpson; and Mr. William Bull for Cereus C. M. Hovey, a fine variety in the way of C. speciosissimus.

Edinburgh Botanical: *June* 10.—The Society met in the class-room, Royal Botanic Garden; Mr. Gorrie, President, in the chair. The following communications were read:—

I. Remarks on Rheum nobile, Hook. fil., which has flowered in the Royal Botanic Garden, Edinburgh; illustrated with coloured drawings by Miss Woon. By Dr. Balfour, F.R.S., Emeritus Professor of Botany.

This plant, as already noticed in the *Gardeners' Chronicle*, has flowered within the last few weeks, and has attracted the attention of many visitors. Its original habitat is the Sikkim range, and the seeds were obtained seven years ago from Dr. King of Calcutta. The plant is now fully 3 feet 9 inches high, and promises to perfect seed. This is the only known instance of the plant flowering under cultivation in Europe.

II. New Forestry Inquiries Established by the Conservator of Forests in Oudh. By Sir Robert Christison, Bart.

Captain Wood, of the Oudh Forest Conservancy, has determined to undertake an inquiry into the objects contemplated in Sir Robert Christison's first paper on the Exact Measurement of Trees, published in the Society's *Transactions*, and for that purpose has sent copies of the directions for exact measurement to the whole of the districts under his charge, desiring his subordinate officers to make preparations for an inquiry in each. With that view Captain Wood has issued instructions to set apart in each forest district a plot of a quarter of an acre, which is to be duly trenched all round for drainage and separation, and in which the trees are to be cut down or planted so that each tree fixed on for observation shall be 15 feet distant from every other. Directions are also given for numbering the trees, and tabulating the results, and the requisite instruments are supplied by the Conservancy establishment. Lastly, instructions are added for noting all peculiarities of soil, climate, elevation, exposure, and treatment. It seemed right that this Indian experiment should be made known to our numerous forest owners at home. If the example thus set at a distance were followed here, important results would be obtained for the advancement of tree culture.

III. W. B. Boyd, Esq., of Ormiston, gave in the report of the annual trip of the Scottish Alpine Botanical Club, made in July and August of 1879, to Killin, for the purpose of exploring the upper portion of Glen Lochy. The sun only appeared on one of the else rainy four working days, but the view then had from a mighty Ben of far stretching neighbour peaks, with the accompanying silvery streaks of lochs in the valleys, amply compensated for the previous drenchings and other discomforts. Amongst the most plentiful finds were Arctostaphylos, gathered every day; Cystopteris montana, Bartsia alpina, Woodsia hyperborea, Juncus castaneus, as well as several fine Orchids. In the varieties were a very pretty variety of Saxifraga hypnoides, the white petals of which were each tipped in most delicate rose-colour, but this had not been retained in cultivation. On the table was another of the finds, a beautiful variety of Veronica saxatillis, successfully cultivated by Mr. Lindsay. This had pink petals.

Mr. Potts, of Fettes Mount, showed amongst other growing plants a Saxifrage with beautiful yellow petals. It was found in a spur of the Cairn Gorm Mountains near Dalwhinnie, in 1877, and still retained its special colour under cultivation. Mr. Boyd said the plant was undoubtedly Saxifraga aizoides var. aurantia of Wood's *Tourist's European Flora*. It was common on certain stations on the Alps, but a station for it had been previously unknown in Britain.

IV. Isaac Anderson-Henry, Esq., of Hay Lodge, Trinity, exhibited a number of rare plants from his garden. A specimen of Exarrhenna Lyallii had been raised from seeds sent from the middle island, New Zealand. Two plants had stood on the rockery at Trinity all last winter. It is closely allied to the Myosotis tribe. It is one of the most manageable of New Zealand plants, and is a perennial. A specimen of Morina Coulteriana, which had been sent with the seeds of two other species of Morina from Kashmir some three years ago, is wholly new to this country. It has stood with M. Wallichii in the open ground these two bypast winters, and so is undoubtedly hardy. Mr. Henry had in fair growth with him, though planted so late as November, 1879, a number of plants sent home from Afghanistan. They included Borago two species, Codonopsis species, Rheum species, Liliaceæ from 12,000 to 14,000 feet, Althæa species, wild Celery, and a Primula species, taken at 9000 feet, as well as another yellow Morina. A strongly perfumed species of Thymus now on the table was also received with this parcel. A pretty little shrub of Veronica Lyallii, from the northern island of New Zealand, was also exhibited. A plant of this had stood in Hay Lodge rockery all last winter. Though the seeds were sown three years ago it is only now about 8 inches high. One plant flowered partially with Mr. Henry last year, from a sprig of which Sir Joseph Hooker figured it in the *Botanical Magazine*, t. 6456. The height he assigns to it in his *Flora of New Zealand* is 5 to 15 inches. The flowers on the specimen were pure white, and streaked all over with pink veins, each flower being quite circular and rather more than half an inch across. Another inhabitant of the northern island of New Zealand, Veronica diosmæfolia, was also on the table. It is not so hardy as the Veronica just described, has pretty pink flowers and decussate foliage, flowers early, and remains long in bloom. The specimen under discussion was raised from seed sown in July, 1877, and flowered at a height of some 8 inches. Sir Joseph Hooker states the total height gained by the shrub to be from 3 to 12 feet.

V. Report on the effects of last winter in different parts of Scotland, and on the progress of open-air vege-

tation at the Royal Botanic Garden, from the beginning of May. By Mr. John Sadler, Curator.—During this May the thermometer was at or below the freezing point on four occasions, as contrasted with the eight occasions during the same month of last year; the register for that month was 12° of frost, as against 7° this season, which had been also distinguished by a comparatively low temperature, along with the prevalence of northerly and easterly winds. Although there had been a good deal of bright sunshine, yet the drying winds and the want of drenching rains had checked vegetation very much. Still spring herbaceous plants, specially bulbs, had ripened in the garden. From the beginning of January to the present date 470 species and varieties of plants had flowered in the rock garden, and there were now species of ninety-two genera in flower, including the beautiful Cape Senecio speciosus. Amongst many reports from different districts of Scotland regarding the effects of last winter on vegetation, it was stated that at Ormiston, near Kelso, the thermometer registered on the night of December 4 18° below zero. This summer no flowering tree but the Rowan had blossomed there. At Dalkeith 26° of frost were read, the lowest temperature recorded since Christmas, 1860; while at Glamis Castle the winter bad been comparatively mild, and only a few Roses had been killed.

Mr. Buchan, with reference to the above report, mentioned that at Springwood Park, Kelso, a reading had been taken at 16° below zero, which was 4° lower than any reading that, so far as he was aware, had ever before been registered in the British Isles, being in reality considerably lower than that reported from Ormiston, which was obtained on an exposed thermometer, while at Kelso the instrument was protected. The fatality to trees in this district might be attributed to the abnormal growth of wood caused by the fine autumn which here followed the sunless summer of 1878. In connection with this Mr. Dunn showed a bush of Holly berries from Dalkeith, where it had survived the severe winter which killed the blackbirds, who else would have fed on them.

VI. Miscellaneous communications.

Mrs. Bain, of Napier Road, Merchiston, a Lady Associate, exhibited a fine specimen of the Edelweiss in flower.

Mr. Campbell, of Ledaig, Argyleshire, sent Strawberries which had ripened there, in the open ground, on May 29.

The President gave to the garden specimens of the Lavatorea arborea, two varieties, one of which he had recommended to be cultivated as a fibre producer, also a specimen of variegated Holcus mollus.

The Rev. John Stevenson, of Glamis, Forfarshire, sent a fine specimen of Hypocrea parmelioides, Mont. (H. ricciodea Berk.; Sphæria riccioidea, Bolt.), for the herbarium. It has an oblong ovoid figure, with spoke-like filaments radiating from its centre, and anastomosing. This fungus had been found by Mr. James McAndrew in 1878, from New Galloway. The only previous record of it in England, so far as Mr. Berkeley knew, was in 1790.

Alexander Campbell, Esq., presented to the museum a section of an Oak, 145 years old, felled in the spring of 1879, at Cammo, at 2 feet from the roots. The centre was considerably decayed for 2 feet nearly. The longest diameter of wood measures 37.4 inches; transverse, 35 inches; long radius of that diameter, 19.8 inches, short, 17.6; girth over back, 9 feet 3½ inches. Sir Robert Christison, Bart., through whom the gift was procured, has appended a neat scale one half the natural dimensions, showing the relative width of the annual layers of both radii of one diameter by decades of years. After an approximate equality for forty years, one overtops the other; a portion of one side appears to stop after 100 years or so.

W. B. Boyd, Esq., of Ormiston, showed a beautiful abnormal form of the common Daisy.

Mr. W. P. Drummond, of Messrs. Drummond, seedsmen, intimated that his firm had at present a plant of Lilium giganteum in flower about 8 feet high.

Amongst the plants in pots exhibited from the garden were Androsace Chamæjasme, Dianthus alpinus, D. neglectus, Edraianthus Kitaibeli, Fritillaria kamtschatica, Gypsophila cerastoides, Hutchinsia alpina, Linaria origanifolia, Saxifraga cæsia, and Senecio speciosus.

Fig. 138.—Rheum nobile.

Scottish Horticultural Association.—The ordinary monthly meeting of this Association was held in 5, St. Andrew's Square, Edinburgh, on Tuesday, the 1st inst. There was a good attendance of members. The President, Mr. M. Dunn, Dalkeith Park Gardens, occupied the chair. Mr. John Downie, Pinkhill Nursery, sent a paper on "Florists' Flowers—Past and Present." He stated that in his youth the Dahlia was the most popular florists' flower, the first plant of which the essayist had seen as early as the year 1828; it was not till two years afterwards that the first double Dahlia was raised, and was sent out the following year. In these days the common size of this plant was about 8 feet high. Dahlia Beauty of Sheffield was sent out in 1834. At this time, while gardener at South Bank, near Edinburgh, he set out on a visit to the late Mr. Thomson, gardener at Craigie Hall, for the purpose of seeing this Dahlia, which was creating a great sensation in the florist world. Springfield Rival, a great flower in its day, was given to the public in 1835, and Beauty of the Plain in the following year. Dahlias became very popular about 1840, when as much as £200 was given for the stock of a new plant. The late Mr. Young, of Archerfield, did much to advance the culture of this flower. In preparing ground for planting out it was necessary to dig or trench and manure well. The next florists' flower described was the Pansy. Named varieties of this flower had been sent out since 1830. Fancy Pansies were not printed in a catalogue till 1862. Three years previous to this six varieties were given to the public one of which named Dandie Dinmont, was very popular. Violas, now so much used in bedding, were brought prominently before the public by Messrs. Dickson & Co. Pentstemons were next alluded to: from 1833 to 1850 Continental sorts were largely grown. Antirrhinums, he said, were very much improved since 1849, when there were only a few good sorts. The Fuchsia was first introduced into England by Mr. Lee, who bought the stock from a sailor's wife for £8, and shortly afterwards sent out 300 plants at £1 1s. each. In the year 1836, the late Mr. John Young raised Fuchsia Riccartoni. Hollyhocks were introduced in 1834. The name of the late Mr. David Foulis, of Woodhouselees, would always be associated with the popularising of this florist flower. In Phloxes, the late Mr. Cozzar, of Kingsmeadows, did much towards their cultivation; one of the best he raised was Countess of Home. Pelargoniums attracted considerable attention in 1835; about that time Tom Thumb Scarlet was raised. The first Calceolarias he had seen were in 1833. The Cineraria, Snowdrop, and Rosemary, were then referred to. Throughout the paper Mr. Downie related several racy incidents connected with the introduction and exhibition of new flowers in his early days. The paper throughout was listened to with great interest.

Mr. Emil Fischer, of the Lawson Nursery, next communicated a paper, the subject of it being Flowering Stove Exotics. He dwelt principally on the Dipladenia and Allamanda, both of which were held in high estimation as flowering stove plants, in fact none of this class were more deserving of general culture. He described the method of propagating the former by putting them singly into pots. In regard to watering they were most impatient of an over-supply; the soil required to be removed from the roots once a year, and the best time for doing this was immediately after they were cut back, probably in the month of August or September. As a means of keeping them healthy and clean he recommended frequent syringings with pure water. Plants trained in the form of a balloon looked better than in any other shape. Allamandas, although not so generally useful as the foregoing, were still very fine for showy purposes. This plant was rather partial to abundant waterings, and needed a temperature not under 65°; the most useful variety in this class was grandiflora, which could be easily propagated from cuttings.

The following certificates were granted, viz., to Mr. Charles Wilson, Summerhow Nursery, Kendal, for a new double white seedling Zonal Pelargonium of dwarf habit and a free flowerer, named Mrs. Wilson. To Messrs. Dicksons & Co., for Fancy Pansy named Perfection, maroon ground, with yellow belting. To Messrs. Downie & Laird, for Fancy Pansies Robert Laird, Jun., maroon and yellow edge; and Mrs. Dewhurst, purple, with white edge. The following articles were commended:—New double pink Geranium named Summerhow Gem, from Mr. Charles Wilson, Kendal; a strain of Mimulus flowers from Messrs. Dicksons & Co.; and a Fancy Pansy, named Mrs. Robertson, from Messrs. Downie & Laird.

The other exhibits on the tables were a collection of Fancy Pansies from Messrs. Downie & Laird, a collection of Fancy Pansies, double seedling Potentillas, double Tropæolum flowers, and Saxifraga MacNabiana in flower, from Messrs. Dicksons & Co.; a collection of Regal Pelargonium flowers from Thomas Methven & Sons; Orchids, and a Gloxinia, from Ireland & Thomson; and a collection of herbaceous plants in flower from Mr. George Robertson, Mordington Gardens, Berwick-on-Tweed.

Paris Horticultural Society's Annual Show.—This show took place as usual in the Palais de l'Industrie, Champs Elysées, and was open from the 5th to the 8th inst. It was quite up to the average of former displays, the most attractive groups being without doubt Vallerand's collection of new seedling Gloxinias, and Bleu's Caladiums. But let us begin by a brief description of the several groups exhibited. MM. Eroux et Fils, nurserymen, of Vallée d'Aulnay, had a very fine group of large plants of Kalmia latifolia, which it appears did not suffer from the effects of the last winter. In the centre stood a good specimen of Rhododendron Sherwoodianum. Round this group were some nice well-flowered plants of the dwarf Kalmia myrtifolia. The same firm had another group of Conifers, comprising specimens in the following sorts (they were most of them small plants):—Juniperus Sabina, J. Sabina variegata, tamariscifolia; Abies excelsa nana, Sciadopitys verticillata, Abies orientalis, concolor, excelsa, Nordmanniana, Engelmanni; Retinospora plumosa, obtusa, squarrosa, pisifera; Thuyopsis Standishii, dolabrata; Thuya Ellwangeriana, Lobbii, &c. These gentlemen received a Gold Medal. M. A. Lecaron, seed merchant, of 20, Quai de la Mégisserie, received a Silver Medal for a large collection of annuals—Pansies, Zinnias, herbaceous Calceolarias, Mimulus, &c. MM. Couturier & Robert, nurserymen, of Chalon, near Paris, a Silver-gilt Medal, for a good group of bulbous Begonias, their own seedlings—M. Lequin, red; Henri Couturier, orange-red; M. Pigny, red; M. Mathieu, red; a nice rose-coloured variety, not named, &c.

Messrs. Chantrier Frères, of Mortefontaine, had a most effective group of fine Crotons, their own seedlings, large and healthy specimens, including fine large plants of Baronne James de Rothschild, two of Bergmanni, one of Carrierii; these three have already being alluded to in the *Gardeners' Chronicle*. The other varieties were Baron Frank Selliere, Drouetii, long narrow leaves veined with red; Chantrierii, red leaves; interruptum elegans, figured in *Revue Horticole* not long ago; Truffautii latimaculatum, fine, centre pure yellow, bordered with green; and a few new seedlings not named. This group brought its owners a Medal of Honour.

Louis Chaté, nurseryman, of Paris, a Silver Medal for a collection of Echeverias and other small plants used in miniature carpet-bedding. M. Delahaye, of 18, Qua

de la Mégisserie, Paris, a Prize Medal for a collection of cut flowers, comprising twenty-five varieties of Delphinium, Ranunculus, Lilium atrosanguineum, Irises, Muscaris, Anemones, Amaryllis vittata rubra, &c. M. Saison Lierval, nurseryman, of Neuilly (Seine), a Gold Medal, for a group of Latania borbonica, a large specimen of Rhapis flabelliformis, Chamærops excelsa, Kéntia Balmoreana, Fosteriana; Areca Baueri sapida, Phœnix tenuis, Livistonia Hoogendorpii, Poinsettia mexicana, Araucaria excelsa, Bidwelli, excelsa, glauca; Chamærops humilis, tomentosa, &c. M. L. Landry, nurseryman, of 92, Rue de la Glacière, Paris, a Silver-gilt Medal for a collection including Cycas revoluta, Aspidistra, Latania borbonica, Rhapis flabelliformis, Araucaria Cunninghami, Areca Verschaffeltii, sapida; Strelitzia reginæ, Chamædorea gracilis, Cypripedium villosum, caudatum, a nice elegant plant; Chamærops humilis gracilis; Nidularium princeps, fulgens, Innocentii; Vriesia splendens, Bilbergia Legrelli, tristis, rhodocyanea, iridifolia, Leopoldii; Encholirion Saundersi, Youngii.

We now come to a very interesting group, that of M. Bleu, the well known Caladium grower, who received a Gold Medal of Honour. His plants were all very fine. He had at the back of his Caladiums three Orchids well flowered, Brassia verrucosa, Oncidium crispum, Oncidium pulvinatum. We shall only note the best of his plants; Madame Marjolin-Scheffer, Aristide, Virginale, pure transparent white with the mid and side ribs green, very fine; Burelle, Ville de Mulhouse, Ibis Rose, the colour of the bird so-called; Madame Audrien, Perle du Brésil, Pyrrhus, Mithridate, Isidore Leroy, Reine Marie de Portugal, Emilie Verdier, very curious; Walter Scott, Jules Duplessis, L'albane Lepeschkinei, Baronne James de Rothschild, Madame Lemoinier, a very strange yellowish colour, not very attractive; J. Linden, Triomphe de l'Exposition, Verdi, very fine dark red ground, bordered with green and fringed; Clio, Eucharis, Rubens, Salvator Rosa, and some red-leaved seedlings not yet named; also a collection of foliage Begonias, amongst which we noticed Louise Chrétien, Jules Dehaussy, &c.

M. Lacroix, gr., a Silver-gilt Medal for a collection of the newest Coleuses. M. Lemoine, of Nancy, a Bronze Medal for a seedling Zonal Pelargonium, very dark red. M. Evrard, nurseryman, of Caen, a Gold Medal for seedling Pelargoniums Emile Chaté, double, flesh colour; Richard le Noir, dark red; Eugène Delamarre, fine pink; Malherbe, flesh colour; Alfred Dumesnil, pale cherry; Alice Rigault and Gloire de Crimée. M. A. Dufoy, nurseryman, of Plateau d'Arron, Seine Loise, a Silver Medal for two lots of Pelargoniums, Gloire de l'Exposition, white with a pink dot; Madame Philippe Gautier, pale pink and white. M. Aug. Roy, 162, Avenue d'Italie, a Silver Medal for a group of Clematis, including Magnifica, Lady Caroline Nevill, Venosa, Madame Van Houtte, Excelsior, Eug. Delattre, Regina, Lucie Lemoine, &c. M. Boutreaux, nurseryman, Montreuil, a Silver Medal for over one hundred varieties of Geraniums. M. A. Poirier, nurseryman, Versailles, a Silver-gilt Medal for another collection of Geraniums.

Messrs. Thibaut & Keteleer, nurserymen, at Sceaux, a Gold Medal for a very fine group of new Pelargoniums: all of them will prove very useful, especially Watteau, dark red; Madame Cleriet, pink; Queen Victoria, Pygmalion, large flowers of a pleasing dark red; Roseum, very pale pink; Artaban, salmon; Rebecca, &c.

M. Lequin, nurseryman, Clamart, a Gold Medal, for bulbous Begonias, new seedlings not yet named, some of which will be very fine. Ernest Gomesse, nurseryman, Passy, a Gold Medal for plants for miniature carpet-bedding and also specimens of same. M. L. Renault, 15, Rue de l'Arcade, Paris, a Silver Medal for Pyrethrums in flower, white, pink, and pale pink. Albert Paintèche, Passy, a Silver-gilt Medal for miniature carpet-bedding, butterfly, bird, &c.

Messrs. Vilmorin-Andrieux, 4, Quai de la Mégisserie, a Medal of Honour, for very extensive collection of annuals, herbaceous Calceolarias, dwarf Tropæolums, dwarf Phloxes, Mimulus, Pansies, Lobelias, &c. M. A. Chantin, an Objet d'Art for a fine and extensive collection of Palms, in large specimens, and also Aroids, such as Anthurium magnificum, A. Dechardii, A. crystallinum, A. Scherzerianum, A. Ernesti Augusti, A. reflexum, &c. The Palms included some of the following:—Calamus Lewisianus, Kentia Balmoreana, K. Fosteriana, Martinezia caryotæfolia, Araucaria Baumanni, Cocos australis and Weddelliana, Pandanus Veitchii, P. ornatus, Sabal Adansoni, S. princeps, Ceroxylon niveum, C. andicola, Chamærops humilis gracilis, Latania rubra, Corypha australis, Rhapis flabelliformis, Phœnix dactylifera, Areca sapida, A. lutescens, A. speciosa, Martinezia Lindeniana, Cyathea medullaris, Cibotium princeps, C. regale, Tillandsia Lindeni, Alsophila australis, Zamia horrida, Z. glauca, Cycas revoluta, C. circinalis, &c. Facing this was another fine group of Palms, sent by the Town of Paris, from the Muette. The varieties were about the same as in M. Chantin's lot.

M. Jolibois, gr. to the Luxembourg Garden in Paris, sent a fine group of Bromelias, consisting of most of the known varieties, and having as a centre-piece a fine plant in flower of the Vriesia Glaziovi: the flower is high and very ornamental, though not very attractive as regards colour. M. Morin, gr. to M. Attias, at Neuilly, near Paris, a Gold Medal for a very nicely arranged group of miscellaneous plants, such as Coleus, Ferns, Palms, Begonias, Caladiums, Dracænas, &c.

M. Savoye, nurseryman, Bois, Colombes, a Medal of Honour for a good group of Palms and other plants—Pandanus Veitchii, P. reflexus, Theophrasta imperialis, Carludovica atrovirens, Dracæna Goldieana, Tillandsia tessellata, &c. M. Paillet, nurseryman, Chatenay-les-Sceaux, a Silver-gilt Medal for a collection of very good cut flowers of Pæonies, fresh and varied. M. Thiébaut-Legendre, a Silver Medal for Mignonette, Pansies, &c. M. Porrier, gr. to M. Noël, a Silver-gilt Medal for a collection of Coleus and Caladiums. M. Mathieu, 54, Rue Spontini, Passy, a Medal of Honour for a group of Palms, &c.—such plants as Latania borbonica, Areca sapida, Rhapis flabelliformis, Ficus, Cycas revoluta, &c. M. A. Eberlé, a Gold Medal for a good collection of succulent plants; and M. Simon, a Gold Medal for another collection of succulent plants. M. Morlet, of Avon, a Silver-gilt Medal for new Coleus not yet named. M. Moser, of Versailles, showed a large group of Hollies, Kalmia latifolia, and a few Rhododendrons.

M. Vallerand, nurseryman, Bois, Colombes, received a Medal of Honour for the very best group of seedling Gloxinias I ever saw, and about which I must send you another note. (See p. 780.) Messrs. Lévêque et Fils, Rose growers, of Ivry (Seine), surprised every one with their collection of standard and dwarf Roses. How the first-named escaped from being frozen has not yet been told. Their trees were in good health and the blooms very fair.

Fruits and vegetables were very badly shown in a dark corner, lying flat on the ground, which made it difficult to judge of their value. MM. Forgeot et Cie., 8, Quai de la Mégisserie, a Silver Medal for a Bean that is much talked about—the Haricot Chevrier. M. Margottin fils, of Bourg-la-Reine, showed forced Vines, Peaches, Nectarines, &c. M. Louis Lhérault, of Argenteuil, a Medal of Honour for enormous Asparagus and a collection of Strawberries. M. Millet, Bourg-la-Reine, a Medal of Honour for forced Vines in pots and Strawberries. A lot of horticultural implements of all sorts, including houses, boilers, vases, pumps, &c., were shown in other parts of the building.

I was sorry to see that this show, which might be made most attractive, is still only considered by the Government as a means of showing up the sculpture, which is arranged in such a manner that you cannot without difficulty get near the several groups of plants and flowers shown. (*From a Correspondent.*)

South Essex Floricultural: *June* 10.—The annual exhibition of this old-established Society was held in the grounds of J. G. Barclay, Esq., Knott's Green, Leyton. It ought to be stated that, during the last few years, Mr. Barclay has thrown open his beautiful grounds and conservatories on the occasion of the annual exhibition of this Society, and this additional attraction to a first-class provincial exhibition has been the means of placing it on a sound basis. The exhibits were not quite so numerous this year as last, but the quality was exceedingly good. The eight stove and greenhouse plants exhibited by Mr. Donald, the gardener at Knott's Green, were superior to most of those exhibited in London this year; his Darwinia tulipifera was exceedingly healthy and well furnished with richly-coloured flowers. Dracophyllum gracile was also large and fine. Mr. Bones, gr. to D. McIntosh, Esq., had a good Ixora floribunda nana, a seedling raised in Mr. Fraser's nursery, of very dwarf habit, and which is not so well known as it ought to be. Mr. Douglas, gr. to F. Whitbourn, Esq., Loxford Hall, who competed in this class, also had a nice plant of Ixora Williamsii. The collections of Orchids were much more numerous than usual, and the plants, though small, were healthy and well-flowered. The best came from the collection of A. Borwick, Esq., Higham Hall, Walthamstow (Mr. Dover, gr.). In his collection was a very fine variety of Oncidium macranthum with fifteen flowers, a splendid form of Cattleya Mendelli and a beautiful Cymbidium eburneum. Mr. Borwick also exhibited Odontoglossum polyxanthum, probably the first time it has flowered in England. It has the leaves and pseudobulbs of O. crispum; the flowers, of which there were three on a spike, remind one of a good O. triumphans, but it cannot be even a good variety of that species, as its shorter and broader sepals and petals are different: these are broad deep yellow, barred and blotched with rich brown, the lip brown with a slight fringed creamy-white margin. Mr. Douglas exhibited a good Dendrobium Devonianum, and a richly coloured Saccolabium ampullaceum. J. R. Scott, Esq. (Mr. Ship, gr.), sent a nice group from his collection: he had a handsome Oncidium concolor and a good specimen of Dendrobium densiflorum; while W. Fowler, Esq. (Mr. Monk, gr.), exhibited a good plant of Vanda Roxburghii with several spikes of its pleasing flowers. Mr. Bones had a collection of fancy Pelargoniums, well flowered; while the large flowered section was well represented by fine specimens of the best varieties from Mr. Donald. Herbaceous Calceolarias were much admired: there were several good groups, but those from Mr. Bones were by far the best; the flowers were large, well coloured, the plants dwarf and healthy. The Cape Heaths, from Mr. Donald, were as well grown and flowered as such plants can be—Ericas obbata and Candolleana were very fine indeed. Mr. Douglas exhibited the best Ferns—Adiantum concinnum latum and Todea superba were remarkably good. While the same exhibitor was first for Palms, Mr. Monk carried the palm for fine-foliaged plants. Anthurium crystallinum seems to be very popular as an exhibition plant. Cut flowers, always popular at country shows, after the fruit, were well represented. Mr. Douglas gained the principal prizes. There was a splendid lot of Black Hamburgh Grapes from the gardens of Albert Spicer, Esq., Woodford (P. Darvill, gr.), the berries were large, black, and even. The 1st prize was most deservedly awarded. Mr. Bones exhibited good Buckland Sweetwater and very fair Muscats, also excellent Peaches, for all of which he gained 1st prize. The dinner-table decorations were very good, so were the single vases. Mr. and Mrs. Abbott, of Wanstead, and Mr. Medland, of Woodford, obtained the principal prizes. Amateurs of small means and cottagers are encouraged to exhibit, and they show good vegetables and flowers. Mr. B. S. Williams, of Holloway, kindly aided the Society by sending a nice group of choice flowers. There were, of course, other interesting exhibits, omitted for want of space.

Obituary.

We regret to record the death of Mr. John Scott, latterly head of the herbarium department, Botanic Garden, Calcutta. He had come home on two years' sick leave, and died at his sister's house, Garvald, East Lothian, aged forty-two. Some sixteen years ago Mr. Scott was a working gardener, under Mr. MacNab, in the Royal Botanic Garden, Edinburgh, when the great merit of his papers, published in the *Transactions* of the local Botanical Society, as well as subsequently in those of the Linnean Society, attracted the attention of Charles Darwin, who procured for him an Indian appointment. Mr. Scott, after a short sojourn in Calcutta, was sent to Darjeeling, partly to pursue an inquiry into a disease of the Opium Poppy. On the hills he had excellent health, and it was only in his subsequent sojourn in Calcutta that he contracted the spleen disease, to which he has succumbed in his early manhood. A few weeks ago he revisited the old gardens of his apprentice-time, but only to show to his companions that he was the shadow of his former self. Mr. Scott has brought home with him a mass of valuable botanical MSS., which we trust will be duly cared for.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON
For the Week ending Wednesday, June 16, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
June	In.	In.	°	°	°	°	°	°	°		In.
10	29.67	—0.12	67.9	41.0	26.9	51.8	— 6.3	47.7	86	ENE: E.S.E.	0.00
11	29.73	—0.06	65.1	44.9	20.2	52.9	— 5.4	49.1	88	E.N.E.	0.00
12	29.84	+0.05	68.3	43.7	24.6	54.0	— 4.5	49.4	84	E.N.E.	0.00
13	29.85	+0.06	74.0	46.0	28.0	58.2	— 0.5	50.2	75	S.W.: WSW	0.03
14	29.88	+0.10	69.6	49.4	20.2	57.0	— 1.9	53.2	87	WSW: N.E.	0.16
15	29.85	+0.07	57.3	50.1	7.2	52.3	— 6.7	48.9	88	NNE: N.	0.28
16	29.82	+0.03	58.1	49.5	8.6	52.8	— 6.3	51.6	96	N.E.: E.N.E.	0.40
Mean	29.81	+0.02	65.8	46.4	19.4	54.1	— 4.5	50.0	86	E.N.E.	sum 0.84

June 10.—Fine, partially cloudy, and cool. Clear at night.
— 11.—Overcast till 2 P.M.; fine and bright after. Cool.
— 12.—A fine bright day. Cloudy in morning, clear afterwards. Cloudless at night.
— 13.—A very fine, bright, warm day. Light clouds. Cloudy at midnight.
— 14.—Generally dull. Slight rain at times. Heavy rain from 6 to 7 P.M. Occasional sunshine in morning.
— 15.—Overcast, dull, cold day. Occasional rain till 5.30 P.M. Heavy rain afterwards.
— 16.—Overcast, dull, and cold throughout. Rain fell till 5 P.M.

London: *Barometer.*—During the week ending Saturday, June 12, in the suburbs of London the reading of the barometer at the level of the sea decreased from 30.01 inches at the beginning of the week to 29.64 inches by the morning of the 7th; increased to 29.88 inches by the night of the same day; decreased to 29.70 inches by the afternoon of the 8th; increased to 29.84 inches by the morning of the 9th; decreased to 29.79 inches by the afternoon of the same day; and increased to 30.05 inches by the end of the week. The mean reading for the week at sea level was 29.85 inches, being 0.21 inch below that of the preceding week, and 0.12 inch below the average.

Temperature.—The highest temperatures of the air observed by day varied from 68¼° on the 12th to 59° on the 9th; the mean value for the week was 64°. The lowest temperatures of the air observed by night varied from 41° on the 10th to 49° on the 11th; the mean value for the week was 44¼°. The mean daily range of temperature in the week was 19½°, the greatest range in the day being 27°, on the 10th, and the least 12°, on the 6th.

The mean daily temperatures of the air and the departures from their respective averages were as

follows :—6th, 53°.6, – 3°.9; 7th, 53°.2, — 4°.4; 8th, 51.3, — 6°.4; 9th, 48°.5, — 9°.4; 10th, 51°.8, — 6°.3; 11th, 52°.9, – 5°.4; 12th, 54°, – 4°.5. The mean temperature of the air for the week was 52°.2, being 5°.8 below the average of observations extending over a period of sixty years.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 144° on the 10th, 134° on the 7th, and 126° on the 12th; on the 9th the reading did not rise above 88°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 35° on the 10, and 37° on the 9th; the mean of the seven lowest readings was 40½°.

Wind.—The direction of the wind at the beginning of the week was W., but veered to E.N.E. afterwards; its strength was strong at times.

The weather during the week was generally dull and cold, though occasionally fine.

Rain fell on four days; the amount measured was 0.43 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, June 12, the highest temperatures of the air observed by day were above 70° at Leicester, Cambridge, Nottingham, and Liverpool, and below 63½° at Norwich, Bradford, and Leeds; the mean value from all stations was 67¼°. The lowest temperatures of the air observed by night were below 39° at Truro, Leicester, Cambridge, Wolverhampton, Nottingham, and Hull; and above 43° at Brighton and Norwich; the mean from all places was 39¾°. The extreme range of temperature in the week was above 32° at Leicester and Nottingham, and below 21½° at Brighton and Norwich; the mean range of temperature from all stations was 27½°.

The mean of the seven high day temperatures was above 63° at Plymouth, London, Leicester, Cambridge, and Nottingham, and below 60° at Wolverhampton, Liverpool, and Bradford; the general mean from all places was 62°. The mean of the seven low night temperatures was below 44° at Leicester, Cambridge, Wolverhampton, Nottingham, Sheffield, Hull, and Leeds, and above 47° at Brighton and Norwich; the mean value from all stations was 44½°. The mean daily range of temperature in the week was above 23° at Cambridge and Nottingham, and below 13° at Norwich and Liverpool; the mean daily range of temperature from all places was 17½°.

The mean temperature of the air for the week from all stations was 51½°, being 4½° lower than the value for the corresponding week in 1879. The mean temperature was above 53° at Plymouth, Brighton, Cambridge, and Nottingham, and below 50° at Wolverhampton and Bradford.

Rain.—The amounts of rain measured varied from 0.99 inch at Nottingham, 0.85 inch at Norwich, and and 0.80 inch at Liverpool, to 0.12 inch at Plymouth, and 0.22 inch at Brighton; the average fall over the country was half an inch.

The weather during the week was generally fine, though cold and frequently showery.

Slight *thunderstorms* occurred at places on the 9th, 10th, and 11th inst.

SCOTLAND: *Temperature.* — During the week ending Saturday, June 12, the highest temperatures of the air observed by day varied from 69½° at Edinburgh to 57¾° at Aberdeen; the mean value from all places was 64¾°. The lowest temperatures of the air observed by night varied from 32° at Paisley to 41° at Greenock. The mean from all stations was 35°. The mean range of temperature from all places was 29¾°.

The mean temperature of the air for the week from all stations was 51°, being 2° lower than the value for the corresponding week in 1879. The highest was 52½°, at Glasgow, and the lowest, 49¼°, at both Aberdeen and Paisley.

Rain.—The heaviest falls of rain were at Aberdeen, 1.26 inch, and at Edinburgh, 0.57 inch; and the least falls at Paisley, 0.22 inch, and Dundee, 0.25 inch. The average fall over the country was 0.31 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

GRASS-CUTTING MACHINES. — Will any of your numerous readers inform me if there is such a machine in the market as can be successfully used for cutting short grass? I do not mean the revolving machine, as it only does for extra close cutting, and when the operation is repeated every ten days or so; but what I am in quest of is one upon the principle of the common corn-reaper and hay-cutter, but with this difference, that it cuts closer than for ordinary agricultural work. My grass is only cut two, three, or four times a year, and sometimes it is pretty rank before I get to it, and sometimes not so. By these indications I trust any one may know what is wanted, and a reply through the medium of your paper will suffice. I would, of course, like to know as full particulars as possible, both as to how the work is accomplished, where the machines have been in use, and something of the cost, &c. *X. P. R.*

Answers to Correspondents.

ANCHUSA AND CYNOGLOSSUM: *J. D. H.* Apart from habit, the chief difference is that the nuts of Anchusa are rough, with little bluntish warts, whereas in Cynoglossum they are studded with little hooks.

CAMPANULA CARPATICA: *T. D. H.* This has the lower leaves on long stalks, and glabrous; the calyx-lobes are toothed, the flowers bell-shaped. C. turbinata is more or less hairy, the leaves shortly stalked, not so deeply toothed as in carpatica, the flowers much larger and more bowl-shaped than bell-shaped. C. muralis and C. Portenschlagiana are synonyms, or slight variations only. C. pusilla and C. pumila are both synonyms of C. cæspitosa, according to some writers.

CARROTS: *J. C.* You can do nothing until the crop is off the ground.

CHINESE JUNIPER BERRIES: *Camjee.* The berries sent are immature, and quite useless for the purpose of propagation. They are possibly falling through drought, or perhaps owing to the past bad season. If any grow on to maturity, sow them in pots of loamy soil as soon as ripe, and keep them in a cold frame till they germinate.

DAVIDSON'S COMPOSITION FOR PROTECTING TREES FROM RABBITS: *H. K.* The manufacturers are Messrs. Davidson, Oil and Colour Works, Leith.

ERRATA: MR. DAY'S ORCHIDS.—For "fair plants," at col. *b*, p. 742, read "air plants;" and further down, for "American," read "Australian;" and at col. *c*, half-way down, for "young roots," read "shoots." *J. A.*—At p. 745, fig. 128, for "Dracæna" read "Dieffenbachia."

INSECTS: *H. & McC.* The common caterpillar, whatever you may mean by that, has not yet arrived.—*G. W.* The steel-black insect found on the Goose-grass is the larva of the Bloody-nosed Beetle (Timarcha tenebricosa. *I. O. W.*—*G. G. B.* The insect sent is the destructive Hylobius abietis, a weevil injurious in Fir plantations. *I. O. W.*—*H. W.* The little white worms which roll themselves into a ball, and which eat the young Mignonette leaves, were so much dried up and shrivelled that we cannot determine them. They, however, seem to be the larvæ of some small weevil. *I. O. W.*

LINDELOFIA: *J. D. H.* This differs from Cynoglossum in the longer tube to the corolla, and in the longer and projecting stamens.

NAMES OF PLANTS: *Ward & Co.* Anthyllis Vulneraria.—*J. Reeves.* Chrysanthemum coronarium.—*J. Wright.* 1, Galega officinalis, white var.; 2, Sedum Sieboldii; 3, 4, next week.—*J. C.* Lepidium Draba.—*T. Davies.* A hybrid Aquilegia, perhaps between A. vulgaris and A, chrysantha.—*F. C.* Jambosa vulgaris, the Rose Apple, probably, and Combretum coccineum.—*S. B.* 1, Bletia verecunda; 2, Cattleya, a hybrid, perhaps C. Warscewiczii; 3, Doodia aspera; 4, Polypodium plesiosorum.—*X. Y. Z.* Send a better specimen, properly packed.—*Camjee.* St. Bruno's Lily (Anthericum liliastrum). — *W. N.* Your climbing plant is Aristolochia Sipho.—*J. B. F.* Melica natans.—*J. H., Bath.* Catasetum tridentatum.—*T. S. W.* Sedum acre, and Pyrethrum Tchihatchewii.—*T. B.* Stanhopea tigrina; Aerides odoratum, so far as we can judge from the materials sent.

SOIL: *C. W. E.* We have not means of testing the loam for iron, but the nearest chemist would answer the question for you, sufficiently for your purpose, at a small cost. It seems to be a most unsuitable soil for growing anything in.

VINE-LEAF: *A. B.* The leaf appears to have been caught by the sun while wet either with dewdrops or by means of syringing; possibly ventilation had not been attended to sufficiently early in the morning.

VINES: *A. B. C.* 1. The plan adopted by your gardener will neither do the fruit good nor strengthen the Vines. If the wood is fairly strong, and the foliage ample, the Vines should have been stopped at the third or fourth leaf beyond the bunch, and all laterals kept pinched back to the first leaf. 2. We should prefer to cut them down low, but much depends upon the time selected for planting and the quality of the canes.

COMMUNICATIONS RECEIVED:—W. G. S.—H. G. (you have not guaranteed the good faith of your criticism by giving your name and address).—J. C. N. (many thanks).—W. T.—F. J. D.—F. & P.—M. P. W. — T. S. — J. H. M. (enclosure with thanks).—D. O.—J. R. J.—J. W.—A. C. R.—A. O.—J. R.—G. N.—H. G.—E. C.—Alb. M.—G. A. B.—C. S.—J. C.—E. W. F.—C. Y. M.—G. T.—A. R.—A. B.—Almanac (next week).

Markets.

COVENT GARDEN, June 17.

Business remains much the same as last week, with prices generally lower. *James Webber, Wholesale Apple Market.*

FRUIT.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Apricots, per box	2 0– 3 0	Lemons, per 100	6 0–10 0
Cherries, per box	1 6– 2 6	Melons, each	3 6– 7 0
Cob Nuts, per lb.	1 0– 1 6	Oranges, per 100	6 0–12 0
Gooseberries, green, per ½-sieve	4 6– 5 0	Peaches, per doz.	12 0–18 0
Grapes, per lb.	1 6– 5 0	Pine-apples, per lb.	2 0– 5 0
		Strawberries, per lb.	1 0– 5 0

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, per bundle	1 0– ..	Herbs, per bunch	0 2– 0 4
— English, p. 100	5 0– 6 0	Horse Radish, p. bun.	4 0– ..
— French, per bun.	2 0– 4 0	Lettuces, Cabbage, per doz.	0 6– 1 6
Beans, French, p. lb.	1 6– ..	Mint, green, bunch	0 4– ..
Beet, per doz.	2 0– 4 0	Mushrooms, p. baskt.	1 6– 2 0
Cabbages, per doz.	1 0– 2 0	Onions, per bushel	5 0– 7 0
Carrots, per bunch	0 8– ..	— Spring, per bun.	0 6– ..
— French, per lb.	0 6– ..	Parsley, per lb.	0 9– ..
— New, per bunch	0 9– ..	Peas, English, per qt.	2 0– ..
Cauliflors, new, each	0 9– ..	— French, per qt.	2 6– ..
— English, each	1 0– ..	Potatos (new), per lb.	0 2– 0 6
Celery, per bundle	1 6– 2 0	Radishes, per bun.	0 2– ..
Chilis, per 100	3 0– ..	Small salading, pun	0 4– ..
Cucumbers, per doz.	8 0–12 0	Spinach, per bushel	2 6– ..
Endive, per 2 doz.	1 6– 3 0	Tomatos, per dozen	2 0– 3 0
Garlic, per lb.	1 0– ..	Turnips, new, bunch	1 0– 1 6

New Potatos:—Jersey Kidney, 10s. to 12s. per cwt.; Round, 9s. to 10s.; French Round, 8s. to 9s.

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Hydrangea, per doz.	12 0–24 0
Bedding Plants, various, per doz.	1 6– 2 6	Lilium eximium, doz.	30 0–60 0
Begonias, per doz.	6 0–18 0	Lobelia, per dozen	4 0– 8 0
Bouvardias, per doz.	12 0–24 0	Mignonette, per doz.	5 0– 9 0
Calceolaria, per doz.	6 0–12 0	Musk, per dozen	2 6– 6 0
— Herbaceous, doz.	6 0– 9 0	Myrtles, per doz.	6 0–12 0
Cyperus, per dozen	4 0– 9 0	Nasturtiums, dozen	4 0– 6 0
Dracæna terminalis	30 0–60 0	Palms in variety, each	2 6–21 0
— viridis, per doz.	12 0–24 0	Pelargoniums, dozen	9 0–24 0
Erica various, per dozen	12 0–30 0	— Ivy-leaved, doz.	4 0– 8 0
Euonymus, various, per dozen	6 0–18 0	— Tricolor	4 0–12 0
Ferns, in var., doz.	4 0–18 0	— scarlet, per doz.	4 0– 9 0
Ficus elasticus, each	1 6– 7 6	Roses, Hybrid Perpetual, per doz.	18 0–36 0
Foliage Plants, various each	2 0–10 6	— Fairy, per dozen	6 0–10 0
Fuchsias, per dozen	9 0–15 0	Spiræa, per dozen	6 0–18 0
		— palmata, doz.	18 0–30 0
		Stocks, per dozen	4 0– 8 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Mignonette, 12 bun.	6 0– 9 0
Anemone, 12 bun.	3 0– 6 0	Pansies, 12 bunches	2 0– 6 0
Arum Lilies, per dozen	3 0– 6 0	Pelargoniums, 12 sprays	0 6– 1 0
Azalea, 12 sprays	0 6– 1 0	— zonal, 12 sprays	0 3– 0 9
Bouvardias, per bun.	1 0– 4 0	Pinks, white, 12 bun.	3 0– 9 0
Calceolaria, p. bunch	0 9– 1 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	Ranunculus, p. doz.	4 0– 8 0
Cornflower, per doz.	6 0– 9 0	Roses (indoor), doz.	1 0– 9 0
Eucharis, per doz.	4 0– 6 0	— Roses, Fr., doz.	2 0– 6 0
Forget-me-not, 12 bunches	3 0– 9 0	Spiræa, 12 sprays	0 6– 1 0
Gardenias, 12 blms.	2 0– 8 0	Stephanotis, 12 spr.	3 0– 6 0
Heliotropes, 12 sp.	0 6– 1 0	Tropæolum, 12 bun.	1 0– 3 0
Lily of the Valley, per bunch	1 6– 2 6	Tuberoses, per dozen	2 0– 4 0
		Wallflowers	4 0– 9 0

SEEDS.

LONDON: *June 16.*—No new feature has presented itself in connection with the trade for farm seeds, and in the almost total absence of business values exhibit no alteration. With a slight concession in prices there would be no difficulty in moving American red, but at present limits nothing can be done. White Clover and Alsike are quiet: there is some inquiry for Trefoil, which is very firmly held. The demand for Mustard and Rape seed continues brisk, though rain is still wanted in some parts of the country before the land can be got into working order. Canary and Hemp are quiet. Blue Peas and Haricot Beans are still selling freely. Linseed is rather cheaper. *John Shaw & Sons, Seed Merchants, 37, Mark Lane, London, E.C.*

CATTLE.

At the Metropolitan Market on Monday trade in beasts was excessively dull, but choicest kinds being scarce were not much lower. There was a fair supply of sheep; the demand was smaller and prices not quite so good as on the previous Monday; it was very difficult to effect a clearance at our quotations. Trade was very dull for lambs, without much alteration in price. Quotations:—Beasts, 4s. 4d. to 5s., and 5s. 4d. to 6s. 2d.; calves, 5s. 6d. to 6s. 8d.; sheep, 5s. to 5s. 6d., and 6s. 2d. to 6s. 10d.; lambs, 6s. 8d. to 7s. 10d.; pigs, 4s. 6d. to 5s. 6d.—Thursday's trade was quiet, and supplies were about the average. Beasts were dull and values drooping, but those for sheep and lambs were firm, and tending upwards. Calves and pigs were quiet, on former terms.

POTATOS.

The Borough and Spitalfields Markets reports state that supplies have been pretty good, and the markets remain quiet at wholesale rates:—Champions, 100s. to 120s. per ton; Victorias, 100s. to 120s.; German reds, 3s. to 5s. per bag; New Lisbon, 8s. 6d. to 10s. 6d. per cwt.; Malta ditto, 8s. 6d. to 10s.; New Jersey kidneys, 14s. 6d. to 17s.—During last week 16,771 packages of new produce were received at London from Lisbon, 3663 packages and 199 bags from Malta.

COALS.

The following are the prices current at market during the week:—East Wylam, 15s.; Percy West Hartley, 13s. 9d.; Walls End—Hetton, 15s. and 15s. 6d.; Hetton Lyons, 14s.; Lambton, 15s.; Original Hartlepool, 15s. 6d.; Wear, 14s.; Tunstall, 14s.; Chilton Tees, 15s. 3d.; Thornley, 15s.; South Hetton, 15s. 6d.; Hawthorns, 14s. 3d.; Radford Navigation, 15s. 9d.

Government Stock.—The closing price of Consols on Monday was, for delivery, 98 to 98⅛, and for the account, 98⅛ to 98¼ (both ex div.) The figures on Tuesday and Wednesday were, for delivery, 98⅛ to 98¼, and for the account 98¼ to 98⅜ (both ex div.); and the same prices closed business on Thursday.

EDGINGTON'S GARDEN NETTING, the cheapest and most durable, at 1*d.* per square yard, or in quantities of 250, 500, or 1000 yards carriage free.
EDGINGTON'S MARQUEES and GARDEN TENTS are the prettiest.
EDGINGTON'S MARQUEES for Hire are the most handsome and capacious.
EDGINGTON'S RICK-CLOTHS for seventy-two years have maintained their celebrity as the best.
HAYTHORN'S and WALLER'S NETTINGS.
A quantity of good Second-hand Government TENTS from Abyssinia for Sale, cheap.
Sample of material free on application.
Be particular—FREDK. EDGINGTON AND CO., 52 (only), Old Kent Road, London, S.E.

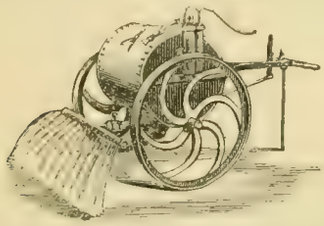
NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.
TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards 20*s.*; 4 yards wide, 6*d.* per yard, or 50 yards 20*s.*
NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1*s.* per yard; ¾-inch mesh, 4 yards wide, 1*s.* 6*d.* per yard.
TIFFANY, 5*s.* and 6*s.* per piece of 20 yards.
LAWN TENNIS NETS from 16*s.* to 25*s.*
EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

HAY RICK CLOTHS.

To cover 20 loads	20 feet	by 24 feet,	£2	13	2
To cover 25 ,,	24 ,,	by 30 ,,	3	15	2
To cover 30 ,,	30 ,,	by 30 ,,	4	14	5
To cover 35 ,,	30 ,,	by 34 ,,	5	7	3

All other sizes at proportionate rates. Carriage paid to any railway station in England. Terms, cash. Samples on application.
THOMAS H. HUNKIN, St. Sampson's, Guernsey.

COLEMAN AND MORTON'S HAND WATER-CART and GARDEN ENGINE.



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Are entirely free from SMELL
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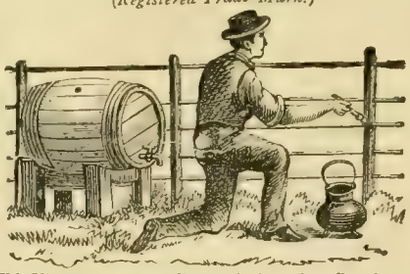

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Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom
UNSOLICITED TESTIMONIAL.
"*Piercefield Park, June* 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Piercefield Park, Chepstow.—I am, Sirs, yours respectfully, WM. COX."
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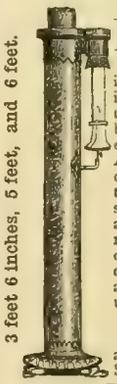

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Prices from 50*s.* to £10 10*s.*
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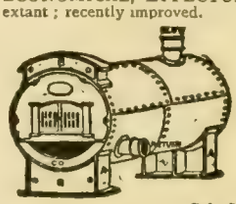

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	15 × 10 to 18 × 12,	11*s.*, 13*s.*, 14*s.*, 15*s.*		
	20 × 12 to 24 × 16,	11*s.* 6*d.*, 13*s.* 6*d.*, 14*s.* 6*d.*, 15*s.* 6*d.*		
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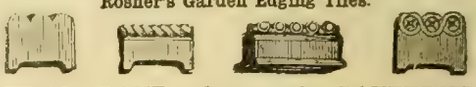

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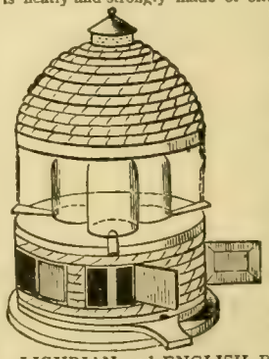

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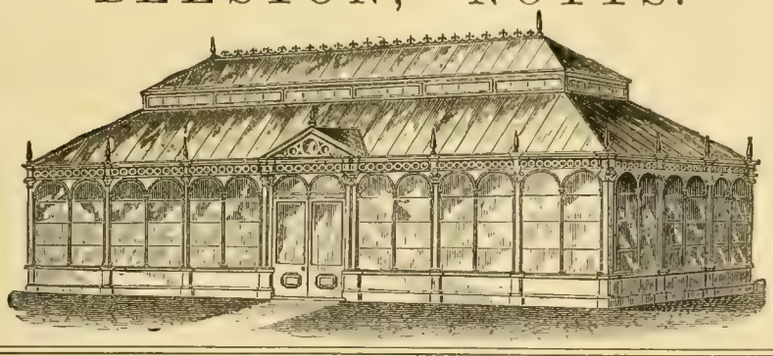

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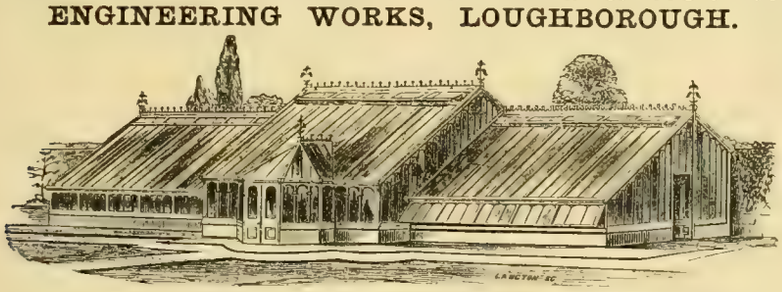

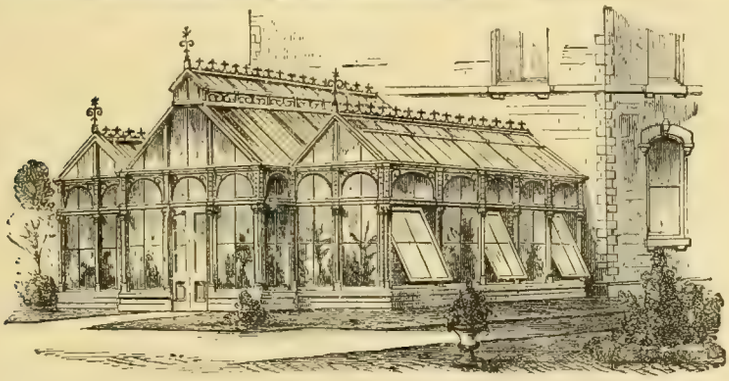

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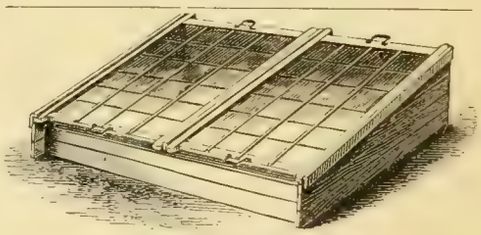

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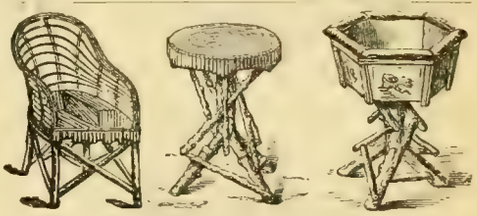

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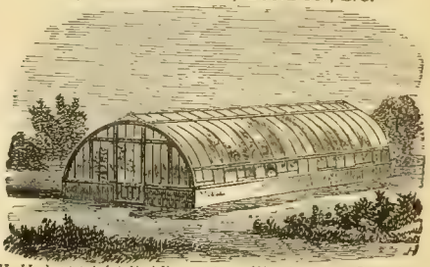

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GARDENER (HEAD, WORKING, or good SINGLE-HANDED).—Married, one child age (4 years): fifteen years' experience in all branches. Excellent character.—D. AGATE, Croft, Ardingly, Hayward's Heath.

GARDENER (HEAD, WORKING).—Middle-aged, married, no family; many years' practical experience in every department. Five years' good character and other testimonials.—H. C., Clarensdean, Roehampton, Putney, London, S.W.

GARDENER (HEAD, WORKING).—Age 37; competent to Manage a first-class place. Thorough good Grower of Grapes, Melons, Peaches, Stove and Greenhouse Plants, &c.; also good Flower and Kitchen Gardener. Abstainer. Nine years' character.—H. N., 44, Girdlestone Road, Upper Holloway, N.

GARDENER (HEAD, WORKING).—Age 30, single; is well versed in the Cultivation of Stove and Greenhouse Plants, Orchids, Pines, Grapes, &c.; also Flower and Kitchen Gardening, and the general Management of a Nobleman's Establishment. Can be well recommended.—G. F., Railway, Wansford.

GARDENER (HEAD, or good SINGLE-HANDED).—Middle-aged, married, three children; understands the Management of a good establishment; also Land and Stock. Four years' good character.—S. HARDY, Lea Bridge Road, Leyton, Essex.

GARDENER, in the Houses, under a Foreman, to improve himself.—Age 22, single. No objection to Indoors and Out. Good character.—F. COOPER, Sands Seale, Farnham, Surrey.

GARDENER (age 30). — A GENTLEMAN leaving the country wishes to find a situation for his Gardener. Steady and respectable. Good in Vinery, Stove, Conservatory, and Flower Garden.—W. NELSON, 2, Jury Street, Warwick.

GARDENER, in a Gentleman's establishment, under the Gardener, or SINGLE-HANDED.—Age 38, single; good workman. Ten years' good character.—WILLIAM DAVIS, Spettisbury, Blandford, Dorset.

GARDENER (good SINGLE-HANDED).—Age 29, single till suited; understands Vines, Cucumbers, Melons, and Flower and Kitchen Gardening. Good characters.—W. J., Bookstall, Weybridge, Surrey.

GARDENER (SINGLE-HANDED).—Age 26; understands Vines, Cucumbers, Stove and Greenhouse Plants, and Flower and Kitchen Gardening. Good character given.—H. J., 9, Karlslake Terrace, Burnt Ash, Lee, Kent.

GARDENER (WORKING).—Thoroughly understands Early and Late Forcing, all kinds of Fruit, Flowers and Vegetables, Flower and Kitchen Gardening; Land and Stock if required.—THOMAS RENNIE, Savernake Forest Gardens, Marlborough, Wilts.

GARDENER (JOBBING).—Age 27, single. Advertiser would be pleased to engage with any one requiring a good and steady man. Accustomed to the Scythe. Please state wages given.—H. SIBSON, Wansford.

GARDENER (SECOND).—Age 24; has had good experience. Two and a half years' good character. Please state terms.—B., Mr. Young, 1, High Street, Fulham, S.W.

GARDENER (SECOND, or THIRD).—Age 20; four years' good character. Well recommended.—W. X., Gardener, Greenhill, Wimbledon Common.

GARDENER (UNDER) in a good establishment.—Age 20; three years' good character. State wages, &c.—W. K., 95, Upper Fant Road, Maidstone.

GARDENER (UNDER).—Age 17; experienced in Plain Gardening. Active and intelligent, and can be well recommended.—J. D., Vicarage, Merton, Surrey.

GARDENER (UNDER), in a Nursery or private establishment.—Age 22; five years' experience in the Indoor and Outdoor branches. Total abstainer. Good references.—C W. SUTTON, Groombridge, Tunbridge Wells.

GARDENER (UNDER).—Age 20; has had five years' experience both in the Nursery and Seed Department. Good references. If within a reasonable distance could call if desirable.—C. L., 5, South Vale, Blackheath, Kent.

GARDENER (UNDER), in a Gentleman's Garden (in the Houses preferred).—Age 18; accustomed to General Gardening. Three years' good character. Bothy preferred.—J. CHARMAN, Mount Mascall, Bexley, Kent.

GARDENER (UNDER).—Age 18; handy, active, and strong; used to Outdoor Work, and the Forcing and Plant-houses. Good character and testimonials.—W. HIGGINS, Ebenezer Cottage, Fleet, near Winchfield, Hampshire.

To the Trade.

MANAGER, or GENERAL FOREMAN, in a first-class business.—Thorough knowledge of Roses, Stove and Greenhouse Plants, &c., and Routine of a good Trade.—REX, 2, Junction Terrace, Clapham Junction, S.W.

FOREMAN, in the Houses.—Age 26. Four and two years' character, from last and previous place.—T. PORTER, Glazenwood, Braintree, Essex.

FOREMAN, in the Houses.—Age 23; seven years' experience. Good references.—G. H. Y., 2, Alpha Terrace, Blenheim Street, Chelsea, S.W.

FOREMAN.—Age 25, single; has filled a similar situation. Good character from last and previous employers.—H. O., Durrington, Worthing, Sussex.

FOREMAN, in the Houses, in a Nobleman's or Gentleman's establishment.—Age 26; two and a half years' good character.—G. KETTERINGHAM, Shottesham Park, Norwich.

FOREMAN.—Single; seven years' experience in Gardens and Nursery. Character, &c., first-class.—OMEGA, 3, Lowesia Place, Osborne Street, Slough, Bucks.

FOREMAN, where Flowers are grown with great spirit for Market or private work.—Age 26; ten years' experience.—G. N. M., Ivy Cottage, Lansdowne Road, West Green.

FOREMAN, in a Nobleman's or Gentleman's establishment.—Age 24; nine years' excellent character.—J. MELVILLE, Gardener to M. P. W. Boulton, Esq., Great Tew Park, Enstone, Oxfordshire, can recommend an industrious and experienced man as above.

FOREMAN, or FOREMAN and PROPAGATOR, for Market or otherwise.—Well up in all branches.—A. Z, W. Stevens, near "Horse and Groom," Mitcham Common, Surrey.

FOREMAN, or FOREMAN and PROPAGATOR, for Market or otherwise.—Twenty-five years' practical experience. Well up in all branches. No small place accepted.—ALPHA, 3, Firtree Cottage, White Horse Road, Croydon.

FOREMAN, or JOURNEYMAN, in a good establishment.—Age 23; first-class references.—W. W., 5, Blenheim Grove, Peckham Rye, S E.

To Nurserymen and Landscape Gardeners.

JOBBING FOREMAN.—Age 33, single; understands Management of Men, Laying-out, Furnishing, &c.—J. SMITH, Highgate Nurseries, London, N.

JOURNEYMAN.—Age 22; six years' experience.—Please state wages, &c., to F. KENNETT, 15, Spencer Road, Kentish Town, N.W.

JOURNEYMAN, in the Houses, in a good establishment.—Age 22; seven years' experience. Three years' good character from present place.—W. BEALE, Mr. Lawford, Sopley, Ringwood, Hants.

JOURNEYMAN, in the Houses.—Has had four and a half years' experience at Panshanger. Can have good recommendations. Bothy preferred.—Apply, stating wages, to C. WILLIAMS, Victoria Cottages, Waltham Cross, Essex.

JOURNEYMAN.—THOS. PRITCHARD can with confidence recommend the above to any Gardener requiring a steady industrious young man.—THOS. PRITCHARD, Gardener to G. F. Muntz, Esq., Umberslade Park Gardens, Birmingham.

Market Nurseries or Trade.

PROPAGATOR (GENERAL), or GROWER. Good experience in Heaths.—Apply, stating particulars, M., 4, Rossington Street, Upper Clapton, E.

ROSE GROWER (ASSISTANT).—Age 21; well up in Budding and Grafting. Good references.—J. LOVELESS, Lambridge Cottage, Lambridge Street, Bath.

BAILIFF, or BAILIFF and GARDENER.—W. H. GOOD, Bailiff and Cardener to the Right Hon. W. H. Smith, M.P., will be shortly disengaged, and begs to offer his services to any Lady or Gentleman requiring an active experienced thoughtful man, with established character and good references; no family.—W. H. GOOD, The Gardens, Greenlands, Henley-on-Thames, Oxon.

IMPROVER, in the Houses.—Age 20; over two years in present situation. Can be well recommended.—J. GIBBS, The Gardens, Vale Royal, Northwich.

To Head Gardeners.

IMPROVER, under Foreman, in the Houses.—Age 21; four and a half years' experience. Good character.—G. W. S., Station Cottages, Sydenham, Kent.

IMPROVER, in a Gentleman's Garden.—Age 21; used to Outside Work, and desirous of learning Plant Growing. Willing to be useful. Can be well recommended. — JOS. TRACEY, Norton's Green, Knowle, Birmingham.

IMPROVER, in a Nobleman's or Gentleman's establishment, in the Houses as much as possible.—Age 19; respectable. Would pay a Premium. Five years good character.—HEAD GARDENER, Westbury Park, Petersfield, Hampshire.

MANAGER, BOOK-KEEPER or CORRESPONDENT.—Age 37; over twenty years' experience in all branches of the Nursery and Seed Trade.—W. D. H., 98, Lambeth Road, London, S.E.

SHOPMAN (HEAD).—Age 32; seventeen years' experience in London and provincial Houses. Thorough practical knowledge of the Trade in all its departments.—HORTUS, 63, Carlisle Street, Belfast.

SHOPMAN (ASSISTANT).—Young, steady, trustworthy, and obliging. Moderate wages. Good character.—S., Parsonage, Brenchley, Staplehurst, Kent.

SALESMAN, or ASSISTANT.—Well acquainted with Covent Garden Trade. — G. EASTON, 3, Elizabeth Street, Brompton Road, S.W.

ESTATE CARPENTER, ESTATE STEWARD, or Permanent CLERK of WORKS, or such similar appointment.—A Builder (Carpenter and Joiner by trade), who is about giving up business, desires a situation as above. Could assist in Choir of Church or Chapel. Good testimonials and references.—T., Cadogan Library, 283, King's Road, Chelsea, S.W.

EPPS'S COCOA.

GRATEFUL AND COMFORTING.

"By a thorough knowledge of the natural laws which govern the operation of digestion and nutrition, and by a careful application of the fine properties of well-selected Cocoa, Mr. Epps has provided our breakfast tables with a delicately-flavoured beverage which may save us many heavy doctor's bills. It is by the judicious use of such articles of diet that a constitution may be gradually built up until strong enough to resist every tendency to disease. Hundreds of subtle maladies are floating around us ready to attack wherever there is a weak point. We may escape many a fatal shaft by keeping ourselves well fortified with pure blood and a properly-nourished frame."—*Civil Service Gazette.*

JAMES EPPS AND CO., HOMŒOPATHIC CHEMISTS.

KINAHAN'S LL WHISKY.

KINAHAN'S LL WHISKY. Pure, Mild and Mellow, Delicious and Most Wholesome. Universally recommended by the Profession. The Cream of Old Irish Whiskies.

KINAHAN'S LL WHISKY. Dr. Hassall says—"Soft and Mellow, Pure, well Matured, and of very excellent quality."

KINAHAN'S LL WHISKY. Gold Medal, Paris Exhibition, 1878; Dublin Exhibition, 1865, the Gold Medal.—20, Great Titchfield Street, London, W.

"Facts Speak Louder than Words."

The *Chemist and Druggist* says:—"Mr. Saville has sent for our inspection a large bundle of testimonials he has received from persons who have obtained the *desired results*, after using his preparation. We confess that, testimonial-hardened as we are, we could not help feeling convinced, from THEIR EVIDENTLY GENUINE CHARACTER, that Saville's Capillary Germinator has *really a decided effect* when the hair is falling or fallen off."

GUARANTEED to effect this marvellous change in a few weeks.

BEFORE USE. NEVER FAILS. AFTER USE.

The following is a fair specimen of the letters we are daily receiving, which prove the good qualities of

"SAVILLE'S CAPILLARY GERMINATOR"

As a Real Producer of

WHISKERS,

MOUSTACHES, EYEBROWS, &c.,

And as a Complete and Certain Cure for

BALDNESS,

Or for Weak, Thin, and Falling Hair.

New Chester Road, Tranmere, Cheshire, April 30, 1880.

"Dear Sir,—Will you kindly forward me another bottle of your "Capillary Germinator," as I have found it to be beneficial and *quite capable of producing what I so earnestly desired.* I shall recommend this wonderful producer to all my friends and comrades. I shall be in London soon, and shall have the pleasure of showing you my capital Whiskers and Moustaches, which your preparation has to my satisfaction produced.—I remain, yours respectfully, "W. C. MAGER."

Harmless, free from grease, nicely scented, will not stain nor injure the skin. The original of the above, with hundreds of similar letters, may be seen at any time.

Full particulars with forty testimonials sent free to any address.

Of all Chemists, Perfumers, &c. Sent, *carriage paid*, to any address, secretly packed, with testimonials, directions for use, &c., for 2*s.* 6*d.* Larger sizes, FREE, 5*s*, 9*s*, and 12*s*.

JOHN F. SAVILLE AND SONS,
146, Regent's Park Road, London, N.W.

Beware! Beware!!—Every genuine bottle has above title impressed in the glass. Do not be deceived into buying any imitations of this thoroughly reliable article.

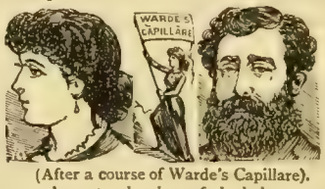
WHAT PRODUCES HAIR?

"We are glad to be able to announce that an answer has been found to this long puzzling and perplexing of questions in Warde's Capillare, which, however, turns out not to be a 'new discovery,' but one that has been in use in the practice of a physician of eminence for many years . . . and so successfully as to produce many beautiful growths of hair, as also whiskers and moustaches in abundance. . . . The secret of its preparation has been purchased by Messrs. Warde & Co., and these gentlemen are giving to society at large what, until lately, has been confined to a limited circle—A REAL HAIR PRODUCER."—*Civil Service Gazette.*

A beautiful Head of Hair, Whiskers, Moustaches and Eyebrows positively produced by the use of

WARDE'S CAPILLARE

(The only "Comme il faut" Hair Producer).



(After a course of Warde's Capillare).

It preserves the natural colour of the hair; KEEPS IT FROM THINNING; is a SPECIFIC for PREMATURE BALDNESS; and thoroughly eradicates scruff and dandriff. Its fragrance and purity, moreover, recommend it FOR DAILY USE, as the best dressing for the Capillature.

Not genuine without Warde & Co.'s signature on the label, thus *Warde & Co.*

Beware of those who copy the style of our Advertisements, and then "Caution" you that theirs have been so treated. Directions for use with each bottle.

Price, 2s. 6d. per bottle, three bottles 6s. 6d.,
Privately packed, carriage paid.

Can be obtained from all Chemists, per order on Wholesale Houses; or sent under cover, upon receipt of remittance, by

G. WARDE & CO., 16, GT. MARLBRO' ST., LONDON, W

DINNEFORD'S MAGNESIA.

The Medical Profession for over Forty Years have approved of this pure solution as the Best Remedy for

ACIDITY OF THE STOMACH, HEARTBURN, HEADACHE, GOUT, AND INDIGESTION,

and as the safest Aperient for Delicate Constitutions, Ladies, Children, and Infants.

DINNEFORD'S MAGNESIA.

HOLLOWAY'S OINTMENT and PILLS.—FEMALE COMPLAINTS.—On the mothers of England devolve much and serious responsibility in securing for their daughters robust health; frequently, alas! thoughtlessly sacrificed by culpable bashfulness at a particular period of life, when all-important changes take place in the female constitution, upon the management of which depends future happiness or misery. Holloway's Pills, especially if aided with the Ointment, have the happiest effect in establishing those functions upon the performance of which health and even life itself depend. Mother and daughter may safely use these powerful deobstruent remedies without consulting any one. Universally adopted as the one grand remedy for female complaints, these Pills never fail, never weaken the system, and always bring about the desired result.

SEND FOR A PRICE LIST OF

JOHN BLAKE'S
PATENT SELF-ACTING HYDRAULIC RAMS,

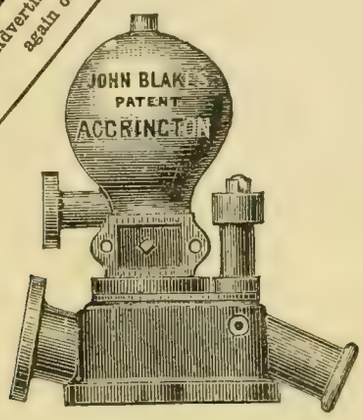
For Raising Water for the Supply of Towns, Villages, Irrigation, Railway Stations, Mansions, Fountains, Farms.

No Cost for Motive-Power, which is obtained from the Stream of Water passing through the Rams.

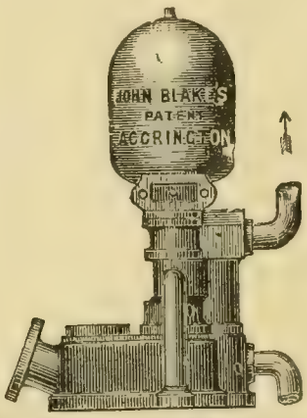
No Oiling or Packing Required.

Made in sizes to raise from 300 to 500,000 Gallons per day.

This Advertisement will appear again on July 10

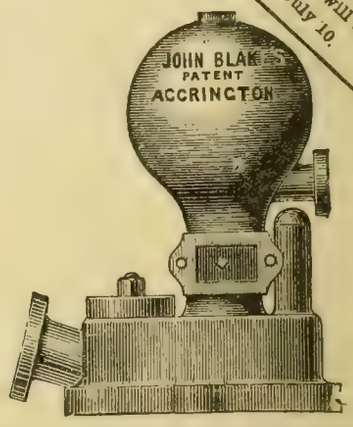


This Ram for small working falls.



This Ram will force a part of the same water that works it, or will force clean water from a well or spring whilst worked by a stream of impure water. Rams on this principle can be supplied to force to a height of 1500 feet.

This Advertisement will appear again on July 10.



This Ram, for deep working falls, will force up one-third of the water passing through it

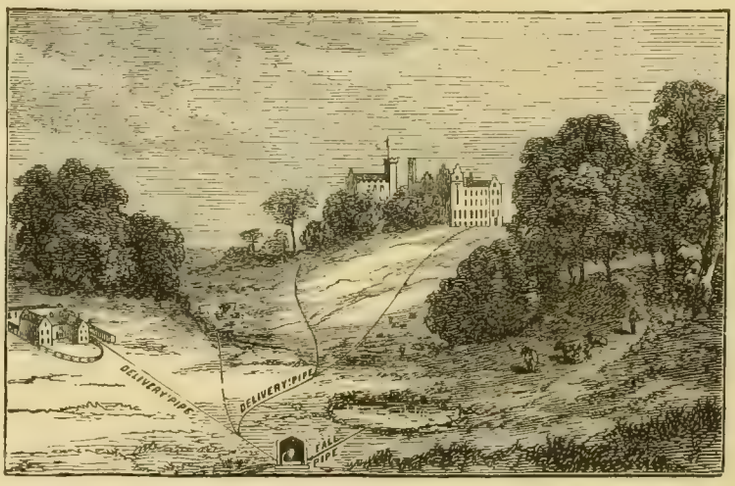
Parties requiring a Water Supply should not too readily conclude that the quantity and fall of water, if any is available, is too small to work a Ram before consulting J. B.

TESTIMONIALS.

From the Right Honourable the EARL of GRANARD, *Castle Forbes, March* 1, 1880.—"The Hydraulic Ram erected for me at Castle Forbes has answered perfectly. Considering the very small fall attainable by the nature of the ground, it is a great success, and throws up water to a cistern on the top of a tower 80 feet high. When Mr. Blake first proposed to put it up I doubted the possibility of its succeeding, owing to the nature of the ground, but I have been most agreeably undeceived."

From Col. TREMAYNE, *Perran-ar-Worthel, Cornwall, March* 7, 1880.—The Self-acting Hydraulic Ram you erected here about two years ago is, I am pleased to say, working most satisfactorily, sending up water at the rate of 8000 gallons to a height of 185 feet, and a distance of more than 2000 yards. The quantity of water is as much as you undertook to deliver."

From W. SCARTH, Esq., *Agent to* His Grace the Duke of Cleveland.—"Raby Castle, Darlington, July 16, 1878.—The Hydraulic Ram you supplied to his Grace the Duke of Cleveland in 1875 is a complete success. It worked for more than two years without once stopping, and throws more water than promised."



This view represents one Ram worked by water from a spring, and forcing it up to a Farm, Cattle Troughs, Kitchen Garden, and Mansion, all at different elevations, the highest being 444 feet, and to a distance of 2008 yards.

TESTIMONIALS.

From Capt. GANDY, *Castle Bank, Appleby, February* 11, 1880.—"The Self-acting Hydraulic Ram you erected for me is an excellent example of strength and good workmanship. Whilst working with 3 feet 4 inches fall it forces water 73 feet high, and so far gives me every satisfaction. It will do more work in one day than the old Ram of another make could do in a week."

From JOHN WALKER, Esq., *Mount St. John, Thirsk, February* 13, 1880.—"In reply to your enquiry I am glad to inform you that the Hydraulic Ram you fixed here in May last has fully answered my expectations, and your promises as to the quantity of water it would force to a height of 185 feet. I consider it a very good machine, and superior to one I had in use previously."

From Captain TOWNSHEND, *Wineham, February* 10, 1877.—"In answer to your inquiry, I am glad to say the Hydraulic Ram you sent me in November, 1875, is working exceedingly well and gives no trouble. It will work when quite immersed, as it has been several times during the floods this winter, forcing up water through a delivery pipe, 900 yards long, at the rate of 80,000 gallons per day, although you only promised 50,000."

From JOHN TAYLOR, Esq., *The Rocks, Bath, August* 22, 1878.—"The Self-acting Hydraulic Ram you fixed here in March of last year continues to work well. It has only the same quantity of water and fall to work it as the water-wheel and pump which I used previously to force a height of 294 feet, and yet the Ram sends up more than double the quantity of water that the wheel did to the same height."

From Major STARKIE, *Lovely Hall, Blackburn, May* 13, 1878.—"Sir, I have great pleasure in testifying to the good qualities possessed by the Ram you erected here last year. It has done its work well, and not failed as the other Ram did, which was of a different construction, and supplied by a different firm. I consider that there are great difficulties to contend with here, but your practical mechanical knowledge, both as to the construction of the Ram and its situation here, overcame most of the difficulties that we had to contend against."

From JOHN PENNINGTON, Esq., *Emmott Hall, near Colne, December* 21, 1868.—"Sir.—The Self-acting Hydraulic Ram you supplied me with nine months ago continues in excellent condition. It receives water from a spring through a 2-inch pipe, of which it forces 3600 gallons per day of twenty-four hours to a height of 90 feet, exceeding all you promised, and far surpassing the water-wheel and force-pumps which it has displaced. Its cost is small, it occupies but little space (2 square feet), and in mechanical detail is simplicity itself. I have much pleasure in recommending it as a cheap and efficient method of raising water."

From the Right Hon. T. SOTHERON-ESTCOURT, *Estcourt Park, Gloucestershire, September* 6, 1875.—"You will be glad to hear, as I am to tell you, that your Self-acting Hydraulic Ram has worked exceedingly well and continuously since it was erected, more than twelve months ago. It is, in fact, perfectly successful." (The delivery pipe in the above case is 4200 feet long, with 100 feet rise.)

Deanewater, Wilmslow, November 20, 1873.—"Dear Sir,—In answer to your inquiries respecting the Hydraulic Ram you supplied me with six months ago, I beg to state that I am more than satisfied with it, as it is in perfect order, sending up to the top of the house about 2000 gallons of water in the twenty-four hours, whereas you only contracted to deliver in that time 500 gallons. I have, therefore, every reason to be well pleased with your work, and more especially as I had a Ram supplied me by another maker which could not send up a single gallon of water to the height required, and a second maker informed me that no Ram with a fall of 3 feet could send up water to the distance required—namely, 120 feet. But yours is an accomplished fact, and does its work most effectually.—Yours, &c., L. HANMER."

From Mr. THOMAS MASON, *Alkincoates Hall, Colne, September* 30, 1871.—"Sir,—Your Self-acting Hydraulic Ram gives me entire satisfaction; it has been at work about fifteen months, and has only been seen once during the last six months; it is forcing about 1400 gallons per day of twenty-four hours, to a height of 194 feet."

JOHN BLAKE, ENGINEER, ACCRINGTON, LANCASHIRE.

Editorial Communications should be addressed to "The Editors;" Advertisements and Business Letters to "The Publisher," at the Office, 41, Wellington Street, Covent Garden, London, W.C.
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Agent for Manchester—JOHN HEYWOOD. Agents for Scotland—Messrs. J. MENZIES & Co., Edinburgh and Glasgow.

THE

GARDENERS' CHRONICLE.

Established 1841.

A WEEKLY ILLUSTRATED JOURNAL OF HORTICULTURE AND ALLIED SUBJECTS.

No. 339.—Vol. XIII. { New Series. } SATURDAY, JUNE 26, 1880. { Registered at the General Post-office as a Newspaper. } Price 5d. { Post Free, 5½d.

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ROYAL HORTICULTURAL SOCIETY, SOUTH KENSINGTON, S.W.
GREAT ROSE SHOW and EXHIBITION by the Pelargonium Society. TUESDAY, June 29. Band of the Royal Horse Guards (Blue). Doors open at 1 o'clock. Admission, 2s. 6d., or by Tickets purchased before the day by Fellows, 2s Tickets at the usual Agents, and at the Office and Entrances of the Garden.
N.B.—The SPECIAL PRIZES offered by Messrs. John Laing & Co., for Begonias; Messrs James Carter & Co., Messrs. Sutton & Sons, and Messrs. Webb & Sons, for Vegetables; and Messrs. Webber & Co. for Fruit, will be competed for at this Show.
Schedules and full particulars on application at the Secretary's Office, South Kensington, S.W.

ROYAL BOTANIC SOCIETY, Gardens, Regent's Park, N.W.
EVENING FÊTE, WEDNESDAY NEXT, June 30—8 to 12 o'Clock. Programmes are now ready. Tickets to be obtained at the Gardens only, by Vouchers from Fellows of the Society, price 10s.; or, on the day or evening of the Fête, 15s. each.

ALEXANDRA PALACE, Muswell Hill, N.
The GREAT ROSE SHOW will be held in the Central Hall, SATURDAY, July 10. ENTRIES CLOSE—SATURDAY, July 3. Schedule of Prizes, Rules, &c., may be had on application to Mr. J. S. COOKE, Sec.
Alexandra Palace, London, N.

FARNINGHAM ROSE and HORTICULTURAL SOCIETY.—The ANNUAL EXHIBITION will be held at Farningham, on WEDNESDAY, June 30. Entries close June 25. Schedules may be obtained on application to
Farningham. F. BURNSIDE, Esq., Hon. Sec.

HIGHGATE HORTICULTURAL SOCIETY.
The ANNUAL FLOWER SHOW will be held (by permission of E. Brooke, Esq., J.P.), in the grounds of Caen-Wood Towers, Highgate, N., on THURSDAY, July 1. Admission from 1 till 3 o'Clock, 2s. 6d.; from 3 till 5 o'Clock, 1s.; from 5 till 8 o'Clock, 6d. Children half-price. Bands in attendance. Refreshments on the grounds.
W. M. BURCK, Sec.

TORQUAY HORTICULTURAL SOCIETY.
The ROSE and TABLE DECORATION SHOW of the above Society will be held in the Bath Saloon, Torquay, on JULY 9. Prizes for Roses amount to over £100; for Table Decorations and Bouquets to over £25. Entries close July 2. Schedules on application to
W. FANE TUCKER, Capt., Hon. Sec. T.H.S.
Braddon Tor, Torquay.

LUDLOW ROSE SHOW.—The ANNUAL EXHIBITION of ROSES will be held at the Assembly Rooms, Ludlow, on WEDNESDAY, July 14. Liberal Open Prizes will be given to Nurserymen, Amateurs and Cottagers. Schedules of Prizes and Regulations may be obtained from the Rev. V. T. T. ORGILL, Hon. Sec.
Ludlow.

ROYAL BOTANICAL and HORTICULTURAL SOCIETY of MANCHESTER.
The PROVINCIAL EXHIBITION of the NATIONAL ROSE SOCIETY will be held in the above Society's Gardens, Old Trafford, on SATURDAY, July 17. Open from 12 o'Clock at noon till 7 P.M. Admission 1s. For Schedules apply to the undersigned, BRUCE FINDLAY.
Royal Botanic Gardens, Manchester.

CARTER'S GREAT EXHIBITION of FLOWERING and ORNAMENTAL FOLIAGED ANNUALS will be ON VIEW DAILY, in the Long Corridor of the Royal Botanic Society's Gardens, Regent's Park, N.W., and continue until further notice. Great display of 25,000 pots.
N.B.—The Exhibition is expected to be at its best from June 25 to 30.
Tickets of admission on application to
CARTERS, the Queen's Seedsmen, High Holborn, W.C.

SUTTON'S HOME-GROWN SEEDS, &c.
PARIS, 1878.
In addition to FIVE PRIZE MEDALS awarded by the Juries, the LEGION OF HONOUR (*a superior distinction accorded to no other English Exhibitor of Seeds*) was conferred on our Managing Partner by the French Government.
SUTTON AND SONS, Reading, London and Paris.

Illustrated Catalogue of Ferns.
W. AND J. BIRKENHEAD, Fern Nursery, Sale, near Manchester, beg to say that their CATALOGUE of FERNS for 1880 is now ready, consisting of eighty-four pages, containing many Illustrations, Synonyms, Descriptions, and copious yet simple "Hints on Fern Cultivation," post-free for six penny stamps. Also, now ready, a "SPECIAL LIST of FERNS," free on application.

Primulas — Primulas — Primulas.
Eleventh Year of Distribution.
WILLIAMS' superb strain, 1s. 6d. per dozen, 10s. per 100; package and carriage free.
CINERARIAS, choicest assortment, same size and price.
The above are quite equal to those I have sent out in previous years. Cash with order.
JOHN STEVENS, The Nurseries, Coventry.

Pyrethrums, Double-flowered, in Pots.
ROBERT PARKER begs to announce that he can supply the above-named, by the dozen, hundred, or thousand, in nearly 100 named varieties, from 9s. per dozen upwards. Descriptive LISTS, with New General CATALOGUE of Hardy Greenhouse and Stove Plants, forwarded to applicants.
Exotic Nursery, Tooting, Surrey, S.W.

THE BEST of the New GERANIUMS and the New Tuberous BEGONIAS, in cuttings, very cheap. Denny's, Postans', and Pearson's new GERANIUMS (1879), 24 varieties for 8s., older varieties, but all new recently, 50 varieties for 4s. A quantity of the New Tuberous BEGONIAS, in cuttings, cheap. All post-free. CATALOGUES on application
RICHARD PANNETT, Nurseryman, Chailey, Sussex.

NEW PALMS, CAMELLIAS, and AZALEAS.
JACQUES COENE, St. Pierre-Alost Nursery, Ghent.

Gardenias.
MESSRS. JOHN STANDISH AND CO. have a magnificent stock of the above plants to offer. They may be had in all sizes from 24s. per dozen to 21s. each, mostly set with bloom-buds. Every plant is warranted absolutely free from mealy-bug.
Royal Nurseries, Ascot, Berks.

To the Trade.
DAHLIAS—40,000, in 400 varieties, now ready. CATALOGUE and Price on application to
KELWAY AND SON, Langport, Somerset.

FRUITING PLANTS of PEACHES, NECTARINES, APRICOTS, and GRAPE VINES, a large and fine stock, now offered for Sale.
THOMAS RIVERS AND SON, Sawbridgeworth, Herts.

Vines for Present Planting.
JOHN COWAN, The Vineyard and Nurseries, Garston, near Liverpool, is now offering a splendid Stock of VINES raised from Eyes this spring, and specially prepared for planting Vineries.
CATALOGUES free. The Trade supplied.

To the Seed Trade.
W. CROWDER, The Thimbleby Nurseries, Horncastle, has still on hand some of his selected GREEN GLOBE TURNIP, also WHITE GLOBE and LINCOLNSHIRE RED, which he will offer on reasonable terms.

COPY of "GARDENERS' CHRONICLE" from 1841, complete (except a few numbers), bound in green cloth. The years 1878 and 1879 are not bound. Offers for the above to
Rev. RALPH BARNES, Ardington Vicarage, Wantage.

J. GRANT AND CO., COMMISSION AGENTS, 33, Catherine Street, Covent Garden, receive FRUIT, FLOWERS, VEGETABLES, PLANTS, BULBS, SEEDS, for SALE. Cash remitted same day as sold.

To Nurserymen, Florists, and others Cultivating MARKET PRODUCE.
SALE of SAME UNDERTAKEN, at moderate Commission, by
WISE AND RIDES, General Agents, 3, Tavistock Court, Covent Garden, W.C.

WANTED, FLORAL and FRUIT COMMISSI AGENT, begs to give notice that NO GOODS WON BE RECEIVED UNLESS PREVIOUSLY ADVISEDILL 4, Tavistock Row, Covent Garden, W.C.

WANTED, 500 each of GERANIUMS MacMahon and Flower of Day; also ZINNIA ELEGANS and WHITE CACTUS, strong plants.
T. L. MAYOS, Highfield, Hereford.

WANTED, CUTTINGS of PELARGONIUMS, early flowering market sorts. Send List and price per 100 to
WM. ABRAHAM, Nurseryman, Limerick.

WANTED, TREE CARNATIONS, named sorts. Send List and lowest price to
FLORIST, 41, Wellington Street, Strand, London, W.C.

Selaginella lepidophylla (true).
THE RESURRECTION PLANT.—The most remarkable of plants. They are dried up and apparently dead, but on being placed in water, immediately begin to unfold their elegant green fronds, in fact they come to life again in all their beauty. We offer these wonderful and unique plants at 3s. each, or 3 for 7s 6d post-free.
HOOPER AND CO., Covent Garden, London, W.C.

WM. CUTBUSH AND SON beg to announce that their GENERAL PLANT CATALOGUE is now ready for the ensuing season, and may be had post-free on application.
Highgate, London, N.; and Barnet, Herts.

SPIRÆA ULMARIA VARIEGATA.—Beautiful golden variegated foliage (see the *Garden*, of June 12, 1880, p 513).
Messrs. BUDDENBORG BROS., Hillegom, near Haarlem, Holland, offer fine plants of the above at 20s. per 100.

Begonias.
JOHN LAING AND CO.'S unrivalled Gold Medal Collection is now in bloom. Inspection invited. Young plants, free by post, 4s. and 6s. per dozen. The "coming flower" for Conservatory, Window Decoration, and Bedding-out. LISTS free on application.
The Nurseries, Forest Hill, London, S.E.

Hyacinths, Tulips, &c.
BUDDENBORG BROS., Bulb Growers, House Bloemswaard, Hillegom, near Haarlem, Holland, beg to announce that their WHOLESALE CATALOGUE of the above is now ready, and will be sent post-free on application

OSBORN AND SONS call attention to their collection of HARDY HERBACEOUS ALPINE BULBOUS PLANTS Hardy Ferns, &c., a CATALOGUE of which will be forwarded Post-free on application.
OSBORN AND SONS, The Fulham Nurseries, London, S.W.

BEDDING CLEMATIS, mixed colours.—A great bargain is offered in very fine plants—25 for 20s., 50 for 30s., 100 for 50s., package included. Cash with order. A magnificent stock of CLEMATIS LANUGINOSA on offer. CHARLES NOBLE, Bagshot.

To the Trade and Amateur Rosarians.
NEW ROSES in POTS TEA and NOISETTE ROSES in Pots.—One of the most extensive, most select, and perhaps the most thriving stock of young plants in the country.
Special LIST will be sent gratis and post-free to applicants.
EWING AND CO., Eaton, near Norwich.

The Largest Rose Gardens in England.
CRANSTON'S NURSERIES, HEREFORD. (Established 1785.)
Descriptive CATALOGUES on application. Address CRANSTON'S NURSERY AND SEED COMPANY (Limited), King's Acre, near Hereford.

CROTON interruptum, angustifolia, longifolia, variegata, Weismanni, one of each, well furnished and fit for exhibition table. Also a large plant of PANDANUS VEITCHII. For sizes, particulars and price, apply to HEAD GARDENER, Woodlands, Nightingale Lane, Balham, Surrey, S.W.

Now is the Best Time to Transplant Hollies.
HOLLIES.—Standard Gold and Silver, perfect specimens, from 10s. 6d. to 31s. 6d. each. Pyramids, 3½ to 4 feet, from 7s. 6d. to 10s. 6d. each. Green, for hedges, 1½ to 2 feet, at 40s. per 100; 2½ to 3 feet, at 75s. per 100.
RICHARD SMITH AND CO., Nurserymen, Worcester.

Myosotis elegantissima.
The new Silver-edged, Blue-flowered Forget-me-not.
RODGER, McCLELLAND AND CO. are now sending out this superb Novelty for the Spring Garden. Good plants 3s. 6d. each, 36s. per dozen. Can be sent by post. 64, Hill Street, Newry.

Orchids.
THE NEW PLANT and BULB COMPANY beg to announce that their SPECIAL LIST, No. 47, is just published. Contents:—Importations from New Grenada, East Indies, Brazil, and a fine lot of Established Orchids. Sent Post-free on application.
Lion Walk, Colchester.

To the Trade.
CALCEOLARIA and PANSY SEED, our own saving, from the finest strains. Price on application to
DOWNIE AND LAIRD, 17, Frederick Street, Edinburgh.

STRAWBERRY RUNNERS, strong, healthy, and well-rooted, from V. H. de Thury, President, Sir J. Paxton, Rivers' Eliza, and other good varieties. Price LIST, &c., on application. MANUAL ON STRAWBERRY CULTURE, with sample of plants, post-free, 1s.
W. LOVELL, Strawberry Farmer, Weaverthorpe, York.

Thousand-Head Kale.
S. BIDE can supply, from a fine Stock, Strong Plants of Thousand-Head KALE (invaluable to Farmers for Sheep feed). Also Sutton's Early Drumhead, Enfield Market, Early Battersea, Improved Nonpareil, and Savoy CABBAGE PLANTS, at 4s. per 1000, free on rail, and package free for cash with order, to
S. BIDE, Alma Nursery, Farnham, Surrey.

SALES BY AUCTION.

Established Orchids, &c.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on WEDNESDAY, July 7, at half-past 12 o'Clock precisely, the valuable COLLECTION of ESTABLISHED ORCHIDS, formed by the late W. S. Cooper, Esq., of Hill-Morton, Paddox, including some very fine specimens of Phalænopsis, Aerides, Odontoglossums, Masdevallias, Vandas, Angræcums, Cymbidiums, &c., many of them in flower; an importation of PALM SEEDS from Columbia; a collection of fine specimen FERNS and STOVE PLANTS; 20 fine plants of MASDEVALLIA HARRYANA in flower; 2 magnificent specimens of ANTHURIUM SCHERZERIANUM; 200 plants of SAXIFRAGA WALLACEI; a consignment of TREE FERNS and other Plants from New Zealand; ORCHID BASKETS, &c.; and several other importations of ORCHIDS, PALM SEEDS, &c.

May be viewed the morning of Sale, and Catalogues had.

Oncidium lanceanum.

MR. J. C. STEVENS will SELL by AUCTION, at his Great Rooms, 38, King Street, Covent Garden, W.C., on THURSDAY, July 8, at half-past 12 o'Clock precisely, by order of Mr. F. Sander, St. Albans, a splendid Importation of ONCIDIUM LANCEANUM, in large masses and splendid condition. Among others the consignment contains the most wonderful mass that ever reached this land, measuring 14 feet in circumference, and consisting of a group of plants growing closely on part of a tree. Four natives carried this truly grand specimen four weeks on poles to the seaport.

May be viewed the morning of Sale, and Catalogues had.

Acton, W.

EXPIRATION of LEASE.—CLEARANCE SALE.

MESSRS. PROTHEROE AND MORRIS will SELL by AUCTION, on the Premises, The Nursery, Park Road, Acton, W., near the Station, on FRIDAY, July 9, at 12 o'Clock precisely, by order of Mr. Long, without reserve, the whole of the well-grown STOVE and GREENHOUSE PLANTS, including fine Ficus elastica, Bouvardias, Maidenhair Ferns, Lycopods, 1000 Double White Primulas, specimen White Azaleas, Scarlet Geraniums, Fuchsias, and Callas, two Market VANS, capital Spring CART, and other effects.

May be viewed. Catalogues had on the Premises and of the Auctioneers, 98, Gracechurch Street, E.C., and Leytonstone, E.

Near the Victoria Station, Manchester.

AUCTION SALE of IRON ROOFS, BUILDINGS, WIRE FENCING, &c.

MR. CHARLES COSTIGAN will SELL by AUCTION, on TUESDAY, WEDNESDAY and THURSDAY, July 6, 7 and 8, near Victoria Station, Manchester, on vacant land, corner of Victoria and Chapel Streets, about 260 tons of valuable IRON and STEEL MANUFACTURES, including about 20,000 Galvanised Corrugated Iron and Steel Roofing Sheets, painted and black corrugated sheets; 60 Complete Iron and Steel Roofs, 40 Complete Iron Buildings, 12 miles strong Wire Cattle Fencing, large quantities of Iron Hurdles, Gates, Fencing, Rope and Standards; Eaves Gutters, Ridge Capping, &c. The Galvanised Corrugated Iron and Steel Sheets will consist of usual sizes and strengths, suitable for covering roofs and buildings for all purposes. The Complete Roofs are valuable for hay and corn sheds, and general agricultural and manufacturing shedding, stores, warehouses, workshops, &c. The Wire Fencing is of various strengths, most of it against heavy cattle. The Hurdles are of three strengths, extra heavy, strong, and medium. All the goods are new, of usual sizes and best manufacture, and will be put up in convenient lots to suit all buyers. The Iron Roofs are specially worth the attention of agriculturists; thousands are now in use throughout the kingdom for hay and corn barns, &c. Save their cost to farmers in about three years.

Catalogues may be had a week before Sale, from Mr. COSTIGAN, Auctioneer, Park Road, Liverpool; and ISAAC DIXON, Windsor Ironworks, Liverpool. Full particulars may be had from Mr. DIXON. Goods may be viewed on Monday, July 5.

Hemel Hempstead (4967).

FOR SALE, a NURSERY BUSINESS, comprising an acre of Ground, three Greenhouses, Residence, and Shop. Rent £42 per annum. Price £250. Apply to, Messrs. PROTHEROE AND MORRIS, 98, Gracechurch Street, E.C.

FOR SALE, the LEASE of an old-established NURSERY, in the North of London; about 9000 feet of Glass, with first-class Home Trade and Jobbing Connection. Cottage, long Lease, and every convenience, with immediate possession. Apply,

1, Hanley Road West, Upper Holloway, London, N.

TO BE SOLD, an old-established and profitable JOBBING BUSINESS, 10 miles West of London. Price £100. If required a well-built 6-roomed Dwelling-house with Greenhouse can be had on Lease. Apply in first instance by letter to

A. B., Mr. Woodfin, Stationer, High Street, Hounslow.

TO BE LET, with Immediate Possession, NURSERY GARDENS, about 1 Acre 2 Roods. A Seed Business has been carried on in connection with the same, and could be continued. There are two good Greenhouses, with Pits heated by Hot Water; Dwelling-house—a part of the House is at present let off at more than a third of the rent of the whole. Close to a good Market Town with about 12,000 inhabitants. No other business of the kind in the place. Thirty miles from London, with direct rail. A first-class opportunity for a pushing man with a little capital. Apply to

JOHN COX, High Wycombe, Bucks.

To Market Gardeners and Florists.

TO LET, 14 acres of prime LAND, in first-rate condition, and all cropped. 9 miles from London, close to Southall Station, Great Western Railway. Apply on Premises, Tuesday, or three following days.

PROTHEROE AND MORRIS, HORTICULTURAL, MARKET GARDEN and ESTATE AUCTIONEERS and VALUERS, 98, Gracechurch Street, City, E.C., and at Leytonstone, E. Monthly Horticultural Register had on application.

CARTERS' HOME-GROWN SEEDS.—Paris, 1878. Awarded Five Gold Medals, being the highest award in every competition. All other Seed competitors, English as well as Foreign, received awards of inferior merit.

CARTERS, the Queen's Seedsmen, High Holborn, London.

"Special Reduced Offer."

Extra Fine Spring-sown CABBAGE and other Plants, &c.

GEE'S superior Bedfordshire-grown Plants, &c., grown from his far-famed selected stocks, can now be supplied in any quantities, as follows, for cash with orders:—

CABBAGE PLANTS.—Early Enfield, Nonpareil, Large Drumhead and Thousand-head. SAVOY.—Large Drumhead, and Dwarf Green Curled. SCOTCH KALE, BRUSSELS SPROUTS, finest. KOHL RABI.—Large Green. All the foregoing at 3s. per 1000.

BROCCOLI.—Purple Sprouting, Adams' Early White, Knight's Protecting, and Wilcoves' Large Late White, 5s. p. 1000.

CAULIFLOWER.—Veitch's Giant, true, 7s. 6d. per 1000; Early London and Walcheren, 5s.

LETTUCE.—Old Brown Cos, Victoria, Drumhead, and Paris Green Cos, all at 5s. per 1000.

CELERY PLANTS.—Cole's Superb Red and White, 5s. per 1000, 9d per 100 of 6 score.

Packages charged lowest prices, which can be returned, and full price allowed. For quality and price, F. GEE will defy the competition of any grower in England.

F. GEE, Seed and Plant Grower, Biggleswade, Beds.

Cheap **Orchids.**

B. S. WILLIAMS having recently received from his Collectors and Correspondents in different parts of the world large consignments of ORCHIDS, and through having purchased several Collections in this country, is now in a position to offer good young healthy Plants at more reasonable prices than it has been possible hitherto to sell at. An inspection is respectfully invited. Special LIST of cheap and desirable kinds sent post-free on application.

Victoria and Paradise Nurseries, Upper Holloway, London, N.

CHARLES B. SAUNDERS, NURSERYMAN, &c., Jersey, respectfully offers to the Trade:—

CAMELLIA STOCKS, good plants, from cutting beds, at 20s. per 100.

,, ,, strong ditto, established in small pots, 30s. per dozen.

ASPLENIUM MARINUM, or Sea Spleenwort, 5s. per dozen.

GYMNOGRAMMA LEPTOPHYLLA, or Annual Maidenhair Fern, 5s. per dozen.

Also a large quantity of MAIDENHAIR FERNS of varieties.

COLEUS VERSCHAFFELTII, strong, from single plants, 10s. per 100.

ALTERNANTHERA PARONYCHIOIDES, major, from single pots, 10s. per 100.

GERANIUMS and other mixed Bedding Plants, from single pots, 10s. per 100.

COLEUS, twelve good distinct varieties, post-free, for 2s. 6d.

Post-office Orders payable at Sissinghurst.

WM. POTTEN, Camden Nursery, Sissinghurst, Kent.

Spring Sown Strong Plants.

ASPARAGUS KALE.—200,000, comes in early, very prolific, 3s. 6d. per 1000, 30s. per 10,000, 55s. per 20,000. BRUSSELS SPROUTS, 3s. 6d. per 1000. DRUMHEAD SAVOYS, 3s. 6d. per 1000. NONPAREIL CABBAGE, 3s. 6d. per 1000. All grown on poor chalk soil, without manure. Cash with orders.

J. BOWEN, Plant Grower, High Wycombe, Bucks.

To the Trade,

HOME-GROWN TURNIP SEEDS.

H. AND F. SHARPE invite the attention of the Trade to their fine selected Stocks of TURNIP SEEDS, which comprise, amongst others, the following excellent varieties, viz.:—

Sharpe's Improved Large Swede	Sutton's Mammoth Purple-top
Sharpe's West Norfolk Swede	Devonshire Grey Stone
Sutton's Champion Swede	Pomeranian White Globe
East Lothian Swede	Lincolnshire Red Round
Green-top Yellow Aberdeen	Stratton Green Round
Golden Yellow Aberdeen	White Stone or Stubble

The quality is very fine, and the prices will be found very advantageous to purchasers. For further particulars apply to

Seed Growing Establishment, Wisbech.

VIOLAS, 20,000 fine strong plants:—

,, cornuta, white } 5s. per 100, 45s. per 1000.
,, ,, Queen of Blues, }

LOBELIA, Emperor William, strong autumn-struck, from stores, 2s. 6d. per 100, 20s. per 1000; from single pots, 5s. per 100, 45s. per 1000.

VERBENAS, Pink and Crimson, strong autumn-struck, 6s. per 100, from stores; 10s. per 100, from single pots.

Cash only. Carriage and package free.

H. J. HARDY, Stour Valley Seed Grounds, Bures, Suffolk.

East Lothian Intermediate Stocks.

THOMAS METHVEN AND SONS now offer their Choice Strains of these splendid STOCKS for present sowing—Scarlet, Purple, White, Snow-white, Wall-leaved, and Cowe's New Crimson—in packets, 1s., 2s. 6d. and 5s. each colour.

15, Princes Street, Edinburgh.

Dutch Bulbs.

To SUPPLY the TRADE.

SEGERS AND CO., BULB GROWERS, Lisse, near Haarlem, Holland, beg to announce that their crops of HYACINTHS, TULIPS, &c., look very promising.

Their WHOLESALE CATALOGUE and PRICE LIST is sent to any part of the United Kingdom, and may be had free on application.

☞ Please observe name and address.

DR. DENNY'S Zonal PELARGONIUMS. "SEVENTH SET."—Consists of 8 splendid and distinct varieties, all of which were staged in the First Prize-taking Exhibits of the Pelargonium Society's Show of 1879. Five of the varieties were also awarded First-class Certificates of Merit.

DR. DENNY'S "SIXTH SET" can now be supplied at 12s. per dozen, good plants. For particulars and CATALOGUES, apply to

JOHN BALAAM, The Vine Nursery, Downs Road, Lower Clapton, E.

Cabbage Plants—Cabbage Plants.

W. VIRGO can now supply in any quantity good strong well rooted spring-sown plants of the following:—Robinson's Champion Drumhead Cabbage, Early Oxheart, Early Enfield Market, Wheeler's Imperial, and Drumhead Savoy. All at 4s. per 1000. Also Broccoli, Cauliflower, Brussels Sprouts, Winter Kales, Green Curled Savoy and Early Cabbage. The above in any quantity at 6s. per 1000, made up of different kinds. Cash or reference from unknown correspondents. Delivered free on rail.

Wonersh Nurseries, near Guildford, Surrey.

CANTERBURY and EAST KENT ROSE SOCIETY.

The ANNUAL EXHIBITION of ROSES will be held in the Corn Exchange, Canterbury, on THURSDAY, July 1, 1880.

OPEN CLASSES.

CLASS 8.—NURSERYMEN ONLY.

	1st Prize.	2d Prize.	3d Prize.
Thirty-six varieties, any kinds ..	£8 0 0	£5 0 0	£3 0 0

CLASS 9.—AMATEURS AND NURSERYMEN.

Twelve Teas and Noisettes ..	£3 0 0	£2 0 0	£1 0 0

CLASS 10.—AMATEURS ONLY.

Twenty-four varieties, any kinds	£5 0 0	£3 0 0	£2 0 0

CLASS 11.—AMATEURS ONLY.

Twelve varieties, any kinds ..	£2 2 0	£1 1 0	£0 10 6

The Prizes in this Class are given by Messrs. Kinnmot & Kidd, of Canterbury, and will be paid in Rose Trees to be selected by the winners from Messrs. K. & K.'s Catalogue, and will be delivered package and carriage free.

Entries close Monday, June 28. Schedules of the

HON. SEC., 2, Palace Street, Canterbury.

DISS HORTICULTURAL SOCIETY'S SHOW, TUESDAY, July 13. Special Rose Prizes will be given. Rev. F. PAGE ROBERTS, Hon. Sec.

The Rectory, Scole.

SHROPSHIRE HORTICULTURAL SOCIETY'S ROSE SHOW.—In consequence of the lateness of the season the Society's ROSE SHOW, fixed for July 1 next, has been ADJOURNED to WEDNESDAY, JULY 28, being the first day of the Grand National Archery Meeting, which will be held in Shrewsbury this year.

The GREAT SUMMER SHOW will be held on AUGUST 18 and 19

Schedules may be had on application to the undersigned,

H. W. ADNITT } Hon. Secs.
W. W. NAUNTON, }

Shrewsbury, June 17, 1880.

THORNTON HEATH HORTICULTURAL SOCIETY.

The FOURTH EXHIBITION of FLOWERS, FRUIT and VEGETABLES, will be held on WEDNESDAY, August 18, in the grounds of K. T. Oelrichs, Esq., Elm House, Thornton Heath. Schedule of Prizes and all information may be obtained on application to Mr. L. HAKEMAN, Hon. Sec.

9, Cleveland Villas, Bensham Manor Road, Thornton Heath, Croydon.

Veitch's Autumn Giant Cauliflower.

FOR SALE, a large quantity of Veitch's AUTUMN GIANT CAULIFLOWER, BRUSSELS SPROUTS, SAVOYS and SCOTCH KALE. Apply,

JOSIAH H. BATH, 1 and 3, York Street, Borough Market London, S.E.

To the Trade.

ENGLISH SOWING RAPE SEED and WHITE MUSTARD.

H. AND F. SHARPE have fine clean samples of the above-named Seeds, which they can offer at very reasonable prices. Samples and prices on application.

Seed Growing Establishment, Wisbech.

Roses in Bloom.

PAUL AND SON, the "Old" Nurseries, Cheshunt, have their Roses now finely in bloom. One mile from the Cheshunt Station of the Great Eastern Railway, where are flys. The London Terminus is Liverpool Street.

SWEDE SEED, Champion Purple-top, 150 bushels. CAULIFLOWER PLANTS, Veitch's Autumn Giant, 4s. per 1000. BRUSSELS SPROUTS, 2s. 6d. per 1000 SAVOYS, 3s. per 1000.

WILLIAM COCKS, Monk's Hall Seed Farm, Gosberton, Spalding.

COLLECTION of ORCHIDS belonging to D. G. Straight, Esq., of Tulse Hill, who is relinquishing the culture of them, and which have taken Prizes at the Crystal Palace and Exhibited at the Horticultural Show, will be SOLD WITHOUT RESERVE at

Mr. J. C. STEVENS' ROOMS, 38, King Street, Covent Garden, W.C., EARLY NEXT MONTH.

CAULIFLOWER, &c., PLANTS, very cheap and good.

CAULIFLOWER, Walcheren and Early London, 6s. per 1000, 55s. per 10,000.

BROCCOLI, Early and Late White (for succession), 5s. per 1000, 45s. per 10,000; Purple Sprouting, 4s. per 1000, 35s. per 10,000.

BRUSSELS SPROUTS, Giant; SAVOY, Drumhead; CABBAGE, Thousand-head, Large York, Enfield, Nonpareil, and Robinson's Drumhead; KALE, Cottagers', &c., 3s. 6d. per 1000, 30s. per 10,000.

Well packed, package included.

Carriage paid, London or Reading, or 30 miles.

N.B. Lower quotation for larger quantities.

Apply, EDWARD LEIGH, Norcote Farm, near Guildford.

HELLEBORUS NIGER, the Christmas Rose. This beautiful white flower, coming to perfection at Christmas time, is already much too little grown, being hitherto too scarce and dear. Millions of its fine blossoms should be ready for the markets in mid-winter, where only hundreds are now to be found, and would always prove the most profitable thing it is possible to grow. It requires no heat nor care. We are prepared to supply for immediate orders any quantity of fine roots at one-sixth the usual prices, and we believe that investment in them will prove the finest speculation possible. For terms apply to

HOOPER AND CO., Covent Garden, London, W.C.

CAULIFLOWER AND CABBAGE PLANTS.

Our own selected stocks, in good strong plants. Veitch's Autumn Giant Cauliflower, per 1000, 7s. 6d.; Walcheren and Early London Cauliflower, per 1000, 6s.; Brussels Sprouts, per 1000, 5s.; Daniel's Defiance Cabbage, per 100, 1s., per 1000, 7s. 6d.; Enfield Market, Early Nonpareil, and other sorts, per 1000, 5s.; Champion Drumhead or Cattle Cabbage, extra fine stock, per 1000, 4s. 6d.

Free on Rail at prices quoted. Orders of 20s. and upwards carriage free.

DANIELS BROTHERS,

The Royal Norfolk Seed Establishment, Norwich.

SEEMANN & GOEPEL

Nurserymen, have to offer :—

LATANIA BORBONICA—Seedlings of June, 1879, in store pots, strong and healthy, 50*s.* per 1000.

ARALIA SIEBOLDII—This year's seedlings, 20*s* per 1000.

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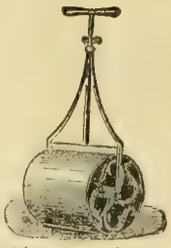

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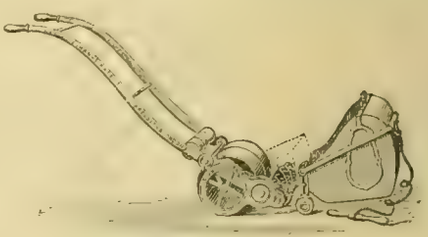

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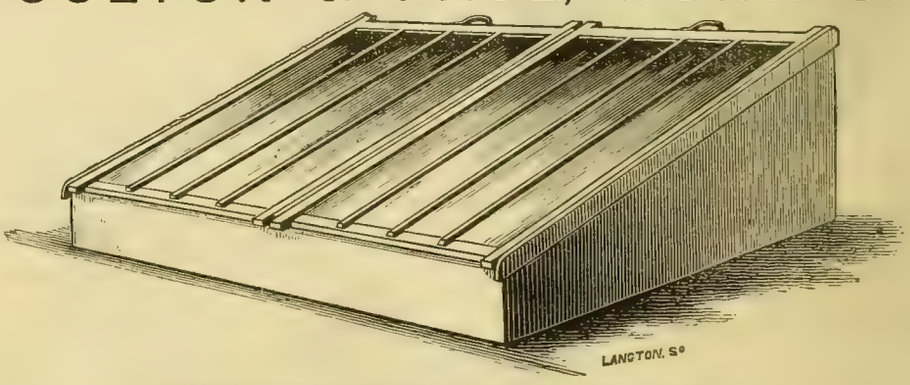

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From Mr. A. ANDERSON, *Gardener to* His Grace the Duke of Grafton, *Wakefield Lodge, March* 24, 1880.
"Sir,—I have had some very fine Primulas this winter from your seed. I enclose some blooms, which are nearly 3 inches across.

PRIMULA SINENSIS FIMBRIATA COCCINEA (New).. .. .. 5s., 3s. 6d., and	2	6
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UPPER HOLLOWAY, LONDON, N.

THE

Gardeners' Chronicle.

SATURDAY, JUNE 26, 1880.

COVENT GARDEN.

THERE is no place where a gardener or a farmer, or a person from the country, could while away an hour more pleasantly or perhaps more profitably than round about the square that forms the great Covent Garden Market "of a morning" as the cockney will have it. Every inch of space seems to be utilised by a variety of vehicles for holding goods, and so crowded and wedged together are they that despite Mr. Bright's now historical opinion as to the impracticability of driving four omnibuses abreast through Temple Bar, such a feat would not seem too great for these accomplished waggoners. The good humour and banter, too, and the ready chaff that prevail would offer a splendid field for the pen of a Dickens to utilise. It is really wonderful the vast amount of vegetables and fruits, and plants and flowers that are turned over in a comparatively small space, and although there is a Babel of voices there is apparently in the midst of it all a considerable degree of order. Living as I did in the Tavistock Hotel for a couple of weeks, during a business tour, I could not miss seeing and noting much that was new and interesting to me. Nothing in the whole market pleased me better than the decided improvement in the make-up of bouquets. Fashion is imperious, and it seems at present ruling in the right direction, as much of the plum-pudding formality is now ignored and in its place there is an easy graceful putting together of flowers of a variety of form which under the old system had to be left out. No doubt the beauty of many of them is due to a considerable sprinkling of Orchids, and in some of the windows these flowers not only abound, but some of the very best forms of species are there in spikes or racemes or panicles as the case may be—abundantly showing that these beautiful things, in their way, can be had by any city man, or any other man of course who does not keep glasshouses but who can pay for flowers.

A few strides further down, and we come upon Stevens' Rooms, now the most wonderful place possibly for Orchids changing hands in the world. Once upon a time "Stevens' Great Rooms" looked to many, when they peeped in, very little, but there was always a considerable business done in them. Since I knew them—and like every other place that prospers—they have become greater, and means have been taken, not a bit too soon, looking to the number of sales, to increase the temperature when needed by hot water-pipes. This, of course, ensures the safety of tender plants, and owners who mean to dispose of their collections in the winter season are likely to get better prices than if there were any risk as to suffering from cold.

A novice stepping in and seeing a motley assemblage of anything but captivating-looking plants, bringing from five shillings up to a hun-

dred guineas, would deem this a species of purchasing madness, but looking to general results it is not so. Horses and shorthorns and poultry have gone down in price in these dull times, but the best quality Orchids have gone up. This shows a healthy state, and is an encouragement to buyers, sellers, and the trade generally. It is one of the best evidences of the march of horticulture, and no one can say but that its tendencies are praiseworthy and that it is a pastime to the opulent of the most delectable kind. In all our horticultural establishments there is a great deal of labour in getting the Orchids into first-rate condition, and we can scarce help envying Mr. Stevens, for the quiet and efficient manner in which he gets through his part. Here is a lot of established Orchids, and consigned from the vans to "Charles" and his assistants for arrangement according to numbers. A few hours' work and they are all arranged for moving to the little table in front of the rostrum. Taking a bird's-eye view of them before they are deposited they do not look much, as sale arrangement and arrangement at home are two different things. A few gentlemen and gardeners busy themselves inspecting the lots individually, noting down what plants they want, and so on. The sale rooms, unlike many others, are seldom if ever crowded, but most of the people that frequent them are buyers. The work proceeds and is finished, and in a few hours the room is cleared ready for next day's work—no matter whether it has been £200 or £1000 worth that has been sold. Some proceed to pack their purchases with great care; others unceremoniously turn them out of pots, and into a valise or box, and go off with possibly £100 worth of goods, and in many cases without the slightest injury. This sort of thing was going on nearly every day during my stay in the metropolis, and it seems to be going on at a greater ratio every year. There appears no glutting of the market, as the love for Orchids among those who can buy them seems fully as great as the supply, however extraordinary it may and does appear to us all. *J. A.*

New Garden Plants.

Angræcum Christyanum, *n. sp.*

This is a highly curious Angræcum, it having a single caudicle. The general aspect is something like that of Angræcum arcuatum (Listrostachys arcuata). The dimensions of the stems and leaves are much alike. The rachis of the inflorescence and the flowers are smaller, the leaves ligulate, standing very close to one another, broader at the base than at the top, nearly 3 inches long by ¾ inch wide at the base, with a two-angled unequal apex. The peduncles are very numerous, standing singly, ½—¾ inch, very flexuose, three to four flowered. The flowers have pedicels articulate at the base, as in Angræcum articulatum, and are apparently yellow or greenish-white, with triangular acute sepals and petals, a very much developed three-lobed lip extended into a retrorse conical spur which has appended at a right angle another inflated fusiform spur, separated from the superior part by a constricted mouth, a kind of "Foramen Winslowii." There are a few very short velvet hairs. The species was kindly sent by Mr. Thomas Christy, F.L.S., Malvern House, Sydenham, S.E. Half was sent to Hamburgh, half to Dresden, now both are at hand. Mr. T. Christy, F.L.S., appears to be singularly fortunate with Angræcum. After having flowered, December 17, 1878, the curious A. lepidotum, he now sees at one time this fresh species, to which I have affixed his name, and the old Angræcum odoratissimum (Listrostachys odoratissima). *H. G. Rchb. f.*

Jamaica Cinchona.—We are happy to learn that the prices for Cinchona bark grown in Jamaica are most satisfactory and encouraging, the prices realised being in some cases nearly double that realised by the Indian bark. Ten thousand pounds weight of bark was obtained from 2490 trees, giving an average of a little over 4 lb. weight of dry bark per tree, or an average yield of 17*s.* per tree. The variety is C. succirubra.

GREENLANDS, HENLEY-ON-THAMES.

Henley-on-Thames, in Oxfordshire, is appropriately described by Mr. Charles Dickens, in his *Dictionary of the Thames*, as "the Mecca of the rowing-man and one of the most favourite places of pilgrimage for anglers; is a comfortable, prosperous-looking town set down in a pleasant valley, almost entirely surrounded by well-wooded heights, and is as good a place to stay at for the tourist who takes no interest either in oars or rods, punts or wager-boats, as can well be desired." Round about this pleasant Oxfordshire town there are several notable houses, such as Park Place, the residence of John Noble, Esq., on the summit of the hill on the Berkshire side; Stonor Park, Henley Park, Phyllis Court, Fawley Court, &c.; indeed the outskirts of the town are remarkable for the number of handsome houses, especially towards the Fair-mile, a very fine avenue of trees which leads from the north of the town. There is much to interest the visitor, and if the weather prove fine, a most delightful holiday can be spent by him.

Greenlands, the Buckinghamshire residence of the Right Hon. W. H. Smith, M.P., is in the parish of Hambleden, a little distance nearer Henley. Greenlands, though to all appearance a modern place, is of some ancient date. In the reign of Elizabeth and later it passed to a younger branch of the Doyley family, who resided here for many years. Lady Periam, wife of Sir Robert Doyley, died here on May 3, 1621. By her will it appears that the house was of great extent and richly furnished. John Doyley, eldest son and heir of Sir Cope Doyley, resided at Greenlands during the commencement of the Great Rebellion, and was firmly attached to the Royal cause; he had the misfortune to have his house converted into a garrison. In 1644 the house underwent a long siege at the hands of the Parliamentary forces under Lord Essex. He was succeeded by General Brown, who planted batteries on the opposite side of the river, which "made many shot and much battered" the house, and almost "beat it about the ears of the garrison." The garrison eventually surrendered to General Brown, but marched out with all the honours of war. Several cannon balls have been dug up about the grounds, but little else in the way of implements of war.

Another account states that Greenland House at the time of the Civil War was the residence of Sir J. Doyley, through whose attachment to the Royal cause it was converted into a garrison and sustained a siege of six months (A.D. 1644), when most of the building having been destroyed, the governor, Colonel Hawkins, capitulated on honourable terms. The house exhibits but few specimens of the former grandeur of the mansion. The fortifications, however, raised during the siege, are yet distinguishable. Between the house and the river skeletons have been found, also skulls, bones, and coins.

In 1852 or 1853 Greenlands was purchased by the late Edward Marjoribanks, Esq. It was then formed out of four estates. When he died it was left to Sir Dudley Coutts Marjoribanks, Bart., and disposed of by Sir Dudley to Mr. Smith in 1872. Mr. Smith has made valuable additions to, and greatly improved the property, which is situated partly in Buckinghamshire and partly in Oxfordshire. The Marjoribanks family also added to the estate, and enhanced its value by good management.

On the Buckinghamshire side is situated the residence, home farm, &c., and on the north are hills crowned with woods, consisting of Oak, Beech in large quantities to supply wood for chair-making, and Larch. In the springtime the wild Cherry, covered with its white blossoms, lights up the sombre hues of Beech and Oak ere the buds unfold their leaves, and with the pale shining green of the Larch impart to the woods a peculiarly pleasing expression. There are three main woods—The Pale Wood, the Great Wood, and the Ridge Wood; and on the north side they may be said to describe the bow of an arch from the higher to the lower point of the river, enclosing the main part of the estate within a natural cordon. Within and about these woods there are drives and views of no mean order, and from certain points of the heights the surrounding country is seen to the best advantage. Year after year sees some improvement worked out. From one wooded eminence a broad turfy ride leads down the side to Hambleden Church lying in the valley below, that is richly wooded and watered by the river. It is a picture of so much beauty that the eye turns from it reluctantly; it is full of that high, sweet influence felt, but incapable of description, like the fragrance breathed from an everlasting spring. Greenlands is situated about 2½ miles from Henley-on-Thames, along what is known as the Hatfield Road. It strikes the visitor as a little odd that the milestones on the road-sides give the distances to Hatfield in Herts, the main road to the historical place being in this direction. Almost as soon as the confines of the estate are reached the mansion is seen on the right of the roadway with the broad glassy sweep of the river stretching away in both directions; and on the left, in a conspicuous position, are the newly erected gardeners' cottage and kitchen garden. Both are in keeping with the place; the former is quite a striking and picturesque erection, making a charming object in the foreground of the landscape. On the right hand is the main entrance to Greenlands house and grounds, a broad sweeping carriage drive leading by umbrageous clumps and lines of shrubs and trees, evergreen subjects and fine specimen Conifers being largely prominent.

The new kitchen garden, made a few years ago, is close to and on the east side of the gardener's cottage. It is in the form of a square surrounded with walls, and is 1½ acre in extent. The walls are substantially built, are 12 feet in height, 13 inches thick, and with the coping at the top projecting some 6 inches. There are a centre and two side walks, the former 9 feet in width to admit of manure being carted in when requisite, with connecting walks at the east and west sides. On the east wall are Plums, showing a fair promise of fruit, the leading varieties being Washington, Jefferson, Victoria, Green Gage, &c.; on the north wall are Morello and Late Duke Cherries. The west wall has Apricots, chiefly Moor Park, planted against it. Against the south wall are Plums and Cherries, and two Peaches, but this fruit does not do well outside, the position being too cold and bleak. It is seven years since the trees were planted, and under Mr. Good's fostering care they have done well, and are now in good bearing condition.

At the back of the wall on the east side is a frame-ground, and against the wall is a border on which were standing groups of Rhododendron odoratum, Kalmia latifolia, Skimmia japonica, Azalea mollis in variety, Daphne Cneorum, American Azaleas, &c., that had come out of the forcing-house, and were now being carefully looked after. Great quantities of cut flowers are required for the London mansion when the family is in town, and constant attention is necessary to maintain a supply. Potatos, French Beans, &c., were coming on in cold pits. The former were represented by Veitch's improved Ashleaf, planted the first week in January in a bottom-heat formed of 3 to 4 feet of dung, and the latter by Osborn's Forcing, a variety of which Mr. Good speaks very highly. There were six lights of these, the Beans being sown at the end of March or early in April. Altogether there are eighteen lights to the line of frames, and when the Potatos and French Beans are over they are very useful for Melons.

There is a very useful south wall flanking the high road, and against this are planted Pears, such good sorts as Knight's Monarch, Beurré Diel, Brockworth Park, Ne plus Meuris, and other good sorts. One part of the wall had standard and half-standard trees planted out to give a supply after the Pears are over on the south wall in the garden. In front of this Pear wall is a 5-feet border which is found very useful for Strawberries. North-east of the kitchen garden are the home farm, with the necessary outbuildings, and the dairy, which is one of the most artistic buildings of the character we can remember. Close by are the labourers' cottages, and the construction of these, together with the nice pieces of garden allotted to each dwelling, show Mr. Smith's forethought for the comfort and convenience of those employed on the estate.

Passing from the kitchen garden, across the Hatfield Road, the visitor is conducted to a block of plant-houses, in which there is to be found much of an interesting character. In a spacious span-roofed house in two divisions—the house covering a plot of 117 feet by 30 feet, and running east to west—is a large, varied, and most useful collection of plants. The western division is a warm greenhouse for Palms, Crotons, Francisceas, Ixoras, the useful Tabernæmontana, and indeed a representative collection of stove plants. In the eastern division are numerous fine specimen

Azaleas, and what is known as old-fashioned greenhouse plants. Mr. Good, being an old pupil of the late Mrs. Lawrence, when at Ealing Park, has a great affection for these plants, and finds many of them very useful for cutting from. Among them are good half and three-quarter specimens of Boronia elatior, Tetratheca verticillata, with its numerous and pretty violet flowers; Adenandra speciosa, Correas, Hedaromas, Dracophyllum gracile, Pimeleas, Chorozemas, Rhododendron Princess Alice, &c.: all these are handsomely furnished plants, cultivated with great care and judgment. The centre stage is formed of concrete walls, enclosing a huge tank covered with slate, and strewn with powdered shells; round the sides of both divisions is a 3-feet stage, and the walks are broad, roomy, and paved with slate. A great quantity of rain-water can be stored in the tank, and there are dipping places for obtaining water at convenient spots. On the outer stage are small specimens of Phœnocoma prolifera Barnesii, Erica elegans, Dillwynia splendens, with its fine and striking orange and brown blossoms; large plants of Desfontainea speciosa with their bright looking yellow and red flowers; Azalea sinensis Fraseri, with very fine deep yellow blossoms, &c. In constructing this house provision was made for a supply of water in case of prolonged drought, so that should the tank become empty it can be filled from a resorvoir on the estate.

By the side of this house is a Peach and Nectarine house the length of the other, and this is planted with the latest varieties possible to procure. Of Peaches there are the Barrington, Late Admirable, Walburton Admirable, and of Nectarines Pine-apple, Rivers' Victoria, and Elruge. This house being only 8 feet in width, with a walk down the middle, is sufficiently heated by means of a flow and return 4-inch pipe; it is also very useful for supplying cut cut blooms of Roses early in the season, the plants being trained along in the span of the roof, and far enough away from the trees to do them injury. The leading Roses are Maréchal Niel, Gloire de Dijon, and Solfaterre, and they do well close to the glass, coming in before the pot Roses and those in the open air. Ventilation can be given on both sides, by means of sliding lights. This is a very useful house indeed, and the condition of the trees and the good crops of fruit they were carrying testified to the care bestowed on them by Mr. Good.

Next comes a range in three divisions, the western end being used as a Cucumber-house, and used also for Melons in pots. It is also turned to account for the culture of some useful stove plants, such as Stephanotis floribunda trained against the roof; Caladium, Clerodendron fallax, in fine colour; Scutellaria Mociniana, Aphelandras, &c. Against the wall just within the door was a plant of the pretty white Rivina tinctoria, a self-sown plant, that is in flower all the year round, and a most useful subject to cut from. In the other divisions are useful plants that come in handy for furnishing, &c., such as Gardenias in pots, Ixoras, Gloxinias, Marantas, Crotons, Eucharis, Phyllanthus Lindeni, &c.

Cucumbers are had nearly all the year round, the avourite varieties being Jones' Empress and Hedsor Winter Prolific, the latter an excellent Cucumber when it can be had true. Here, too, are Ixoras in pots, young Dracænas, &c.; indeed there is such a large need for plants of this character that they cannot be too numerously grown.

Next is another span-roofed house, also in three divisions, and, like the preceding one, narrow in dimensions but very useful for the purposes to which it is devoted. In two divisions are Orchids. The collection is at present small, but additions are gradually being made. Among those now or lately in bloom are a finely-coloured variety of Odontoglossum Roezlii, Cypripedium niveum, so useful to cut from; Dendrobium formosum, D. nobile, D. crystallinum, D. Bensoni, are fine varieties; Cypripediums in variety; small plants generally, but all in good condition. D. nobile is most useful for supplying cut flowers. Of cool Orchids, or at least those having cooler treatment than the preceding forms, are Oncidium macranthum, Odontoglossum pulchellum, Maxillaria Harrisoni, Ada aurantiaca, Trichopilia suavis, &c. In the remaining division were Pelargoniums in pots for cutting from, both show and fancy, and other useful subjects.

On the west side, running at a right angle with the plant-houses, but parallel with the potting-sheds, bothies, &c., and shut out from view by hedges, is a row of many lights heated with hot water, and found very useful indeed for Roses, Cyclamens, Double White and other Primulas, bedding stuff, &c.

Next comes the old kitchen-garden now mainly used as a fruit garden—Gooseberries, Currants, and Strawberries being the principal subjects. This garden is just under an acre in extent, with a range of vineries, &c., against the south wall. On the west wall are Apricots; on the north wall Plums; the east wall is to be replanted in the autumn. Commencing at the east end of the range, the first division is used for Ferns, and on the roof, but occupying only a portion of its former dimensions, is the fine example of Bougainvillea speciosa to which attention has already been called in these columns. The centre stage is filled with Ferns, that do well under the grateful shade of the Bougainvilleas; there is a wall at the back, with shelves against the wall, and these come in useful for French Beans, Strawberries, &c. Next comes a series of five vineries, one an early house, the other a late house, both with inside borders; the remaining three have outside borders. In the early vinery are Black Hamburgh and Buckland Sweetwater, planted alternately, and now in their seventh year, and doing well. Strawberries and French Beans are grown on the shelves here also. In the next division are older Vines, chiefly Muscat of Alexandria and Black Hamburgh. In the next house are Madresfield Court, Black Hamburgh, Muscat of Alexandria, and Golden Hamburgh. Mr. Good warmly praises the Madresfield Court, regarding it as a very fine Grape, and treated in the same way as the Black Hamburgh, it comes very fine. In the next house are Hamburghs, West's St. Peters, and Lady Downe's, and, in the latest vinery Alicante and Muscat. President Strawberry is largely grown by Mr. Good for pot-work, and is highly commended by him.

At the back of the vineries is a very useful house for retarding previous to flowering, as well as housing after blooming, plants that are sent to London for the decoration of the town house. Azaleas and such things find here for a time a congenial resting-place; Rhododendron Nuttalli has been very fine here, and some excellent Camellias in pots find a place.

The south side of the old kitchen garden affords space on the reverse of the wall for a narrow Peach-house, formed of glass placed against the wall after the Trentham plan. This is about 176 feet in length by 5 to 6 feet in width. The first division had early Peaches and Nectarines in a forward state, representing the best standard sorts; the trees in excellent condition. The second division is devoted to the culture of Figs, chiefly Brunswick and Brown Turkey. The third division had Peaches and Nectarines repeated.

From this point access is had to the pleasure grounds surrounding the house, and the spacious sloping lawn in front of it falling away to the river, which washes its verge for some distance. Of specimen trees there are a fine Catalpa which blooms freely, a Venetian Sumach, which is very fine in autumn; Taxodium sempervirens, &c., and one or two fine Cedars of Lebanon which form conspicuous features. On the lawn are fine beds of the best varieties of hardy Rhododendrons; and flower-beds are set down here and there.

Adjoining the mansion on the east side is a fine oblong conservatory with a broad ridge-and-furrow roof. Along the centre of the house are two large beds with fine specimen Palms, Tree Ferns, Camellias, &c., either planted out or growing in pots; Azaleas, Agaves, &c. On the back-wall are Camellias, and on the roof Tacsonia Van Volxemi and other creepers are trained. In the centre of the back wall is a fernery, arranged as an alcove with much skill and taste.

The grounds are by no means deficient in charming features—one in particular is afforded by some archways of Ivy. Behind them is a grove of fine young Elms and other trees, with a grand old Walnut tree forming the background. Further eastward is a raised border planted with many of Robert Fortune's Japanese plants, Retinosporas in variety forming a leading feature, and very charming they are when well furnished with foliage. Next comes the rockery, one view of which is seen in our illustration (fig. 142, p. 813). The ground level is sunk below the surrounding surface, and it is constructed of Derbyshire tufa. Ferns, Sedums, Saxifrages, Yuccas of dwarf growth, and many things of spring and summer flowering habit are found here in great variety and well intermixed. The rockwork was designed by Mr. Marnock and completed by Mr. Pullman, but improved in many of its features by Mr. Good.

Beyond this lies a further stretch of pleasure-ground, which having been taken in from fields has been nicely planted, and now lends additional charms to this riverside residence.

After having been in charge of Greenlands for some twenty years, Mr. Good is leaving the service of Mr. Smith. He will always be able to look back with pride on the many touches of added beauty he has so largely assisted to impart to the place. *R. D.*

PLANT GOSSIP.

Hybrid Yuccas.—M. Deleuil, of Marseilles, contributes to the *Revue Horticole* an account of the hybrid raised by him and sent out under the name of Yucca dracænoides ×. This originated between Y. aloifolia variegata as the seed parent and Y. pendula as the pollen parent. This cross produced 350 plants different from the parents, and very different one from another. One of the most distinct of these seedlings is the plant above cited, and of which a full description is given. The same experimenter fertilised Y. aloifolia variegata with the pollen of Y. albospica. The cross, named Y. lævigata ×, produced 300 plants intermediate in character between the parents, but all alike, with little or no variation between them. Details of numerous other crosses are given, showing that the Yuccas fruit readily at Marseilles, and promise an abundant variety for the gardener. The physiological differences between the species, as above indicated, are very noteworthy, but very difficult to be explained.

—— Lewisia rediviva.—We lately had the pleasure of witnessing a very fine display of this singular and truly beautiful plant in the nurseries of Messrs. James Backhouse & Son, York. The plants were growing in a 4-foot bed, in which a considerable quantity of peat earth had been thoroughly incorporated with the ordinary nursery soil. The plants were fully exposed to full sun-light, and they certainly were remarkably vigorous and fine, in fact the ground was literally covered by the large rosy-pink Cactus-like blossoms, which were nearly 3 inches across. Strange to say, the leaves of this quaint alpine plant, which resembled, a few days ago, a small tuft of Sea-pink, have now entirely disappeared, and will not make their reappearance until about next October. No doubt, owing to this singular habit which the plant possesses, it has not unfrequently been thrown away as dead by cultivators, who should have waited patiently for its reappearance. In its dormant state it is better to keep the plant rather dry.

—— Rhododendron "Salvini."—During the last few years many new varieties of hardy hybrid Rhododendrons have been sent out in all shades of colour, and as many of these (being the descendants of the same strain of parents) must necessarily bear a close resemblance to each other, it is only when a new variety possesses some exceptional merit that it calls for a special remark. Such a one is Rhododendron Salvini, sent out amongst others by Mr. Maurice Young, of Milford Nurseries, near Godalming, some three or four years ago; in colour it is of a rosy purplish-lake intensely spotted with chocolate all over the flowers; the foliage is smooth and ovate in shape, and the habit compact. Its chief characteristic is, however, the freedom with which it sets its blooms, nearly every shoot on two or three year old plants having a bud, and sometimes two and three in a cluster; and we saw even grafts of one year carrying single trusses, and this every year. That it is perfectly hardy both in wood and bud is established beyond doubt by the fact that it has passed perfectly unharmed through the past severe winter, which proved so fatal to the buds of many other varieties.

—— The Zenobias.—Amongst hardy shrubs now in flower in the Kew collection undoubtedly none are more beautiful than the Zenobias, with their lovely white, wax-like, bell-shaped blossoms. Any damp peat border where American plants, such as Vacciniums, Kalmias, Azaleas, &c., would grow, would also suit these well. The species are of fairly neat habit, and as they could be easily pinched in and kept to any size, few lovelier plants could be chosen for pot culture and the decoration of the cool conservatory. Z. speciosa has green leaves, paler beneath, and Z. speciosa var. pulverulenta has foliage lighter green above, the under-surface being covered with a thick glaucous bloom.

—— Sunflowers.—Helianthus annuus, the old-fashioned Sunflower one used to see so frequently in cottage gardens, is a plant that dates back to a very

remote period, it having been brought from Peru and first cultivated in England in 1596. There are several other kinds of quite recent introduction that are grown principally for the ornamental character of their blooms, most of which are of very large size, and in fine summers form most ornamental and conspicuous-looking objects planted in shrubbery borders backed by evergreens, a situation for which they are well adapted. Although the common annual variety will not bear comparison with such showy kinds as californicus, argyrophyllus, striatifolius, macrophyllus, giganteus, and a few others, in the display they make, it is much more valuable on account of the large quantity of seeds it yields, and the uses to which these and the plant may be put for agricultural and other purposes. The leaves are said to be an agreeable food for cattle, and those on the lower parts of the stems may be picked off without detriment. After affording a crop of fodder in this way, then comes the more plentiful one of seeds. The easiest method of gathering these is to cut off the peduncle or footstalk; and as the involucre is extremely thick it is necessary to hang or lay the heads in some airy place, to accelerate the drying, after which they may be stored anywhere for the use of poultry and pets like parrots and other hard-billed birds, which devour them with avidity. In the autumn, when harvest is over, and the fields are cleared of corn, pheasants wander far from their preserves in search of grain, and no better expedient could be adopted to keep them at home than to grow a quantity of Sunflowers near the margins of rides where there are bare open spots that could be turned to account and utilised for the purpose. All that is necessary is to break up the ground and dibble in the seeds a foot or so apart, and as the plants soon germinate, and are strong-growing, they are able to take care of themselves. Those enumerated above are best raised in heat in small pots, so as to get them early, when they may be hardened and planted out by the end of May or first week in June.

—— Tabernæmontana coronaria flore-pleno.—This plant is no doubt becoming much more largely grown than of late years. Whether for exhibition or decorative purposes it deserves to be in the front rank. The plant shown by Mr. W. Lee at the exhibition of the Reading Horticultural Society, on the 20th ult., was much admired by the gardeners present, and probably some came face to face for the first time with a subject of whose beauty and great usefulness they had but little previous knowledge. In one of the plant-houses at Gunnersbury Park Mr. Roberts has small bushy plants 18 inches or so in diameter, that are both well grown and flowered, and most useful subjects for cutting from. It is a plant that must be grown well and freely, if any one would succeed with it. In all probability some growers have been under the impression that to succeed with this plant it is necessary to starve it, and the notion may account for the sorry specimens met with occasionally. Mr. Lee had cultivated his plant liberally, and to all appearance had encouraged it to the very utmost. The plant bore this testimony to the zeal of the cultivator, and the latter was congratulated warmly on his marked success.

—— The Resurrection Plant.—It may interest readers in search of the curious to know that Messrs. Hooper & Co., of the Central Avenue, Covent Garden, have been fortunate enough to secure several hundred specimens (a rare occurrence) of the curious and interesting Selaginella lepidophylla, which, on account of its remarkable hygroscopic property, has been dubbed the Resurrection Plant, though it no more comes to life when immersed in water than tea leaves do when they unfold in the tea-pot.

—— Cupressus macrocarpa.—This fine Cypress flourishes near the sea, and nowhere have we seen it to greater advantage than at Eastbourne. It may not be able to bear the full blast of the south-west winds close to the sea like Tamarisk, but it does well in most of the gardens in the town. Many specimens have attained a considerable size, and assumed the habit of a Cedar—a characteristic of this species in an adult state. Talking of Tamarisk, we saw one ancient example against the gable of a house facing the sea, the trunk of which must be nearly, or quite, a foot in diameter, and the height nearly 30 feet. Tamarisk is, we may mention, very effectively employed in the same town on the steep slopes of the parade fronting the sea. It is cut down annually, and the young growth makes a fine bank of green in summer, extending from the pier to the Wish Tower. Here and there, at the back of the concrete seat, which extends from one end to the other of the parade, the Tamarisk has been left, and trained over, in order to provide a little shade.

ANTHURIUM SCHERZERIANUM.

The illustration (fig. 139) represents a curious sport of this gorgeous plant, and which may if developed become the parent of a race of Anthuriums which will assuredly attract attention. It has become now not uncommon to see two spathes surrounding the spadix, but in this case a large number of scarlet spoon-shaped bracts have been developed all up the spadix between the closely packed flowers. Botanically this

Fig. 139.—Anthurium scherzerianum, bracteate form.

is what might be expected, as flowers originate in the axils of bracts. Our specimen came from the nurseries of Mr. Pattenson, of Carlisle. Last season the plant showed the same peculiarity. It is possible that some seedlings of this plant would reproduce the same condition and in an improved form, and the promise is so good that we should recommend the trial to be made.

Native Californian Tobacco.—Prof. Rothrock is of opinion that the early natives of California smoked the leaves of Nicotiana Clevelandii, A. Gray—a species only quite recently described. It is a small plant with small flowers, and it was found by Prof. Rothrock only in association with the shell heaps which occur so abundantly on the coasts of Southern and Central California. He states that perhaps of all the remains of extinct races so richly furnished by that region, none were so common as the pipes, usually made of stone resembling serpentine. The Tobacco of N. Clevelandii Prof. Rothrock found by experience to be excessively strong.

CHIA.

"During the summer of 1875," writes Dr. Rothrock, "my attention was called, while in Southern California, to a mealy preparation in popular use. On inquiry I found it was called 'Chia.' Further examination proved that it was furnished by the seeds of Salvia columbariæ, Bentham. The seeds [nutlets] are collected, roasted, and ground, in the native way, between two stones. It is used as food by mixing it with water, and enough sugar to suit the taste. It soon developes into a copious mucilaginous mass, several times the original bulk. The taste is somewhat suggestive of linseed-meal. One soon acquires a fondness for it, and eats it rather in the way of a luxury than with any reference to the fact that it is exceedingly nutritious besides. It is in great demand among the knowing ones who have a desert to cross, or who expect to encounter a scarcity of water, and what there is of bad quality. By preparing it so thin that it can be used as a drink, it seems to assuage the thirst, to improve the taste of the water, and, in addition, to lessen the quantity of the water taken, which in hot countries is often so excessive as to produce serious illness. As a remedy it is invaluable, from its demulcent properties, in cases of gastro-intestinal disorders. It also holds a place among domestic remedies for the same purpose that Flaxseed occasionally does with us—*i.e.*, a grain of the seed is placed in the eye (where it gives no pain), to form a mucilage by means of which a foreign body may be removed from the organ. I have found it of great service as a poultice. As a matter of archæological interest, it may be noted that quantities of this seed were found buried in graves several hundred years old. This proves that the use of the seed reaches back into the remote past. Indeed, I find several allusions to it in Bancroft's great work on the *Native Races of the Pacific States*. 'Chianpinoli' appears to have been made by the so-called Aztec races from corn which was roasted and ground as the chia was. Chia was, among the Nahua races of ancient Mexico, as regularly cultivated as corn, and often used in connection with it. Indeed, it was one of the many kinds of meal in constant use, and which appears to have gone then, as now, under the generic name of 'pinòli.'"

CHIVES.

In *Soyer's Cookery* a great many of the recipes begin with Onions fried, as if that were the root of the matter. We read of the whole Jewish nation almost rising in rebellion on account of the Garlic, which, though small, is still an Onion, and we are all familiar with the mild Portugal Onions of commerce; but there are hundreds of town-bred people who have never seen Chives, for they do not appear in market, and as Onions they are at the very lowest round of the ladder of kitchen herbs. Chives are perennial, and die down every year on the approach of hot weather, and appear again in the following spring, and, like all the other Onion species are fond of muck and moisture. Strange to say, good usage does not alter their character very much, neither does any reasonable amount of ill-usage hinder them from flowering and perfecting seed; for, like the Camomile in the old adage, the more they are trampled on the better they grow.

These pot herbs vary much with the culture they get. The common Leek is sometimes grown to look like a nice white Turnip, not being allowed to run to seed, and grown for two summers, so that once, when a dish of Leeks was put upon the exhibition-table in Edinburgh, well-informed people asked "what they were," and "who had brought them hither." Many persons grow Leeks, and blanch their thick stems, and think that this is all they are capable of doing; but Leeks and Onions have odd ways of their own, and if they are not allowed to seed, very large Onions may be raised from any of the species usually grown.

Chives are, however, the smallest of the tribe, and it is to them that I would now call attention. There are two sorts usually grown in the cottage gardens of Scotland, one with straight and slender foliage, and another with awl-shaped leaves, but the first is the sort mostly preferred. By a piece of the greatest perverseness the tops only are used, and the small bulbs are left unmolested. On this side Gretna the

English artisan longs for and eats Spring Onions, to give flavour to his flour-bread and butter, or to his fat bacon, and it is quite edifying to see with what a masterly air he handles this honest salad of Onions and salt. The Scottish housewife is born to other circumstances, and, like the French across the strait, has to keep the pot on the fire; and it is an excellent excuse for inferior cookery that the Scottish cookery is the most economical, and gourmands are held in abhorrence. The motto deeply cut in stone in a Scottish meal market was to the effect of "Eat that you may live, but do not live to eat:"

"Ede ut vivas, attamen non vive ut edas."

The pot is early on the fire for the breakfast porridge, and again for dinner, and lastly for supper; and this is the time that crowns the work, for the standing dish in many farmhouses is still the "Kale brose of auld Scotland." It is to the everlasting honour of the poor Scottish mother that she not only feeds her family with plenty of wholesome food, but contrives to educate them at the same time; but to return to the spring Onions. The English market gardener sows in autumn a lot of Onions very thickly, so that being short of food they may be starved into small Onions—not young ones, and these are dug up in spring and trimmed for market to look like fresh "Ciboules."

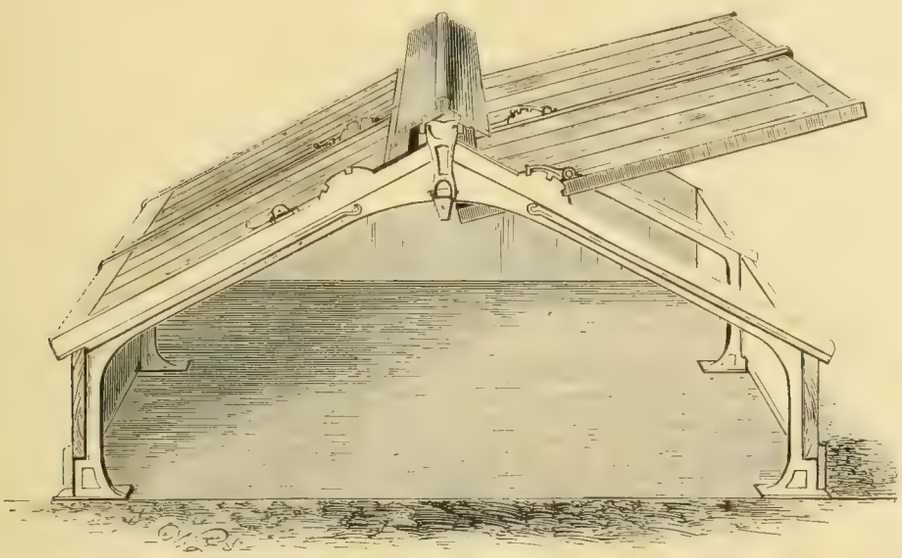


FIG. 140.—MESSRS. FOSTER AND PEARSON'S FRAME.

Beyond being tall and rather tough, they answer the purpose already named of salad for the artisan. The cooking of the Kale in Scotland differs from that usual in England; for in England it is simply put into boiling water and boiled till tender, but in Scotland it is boiled much longer, and when the liquor has been strained off either cream or butter is added and the brose made. In springtime Chives are added to the curled Kale, no doubt for the same reason that Soyer fried his Onions before he set about his "made dishes."

Now when I had charge of other people's property I found that there were many little things that of themselves were not much, but in the aggregate they told either for or against me; and although some things would fail, if there were any others that succeeded it helped to put the balance on the right side. With the aid of friends and neighbours I got a stock of Chives, and had every bulb separated so that I could transplant them into rows and keep them well watered. They grew freely, but instead of cutting off their tops, as was done everywhere, I dug them up root and all, and when they were ready for the salad-bowl they were unlike any other of the Onion tribe. They do best only 1 inch from the surface, and do not need blanching like Leeks, but as spring Onions. I may go a long way before I see their like again.

The late Mr. Barnes, of Bicton, excelled in small things; his salad herbs in winter were well maintained, and he grew Lancashire prize Gooseberries in summer to get them few in number and fine. *Alex. Forsyth, Salford.*

SOILS SUITABLE FOR CINCHONA.

MR. HUGHES, in his interesting communication published in your issue of the 19th inst., draws particular attention to the character and influence of soils upon Cinchona culture as exemplified in Ceylon. The subject is one with which I have had considerable experience, I therefore venture to submit a few observations thereon.

The most important point in connection with the selection of sites for Cinchona culture on tropical mountains is that of securing a suitable soil—viz., a rich, friable, or gravelly soil. This fact is well known, as stated by Mr. Hughes. In a former letter of mine, published in the *Gardeners' Chronicle*, dated December 6, 1879, I referred to the complete failure which attended the first attempt (1862) to establish a Cinchona plantation in the island of Jamaica, chiefly in consequence of the stiff, impervious nature of the soil in which the plants were set. Bearing that experiment in mind, as well as the nature of the soil, which is considered an indispensable factor in Cinchona growing, the following account of this tree, thriving under anomalous conditions, may be interesting.

In 1868, when the first successful Jamaica Cinchona plantations were started, some hundreds of plants of C. succirubra were sent to a distant part of the island, and planted at a height of only 2000 feet above the sea. A few years thereafter Sir J. P. Grant, the governor, with an enlightened desire for the amelioration of the colony, and to whose administration Jamaica is indebted for Cinchona plantations, requested me to make an official tour of the district in question, a large extent of which belonged to the Government, in order to report on its eligibility for Cinchona cultivation. My report was unfavourable, in consequence of the stiff, clayey soil which abounded. Nevertheless, to my surprise, the Cinchonas I had sent a few years previously had attained large dimensions, having grown at the rate of 5 feet a year. Practical experience pointed to totally different conditions of soil and altitude.

Later on other batches of Cinchonas were distributed and scattered many miles apart in that district. I again inspected these trees in 1878. Trees eight years old measured from 30 feet to 35 feet, with trunks near the ground 2 feet in circumference. The first shipment of bark was made when the trees were seven years old, and this bark fetched in London 2*s.* 1*d.* per pound—a highly satisfactory result, considering the age of the tree and its rapidity of growth. But the result is especially remarkable on account of the nature of the soil and low elevation.

Throughout the domain of tropical agriculture the objects of cultivation, with rare exceptions, are amenable to successful production in every variety of soil. Cinchona presents one of those exceptions in a marked degree. Hence the successful issue of the experiment in tenacious clay, as indicated, is quite anomalous. The soil in this district, therefore, is precisely what should be avoided for Cinchona; indeed, in this soil, under ordinary circumstances, Cinchona would inevitably perish within a few months after being planted; but here the injurious character of the soil is counterbalanced by the peculiar geological formation. The whole district is composed of white limestone, on which rests a great deposit of stiff clay. Owing to the remarkably porous structure of the limestone there are no surface rivers or streams whatever; the surface drainage is conveyed by means of sink-holes to subterranean rivers. The superabundant moisture-retaining properties of the clay soil, so prejudicial to Cinchona, is thus by natural means counteracted—*i.e.*, the subterranean drainage exerts a powerful influence upon the soil. *Robert Thomson, Purple Grove Cottage, Helensburgh, N.B.*

A NEW GARDEN FRAME.

THE accompanying illustration (fig. 140) gives an excellent idea of a frame of a new pattern, designed by Messrs. Foster & Pearson, horticultural builders, Beeston, near Nottingham, and exhibited by them at the late summer show of the Royal Horticultural Society, where it met with great approval, and was awarded a Silver Medal. The frame is constructed of wood and iron, well designed, and substantially put together; and it is especially commendable for the novel, simple, and perfect mechanism by which ventilation is secured at the top, and the lights tilted to any desired height. The whole of the lights swing independently of each other on pivots, and are held open when desired either for giving air or attending to the contents, by the simple ratchet-like arrangement shown in the illustration.

Florists' Flowers.

SEASONABLE NOTES.—AURICULAS.—Florists are much exercised as to the right time of the year for repotting Auriculas. One says May is the best month, another June, and even July. Many of the principal growers pot in May, and the plants potted at that time are now well established. Water them carefully, keep the leaves clear of greenfly, and remove the lights altogether unless it rains. Where the plants have not yet been potted, offsets are forming very freely; these must be removed as soon as they are ready, treating them as already recommended. Continue to prick out and to pot off seedlings and offsets as they require it. Collect the seed-pods as fast as they ripen, lay them out on clean paper with the labels attached. When the seeds drop out or can be readily separated from the husks, they should be at once sown. Alpines need not have any glass protection at this season; place the pots in a partially shaded place on a cool moist bottom. The potting and after-culture of these is the same as in the show section. The only difference is that the alpines are hardier, and do not mind exposure to the weather during the summer months.

CARNATIONS AND PICOTEES.

Look over the plants at least once a day with the water-pot; any check to their growth now would be very detrimental to the bloom. The flower-buds are now sufficiently advanced to require looking over, and those that have a tendency to burst should be tied round with matting, or, what is preferred by some, waxed linen thread. Tie moderately tight, and in some cases it may be necessary to slit down the pods a little on the side opposite to that likely to split. It is also necessary to place cards on some of the flowers if it is intended to exhibit them; if this is not done the guard petals reflex and become twisted or curled in some cases. It is now a good time to put in pipings or cuttings: the smaller growths are best for this, and there are sometimes growths too far up the stem to be layered, all these must be taken off and put in pots, using fine soil; the labels must be marked, and a corresponding mark must also be put on the label of the plant from which the pipings were taken in case the flowers should be run.

year.

1 foot apart in deep, rich soil; they will be in full

from; this will be obtained in July or August, and may be sown as soon as it is saved.

delay occurs after July comes in. It is difficult to obtain good pipings from some varieties. Strong side growths are produced, without any of the small grass-

these strong shoots are pinched out, side growths will then be formed which strike readily. I find that Pink pipings strike best when they are taken off in dull rainy weather. Pay attention to the seedling bed, and select those that have smooth edges to the petals, and such as have the lacing bright in colour,

forming good crowns. Keep the bed free from weeds; and if the leaves, as is not unlikely, have been attacked by red-spider, the pest must be

know what is the matter. If the plants look sickly and the leaves pale yellowish-green, examine them, and the spider will be found on the under-sides of the leaves. Make preparations to pot the plants about the end of July. A good rich rather clayey loam suits them best. The rotten turfy part should be used only. Mix about a fourth part of rotten manure with

Part the plants out into single crowns, and pot each

still demand attention; they are very liable to be

much would be injurious, although too little would be worse.

Forestry.

crops, and if this be in accordance with decorum and

bear upon the subject we can easily comprehend it. Trees, in the first place, are of comparatively slow

with their tardy growth. Man also likes excitement.

lacking in surprise power, by any means, for it is the testimony of all who have ever had a splendid forest subject of any kind spread out before them, that the thrill of pleasure and delight thereby afforded is not sur-

may be admitted, however, it nevertheless remains true that, to the greater number at least, the seeds sown to-day and germinated to-morrow, or at least

than are derived from the woodland, however grand

the elements that are calculated to please be present, but the powers and faculties of appreciation must

next to all, can understand and appreciate a bed of Tulips or Pansies, or a border of Roses, but it is not so with the Pinetum, the shaw or copse, the group, the mass, the plantation, the wood or forest. The

because they see and appreciate certain real or sup-

fine plantation or splendid forest; they, too, are seen, it is true, but only by the outer eye, for their true merits and exquisite qualities have not been tasted. The woodland has, however, most truly enrapturing and delighting elements in it, but some of them, the least substantial or enduring, are those most generally appreciated and admired. The leaves or foliage of a tree or landscape only bear a similar relationship to the tree itself as the harness does to the horse or the drapery to the human form. It is sad to reflect that

often more thought of than that of summer, albeit the eye has scarcely rested upon it, or the mind received an impression, before it is dashed to pieces,

The beauties of autumn are neither to be despised nor lightly esteemed, neither are we to conclude that one season of the year is better than another. With the one complete and perfect whole, whether in the animate or inanimate creature, we are not at liberty

depreciate the foot, nor the eye the ear. This we have on Heaven's warrantry, and from this no straining

woods are usually rich with the perfume of the moun-

of. With the fruit crop, however—the natural product of the flower—the loss is more than mere want of

Garden Operations.

FLOWER GARDEN, ETC.

should be afforded, such as picking off dead flowers to prevent seeding, pinching out the points of the

weeds, and rendering the necessity to water less frequent. Sedums, Saxifrages, Cerastiums, and all

have had to be used so sparingly that it is doubtful whether they will fill up their allotted space, the

to plant the arrangements made for Tricolor Pelargo-

carpet-beds, the object being simply to cover the

growth. The edgings and outer lines of plants in the

stand why so many adopt the practice of leaving

that ever afterwards they will take care to fill up the

plants in patches near the edgings, and beneath tall growers, by way of furnishing the ground, which must otherwise be bare because of the impracticability of planting large growing plants closer together, or too near the edges, because of the ragged appearance they present when they exceed their boundary. Many plants in such mixed borders now require supports, notably so Pyrethrums, Potentillas, Carnations, Dahlias, and Hollyhocks. Thin out annuals that have been sown in the borders; and as it is now getting late for planting out any other annuals, fill up any vacant spots there may still be with spare bedding plants, such as Pelargoniums, Petunias, or Calceolarias, as also with seedling Wallflowers, Snapdragons, Sweet Williams, and Canterbury Bells. The earlier-flowering Roses, particularly climbers on south walls, should now have all their old flower-stems cut away, and the longer shoots shortened back, and then be given a thorough watering with strong liquid manure to assist in the production of a good second edition of bloom. Cut off dead and decaying flowers from all other Roses, for by thus being relieved they will the quicker form buds. As soon as they are fit, the budding of Brier stocks should be commenced. Now that planting out is entirely off hand more time may be devoted to the maintenance of neatness by keeping lawns closely cut, edgings of walks and borders trimmed, and the walks weeded and well consolidated by rolling after heavy rain. Complete the clipping of Box edgings and evergreen hedges, also the pruning of shrubs, and the removal of seed-vessels from Rhododendrons that have done flowering, together with any straggling growths necessary to keep the plants in bounds and of good form. *W. Wildsmith, Heckfield.*

HARDY FRUIT GARDEN.

The refreshing showers of the past week have done much towards giving a healthy tone to vegetation generally, and bush fruit trees have been relieved of many insect pests and their larvæ by the force of the rain; and now that we have gained a little ground over these troublesome pests advantage should be taken of the occasion, by way of keeping them under for the remainder of the season. The soft points of the shoots, both of bush and wall fruit trees, are generally the parts most affected, and by removing them promptly a saving of further labour is effected, as well as preserving the health of the trees. Where canker is prevalent in wall trees or espaliers, limbs or branches that there is any suspicion about being diseased may be left for the present season, but a young shoot should be taken away from the base of its nearest and healthiest neighbour, to take its place next year. Wall trees, as a rule, are not cared for as much as cultivators would like in summer, owing to pressure of other work; the breastwood is too often pruned away in a reckless rough-and-ready fashion, but if there were better opportunities of attending to wall trees properly in summer, a good deal could be done towards their regeneration by encouraging healthy young shoots from the base of different parts of a tree occasionally, and removing some of the old limbs which have grown stunted and decrepid at the winter pruning. The laying-in of breastwood in the case of Peaches and Nectarines is an operation of the first importance at this season. The necessity of having the work performed by skilled hands has become more important of late years owing to lack of sunshine and excessive wet. It cannot be too often repeated, that, in the case of stone fruits, there need be no fear of gumming or any other injury being sustained from the effects of summer thinning; therefore, at the cost of making an effort, the pinching, thinning, and removing of all superfluous growths should be seen to in due season, in order to secure an equality of vigour in all parts of the tree, and to retain only such shoots as promise to be fertile next season. For example, if a shoot had been left when the tree was disbudded, because it was bearing a single fruit at or near its extremity, and the fruit through some cause or other turned out an abortion, this shoot might be removed down to its base, and a single one taken away where there were three or more weakly ones before. Again, if there be symptoms of extreme vigour in another part of the tree such shoots should either be removed at an early stage of growth or pinched at the fourth or fifth eye in order to divert or spread the flow of sap into as many growths as will have the effect of correcting the redundancy of sap by extending the surface which it goes to supply. I must, however, point out that stopping upon open walls must be done very early in the season, or the shoots that are produced by it will not have time to ripen, and will probably perish the following winter if the weather be severe. The protection of Cherries and Strawberries from birds is now demanding the utmost vigilance: their attacks are of so determined a character here that we find the only safe plan is to contest the position openly with our enemies and to give them a warm reception at daybreak. Those who tied up their Strawberries as indicated in my last Calendar are now reaping the benefit of the little extra labour in having clean handsome fruit for dessert, as well as saving a quantity that would become a prey to slugs or rot, if left lying flat upon the ground. If through circumstances of any kind the supply of Strawberries has got into an unsatisfactory state, now is the best time of the whole year to make a fresh plantation from young plants. If a suitable quantity are layered in large 60-sized pots and were supplied with water until they have formed plump crowns and then planted out in a rich open quarter they will make strong plants by the end of the year and bear a handsome crop of fruit next season. *W. Hinds, Canford.*

FRUIT HOUSES.

Melons.—As with every other branch of industry so with horticulture, details must be carried out in accordance with the special circumstances surrounding each individual case; and for this reason repetition in Calendar writing is necessarily unavoidable and dry, and must, under the force of circumstances, continue to be so, more especially where there is no variety of subjects to write about. Therefore, under these circumstances, we shall have to reiterate former remarks in the present Calendar. The weather we have been having during the last fortnight cannot be considered as having been favourable to Melon culture in general, inasmuch as it has been dull, wet, and cold for the time of year, necessitating the fires being stirred up and the linings of dung frames being renewed, with a partial cessation of the syringe being applied to plants growing in the latter structures. However it sometimes happens that during such unsettled weather irreparable mischief is caused through the sun "popping out" suddenly with all the force of a clear summer's day when there is comparatively little air on in the various structures, and which, if not immediately and adequately increased, results in the plants and fruits being scorched. Hence the necessity of being always on the alert during such fickle weather in putting on and taking off air—even though it should be a continual repetition of one and the other. The necessary thinning, tying, stopping, and arranging of shoots should be regularly attended to, and with these details no pressure of work, which is felt more or less in the generality of places just now, should be allowed to interfere, for in no other department in the garden do detrimental results so speedily follow in consequence thereof; therefore let all cultural details be regularly attended to. See that successional plantings are landed up as soon as the roots begin to push through the sides of the hillocks, and that the supports are put to the fruits (as recommended in a former Calendar) as soon as they require them. Examine the plants occasionally at the roots, and see that they have plenty of water when requisite, but in no case let there be a surface-watering, but a thorough soaking when they require it. *H. W. Ward, Longford Castle, Salisbury.*

Cucumbers.

Plants in full bearing and almost in every stage of growth will now require copious supplies of water to the roots, also plenty of atmospheric moisture in the houses, and the plants should be syringed thoroughly twice a day, and plenty of water thrown over the floors two or three times a day during bright and sunshiny weather between the syringings. All fruits should be cut as soon as they have attained the proper size, and placed on their ends in saucers in a cool fruit-room in a half inch of water. This will not only relieve the plants of their weight, but materially assist in the swelling off of the smaller fruit. As a matter of course, the general routine of work will be proceeded with in the usual way. *H. W. Ward, Longford Castle, Salisbury.*

PLANT HOUSES.

Stoves.—Now that we are getting our full amount of light, and clear sunny days, the most important matter connected with stoves is to see that the atmosphere is kept in a continuously moist condition, as nothing is so depressing to plants as to stand in houses where rapid currents of dry, heated air are passing through; but if the air in its course can take up and become charged with aqueous matter drawn from the cool surfaces it passes over, the foliage feels it at once, and instead of flagging through excessive loss of sap by evaporation, stands out bold and erect in the manner it should. This being so, the floors and other available plants under the stages should be damped down frequently, and in the afternoon when the lights are closed a heavy syringing given, in doing which it is always desirable to drive the water well into the points of the shoots and under the leaves of any climbers at all liable to insects, as by this means they may be dislodged, and the plants kept clean without much expenditure of time or labour. In cases where the foliage is at all soft and tender, care will of course be required in directing the stream, but with such things as the Stephanotis the garden-engine may be brought into play without doing the least harm, as the tissues are hard and will bear it. The water, however, that is used for the purpose should always be soft and perfectly clear, otherwise a deposit is left, which not only causes a disfigurement, but stops the pores and thus affects the health of the plants. The flowering capabilities of most of these may be greatly augmented by frequent applications of liquid manure, which is essential for all roof climbers having their roots restricted, as just at this season the demand that is made on the feeders is something enormous. Although this is so, it is a mistake to give strong doses, especially if the stimulant happens to be derived from guano or any of the artificial compounds, which are of a hot nature and dangerous, but where sheep droppings can be obtained wherewith to make what is needed, or drainings from the cowyard can be got, nothing answers better, especially if a little soot be added to the liquid and so managed as to be in a perfectly clarified state before using. Where this kind of manure-water does harm is when it is turbid, in which state a sediment is left on the surface of the soil, where it becomes encrusted and prevents the air from entering, and as this is the great sweetener and purifier of the earth and almost as necessary for the roots of the plants as for the tops, it will be seen that they cannot remain long confined in that way without suffering an injury. Not only is it requisite that the surface of the soil should be free and open, but it is quite as much so that the pots be kept clean on the outside, where, from being continuously wet, a slimy growth forms, which soon acts in such a way as to seal up the pores of the vessel.

Greenhouses.—In cases where the roofs of these structures are ornamented with climbers, it will be necessary to keep them well thinned out, that the occupants beneath may have plenty of light, without which none of the soft-wooded plants, so much in use at this time of year for affording a display, will flower in the free manner they otherwise would. Pelargoniums for autumn blooming will do best after this plunged outdoors in some situation were they can have shelter and full sun, under which conditions the growth they make will be short-jointed and firm, and the same with double Petunias and the numerous annuals that are being got up for pot-work. Camellias that made their young wood early ought now to be showing their blossom-buds—a time when many cultivators consider the most seasonable for potting; and where this operation is intended to be carried out there should be no delay, as when they get in a more forward state there is a great risk of the buds dropping through the root disturbance the plants undergo, for however carefully they may be handled a check cannot be avoided, even though the old balls may not be reduced. In shifting Camellias there is no soil answers better for them to grow in than good tough fibry loam, which, with just a slight sprinkling of soot and a little thoroughly decomposed cow manure, imparts a fine healthy green to the foliage. As the plants require much water, it is essential to success in their cultivation that the drainage be free, to secure which an inch or so of fine broken crocks should be used, with some of the rougher portions of the soil placed so as to prevent the interstices being choked. The majority of greenhouses being too dry and hot for Camellias to stand in after this, it will be advisable to get them out at once, and the best site for them is on the north side of any tall trees or shrubs. This with the refreshing dews they get when so circumstanced, is just the thing that will enable them to recoup and add greatly to their health and vigour. Azaleas, too, are much benefited by being stood out for a time, but these will bear more sun and do best if they can get the solar rays from four to six hours each day, which, without distressing the plants, help materially in ripening the young shoots and hardening the leaves for the winter. It should be borne in mind that the watering to which plants are subjected is a great attraction to worms, to stop the ingress of which the pots should be stood on slates or tiles, the latter, if flat, being the most preferable, as from their porous nature they allow the drainage to go on without interruption. *J. Sheppard, Woolverston Park.*

Vitality of Eucalyptus Seeds.—Baron von Mueller writes: "It may interest your readers that Eucalyptus seeds show an unexpected tenacity of life. I took from my dried plants of Eucalyptus miniata seeds, which were for experiment gathered in 1867. They were committed to the care of Mr. Will. Elliott, one of our best horticulturists, and he had the satisfaction to see nearly every grain germinate. It is possible that the seeds of E. miniata may retain their vitality longer than those of the species with smaller seed grain; still, this unexpected fact is interesting. My former experience led me to think that Eucalyptus seeds germinate better when stored for a short time than when quite fresh, the embryo undergoing probably at last still some final maturation. E. miniata is as gorgeous a species as E. phœnicia, both having the fiery blossoms of a Callistemon, and produce for a much longer succession of weeks their flowers than the splended E. ficifolia."

APPOINTMENTS FOR THE ENSUING WEEK.

Tuesday,	June 29	Royal Horticultural Society's Rose Show, and Pelargonium Society's Exhibition Sale of The Wakes, Selborne, at the Mart, by Messrs. Brown, Roberts & Co.
Wednesday,	June 30	Royal Botanic Society's Evening Fête Croydon Horticultural Society's Show. Farningham Rose Show.
Thursday,	July 1	Canterbury and East Kent Rose Society's Show Teddington Horticultural Society's Show. Tiverton Horticultural Society's Show.
Saturday,	July 3	National Rose Society's Show, at the Crystal Palace. Southgate Horticultural Society's Show.

It is no doubt news to a large body of Potato growers to learn that there is now sitting in the House of Commons a committee, with Major Nolan, M.P., for its chairman, which is engaged in the labour of endeavouring to master all the intricacies and incidents relating to the Potato Disease. Although termed the Irish Potato Diseases Committee, yet it is obvious that the same interest must attach to its labours and inquiries as would be the case were its denomination of a more cosmopolitan order, inasmuch as the disease is the same everywhere, has the same manifestations and effects, and if grappled with in one place could equally be dealt with in other localities. Sitting only on Tuesdays and Fridays, the committee has so far chiefly confined its inquiries into the scientific aspects of the subject, and that these, so far as our present knowledge extends, will be exhausted there can be no doubt. Unfortunately the scientists have little if anything fresh to tell us, or new suggestions to offer. They have shown the nature of the disease, what it is, and how it works; and they have also exploded those semi-superstitious ideas which have prevailed respecting its origin. No sane person now attributes it to judgments for national sins, or to the action of electricity, and only blockheads who will not read and learn persist in asserting that the disease is entirely the result of bad cultivation. It is lamentable, however, to see that cultivators, as a rule, take no steps whatever to turn to account the lessons which have been laid before them by the laborious and unthankful researches of the scientist. They take no precaution to destroy the diseased haulm directly it shows itself—they give diseased tubers to the pigs and fowls, and propagate the disease wholesale by means of the manure heap. They are not by any means careful enough to pick out and destroy diseased tubers from among those retained for seed. In fact, as a rule, they do what they ought not to do, and they leave undone what they ought to do. Were such practices confined to ignorant labourers we could not be surprised; but when men with intelligence enough to be examined before a House of Commons committee say—if correctly reported, which we doubt—"that diseased Potatos are, if anything, preferable for feeding cattle" to sound ones, we confess to a feeling that such men are rightly served when they lose their crops. Unfortunately they destroy those of their neighbours also.

It is obvious that any inquiry the committee may further make will be incomplete, unless it takes the evidence of several of our leading and most observant growers, because, as science would appear to have accomplished all that it is in her power to do in the matter for the present, any ultimate practical dealing with the disease must be looked for at the hands of growers and raisers themselves. Whatever they may accomplish, however, there will still remain the fact that our Potato crops must ever be at the mercy of the elements. If we could ensure seasons without rainfall from the middle of June to the end of August, there would be little cause for fear, as within that interval the great bulk of the Potato crop would have matured; but with even very occasional falls of moisture and even heavy dews, supposing the atmosphere to be laden with the fungoid spores, there would be enough of the required element to set these living germs agog and spread the disease throughout the land. Because of this very characteristic, the natural humidity of her climate, Ireland presents one of the worst possible countries in the world for the cultivation of the Potato. All experience goes for nought, if it is determined still to continue to grow Potatos year after year in a climate where, in all ordinary seasons, the disease is an inevitable visitant, and no doubt the wisest

Fig. 141.—Greenlands, Henley, the seat of the Rt. Hon. W. H. Smith, M.P. (see p. 806.)

advisers of Ireland's sons will be those who invite them to discard the cultivation of the Potato, and to grow some other other produce not amenable to such dire visitations.

It is hoped that the kindly efforts made to distribute many thousands of tons of Champion Potatos for seed in Ireland may do something to mitigate the evil, though we must own that we are sceptical on that point. It will be a very severe test of the power of that Potato to withstand the disease—a test under which, it will be remembered, that Flourball, sent from this country with such a good reputation, broke down. Champion, moreover, is such a late ripening kind that its wide cultivation will but largely intensify the evil of distress now existing, as it is hardly probable that any produce will be ready for eating until October, and the moist nature of the atmosphere may keep it growing and fearfully exhausting the soil, should the foliage escape the disease, even till cut down by frost. It would indeed be a grave misfortune were this to result, and it will be a blessing if all that is hoped for should follow ; but it is well to point to the danger that may come, and with respect to which some of our own growers, who understand the character of the Champion, have not been entirely silent.

Ireland is so emphatically a Potato-growing country, and its agricultural inhabitants so largely Potato eaters, that any attempt to break off the connection will no doubt provoke much unreasoning clamour and resistance. But we say emphatically, whether regarded as a national diet, or as an agricultural crop, the Potato is not Ireland's friend ; and until the time comes—a time in spite of scientists, committees of inquiry, Potato shows, &c., alas ! too remote—when the disease shall curse the Potato crops no more, it will be well to induce and encourage the myriads of cottier farmers to trust for a livelihood to some more reliable and healthy crop. If the Irish would partake more of cereals or pulse, and less of Potatos, in a few years a mental and moral revolution would be worked in the population. In the meantime a vast amount of good may be done by the introduction into that country of kinds of Potatos that will ripen oft early, leaving the void created by the absence of late kinds to be filled up by purchase from other and more fitting Potato growing countries. Had one half of the Potatos planted this season been Early Rose the distress existing amongst the population might have been considerably lightened at least six weeks earlier than will now be the case, and by the wide introduction of early ripening kinds, it is not only now but in future years the possibility of famine may be largely avoided.

We are yet entirely at the mercy of the seasons. The bright warm sun is our best friend, a cloudy sky and cold moist atmosphere our greatest enemy. To look for better things in that direction is hopeless, except for temporary relief, as it has been in the past. The mild season will be succeeded by a disastrous one, without doubt, until the end of time. Our chief hopes lie in the following directions :—The Potato murrain may, as in similar cases, become less virulent as time goes on ; that cultivators will not be content, as now, to do next to nothing in the way of prevention, and that sooner or later some method of culture may be devised which shall neutralise the effects of the fungus, or some variety may be raised which shall deserve the name of disease-resisting. These are hopes that have been long deferred, though at times stimulated by what is learnt of one or two sorts, that show powers not general in the Potato. We want not one or two but twenty such kinds, not only late but also early, of all seasons and colours, and of the best table quality. We want to have such as shall inevitably supersede and drive out of cultivation all old kinds that are most amenable to the effects of the fungus. Our hope, therefore, rests with intelligent raisers, who will work for that one end. Perhaps, having regard to the enormous trade interests involved in Potato culture, it might be thought a matter to which the Government might well turn its attention, but British governments cannot be charged with any special anxiety for the promotion of practical horticulture, and therefore nothing must be expected in that direction. If some private raisers can, either by direct effort or indirect luck, succeed in obtaining the avowed

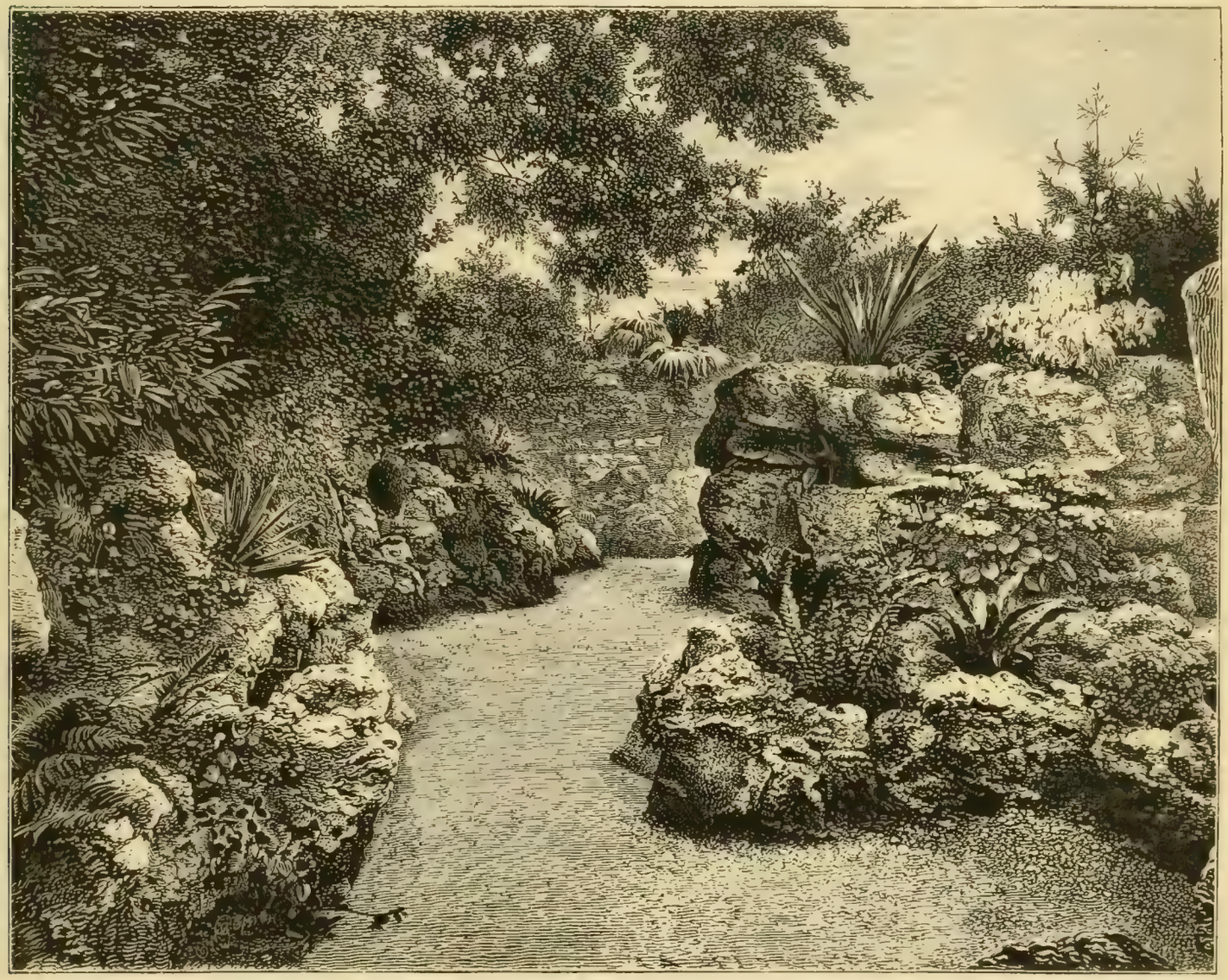


Fig. 142.—View in the Grounds at Greenlands, near Henley. (see p. 806.)

desideratum, the result will be an universal boon, and merit national recognition. In the meantime we commend to the notice of our readers a little treatise recently published by Mr. Bravender, entitled "The Potato Disease, and How to Prevent It," * which contains much information worthy the consideration of the cultivator.

We have received for publication the following letter, the importance of which justifies us in giving it this prominence :—

"To English Horticulturists.

"You are no doubt aware that in order to prevent the invasion of the Phylloxera, a Convention was signed at Berne on September 17 last, by the Plenipotentiaries from the Swiss Confederation, Italy, Spain, Portugal, Austria, Germany, and France, to the effect that in future all horticultural produce would only be allowed to be imported into the countries in question under certain conditions, one of which stipulates that the roots of all plants must be completely divested of soil, which, in fact, signifies a total prohibition of the introduction of plants.

"Italy and Spain, finding the terms not sufficiently stringent to satisfy their exigencies, have refused to ratify the Convention, and have forbidden the entry of all plants; while the Swiss Confederation interdicts the introduction of all horticultural produce coming from countries forming no part of the Convention, even when such sendings are accompanied by a Consular Certificate, which is deemed an insufficient warrant.

"If these severe measures are maintained or put in force, it is evident that they will cause the inevitable and absolute ruin of many horticultural traders, and inflict a lasting and uncalled for injury to horticultural industry in all countries where it now flourishes. No other branch of industry requires, in fact, a vaster or wider field for operation, and hence in presence of such a dreadful calamity we, the Ghent nurserymen, have formed a committee, with the object of protecting by all just means the interests of our threatened industry. The committee immediately summoned the Belgian nurserymen to a meeting, exposing the gravity of the situation, and a petition to that effect was sent to the Belgian Foreign Office. The Ghent delegates undertook to instigate a public interpellation in the Belgian Parliament, while a special deputation, in order to support the petition and to testify to the intense danger threatening the horticultural industry, conferred with the Secretary for Foreign Affairs.

"Notwithstanding the activity displayed in the matter by the Ghent committee, the last intelligence received seems to be unfavourable, more particularly as regards Germany, whose frontiers, it is said, will be closed on or about July 1. This fact is of the highest importance, as it may be supposed with some certainty that the other countries signatory to the Convention will act in the same way as Germany.

"The committee consider that their interests are identical with yours, and that the danger menacing Belgian horticulture will also fetter the progress of your country, and therefore deem it quite essential on your part to take immediate and serious action, in order to present a petition to your Government, either through the medium of a scientific or horticultural committee, with a view of obtaining a modification of the Berne Convention, especially to claim the revision of Paragraph 4, Art. III., requiring that the roots of all plants must be divested of soil, which is the most absurd feature of the recently enacted regulations to prevent the spread of the Phylloxera. A Government like that of England, a country of the first rank for industry and commerce in general, and occupying a great position in horticulture, could do much to stay the danger, more especially as it plays a preponderant and influential part in all important questions, which eventually must be settled through diplomacy.

"We are sure that if all nurserymen of the countries menaced by the Convention act in a body our just cause would find many sympathetic supporters amongst the influential classes, and which would perhaps ward off the death-blow dealt against our industry.—For the Syndicate of Ghent nurserymen,

"A. Van Geert, President."

We give the communication which our Belgian friends have favoured us with as nearly as possible in their own words, merely altering a few expressions which are not quite in accordance with grammatical construction, as must necessarily happen when a foreign language is made use of. If our correspondents will further favour us by referring to the recent numbers of this journal they will perceive that we have been from the first fully alive to the dangers that beset legitimate commerce, and that we have done our best to point out the gravity of the situation. Further than this, the matter has, at our instigation, been brought before the Royal Horticultural Society, who have addressed a memorial to the Government on the subject, the receipt of which has been acknowledged, with the usual official intimation that the subject was receiving attention. As journalists we do not know what more we can do in the matter. We have, on more than one occasion, given in brief the natural history of the insect; we have shown over and over again the absurdity and futility of the regulations enacted by the Berne Convention, and, we are humiliated to say, by some of our own colonies. It is now for the horticulturists themselves to move in the matter.

* *Farm Journal* Office, Great Queen Street.

—— Plants in Living Rooms.—There was once, still is, perhaps, a superstition that plants in rooms are unwholesome. Setting aside special cases it may be said that, as a general rule, plants in a living room, if they have any perceptible effect at all, are beneficial rather than otherwise. We are glad to see the Faculty taking this view of the subject. An American physician has, it seems, pointed out that by their powers of transpiring moist vapour plants render great service in rooms warmed by dry air. The value of plants and flowers as *délassement* for the weak and weary is acknowledged on all hands. Dr. Anders, according to the *British Medical Journal*, goes further, and states that the pursuit of gardening, though naturally it favours rheumatism, appears to arrest consumption in persons of phthisical tendency, while the abandonment of the pursuit in other cases led to the development of the disease. Dr. Anders recommends a room well stocked with plants as a complete and agreeable health-resort free from the inconveniences of travelling and the anxiety of separation from home. We concur with our contemporary in the opinion that the Doctor has opened up amost interesting subject for investigation.

—— Railway Map of Carlisle.—Mr. John Airey, of the Railway Clearing House, Euston Square, has just issued a railway map of Carlisle, in connection with the forthcoming Royal show in the Border City. Intending visitors and exhibitors in quest of such a useful thing cannot do better than procure a copy.

—— The Pelargonium Show.—Mr. Shirley Hibberd's lecture on Pelargoniums, in connection with the exhibition of the Pelargonium Society, will be delivered in the Council Chamber of the Royal Horticultural Society on Tuesday next, at 3 P.M.

—— The Art of Growing Roses.—The Rev. O. Fisher has published a fourth edition of his useful little treatise on this subject, one of the least pretentious but most thoroughly practical of the many treatises on the same subject. It may be had from Messrs. Bradbury, Agnew & Co., for a few pence.

—— The East Kent Natural History Society.—The report of this Society for the year 1879 contains, among other things, an excellent account of the geology of East Kent, by Captain McDakin, which should be studied in conjunction with the local flora and with the data furnished by the gardeners and farmers.

—— Journal of the Royal Microscopical Society.—This journal, edited by Dr. Crisp and others, appears bi-monthly, and is remarkable for its record of current researches, relating to microscopic creatures, whether animal or vegetable. This record and the bibliography connected with it are very valuable features, which we hope to see not only maintained but developed.

—— Spring Bedding.—A visit to Castle Ashby, the seat of the Marquis of Northampton, just now would reward any one desirous of seeing what a charming display can be made, and what a decided effect may be produced by means of inexpensive spring-blooming plants, such as Silene, Limnanthes, Nemophila, half-a-dozen sorts of Pansies and Violas, and a few other things, equally within everbody's reach, got ready and planted last autumn. A great treat was afforded last week on the occasion of the visit of the Midland Union of Natural History Societies, to many of whose members it was in the nature of a revelation that such a brilliant specimen of bedding-out was possible with such materials. Late as it is for such plants they are still in the highest beauty.

—— Cork Agricultural Experiments.—We are glad to see that a series of experiments are being carried out under the auspices of the County and City of Cork Agricultural Society, with a view to ascertain what varieties of Potatos are most suitable for culture, what are the best manures, and so on. Similar experiments on grass, Barley, Oats, Turnips, and Mangels are being carried on simultaneously.

—— Free Seats in the Parks.—Why there should be any other than free seats in our public parks we cannot understand, any more than we can understand why there should not be ten times as many seats as there are. A large proportion of the persons who visit the parks on foot are glad to be able to sit down to rest and enjoy the fresh air, and trees, and flowers, and birds, and it is an intolerable imposition that they should be compelled to pay for the privilege; or, on account of the fewness of the free seats, keep on their feet, or risk taking cold by sitting on the grass. Lord Oranmore and Browne's recent question in the House of Lords on this subject was well-timed. Considering the amount of money expended on the parks, and the manner in which no inconsiderable sum of it is expended, it would be absurd to say the public purse could not afford seats. We have just been turning over a report on the public parks and gardens of Berlin, wherein it is stated that there are 16,505 free seats; and in 1876 there were upwards of 7000 in the public parks and gardens of Paris.

—— The Plague of Flies.—A writer in one of the medical journals states that, by sponging the neck and flanks of a horse with a cold infusion of Walnut leaves, relief from the plague of flies will be found in a manner not less agreeable to the rider than to the steed. This is an old remedy, whose utility we can vouch for.

—— Phylloxera.—M. Boiteau reports in the *Comptes Rendus* that Vines treated with sulphide of carbon applied to the soil in the proportion of 20 grammes per square metre have thriven well.

—— The British Moss-Flora.—Dr. R. Braithwaite has, under the above title, commenced the publication of Monographs of the families of British Mosses, each complete in itself and illustrated by plates of all the species, with microscopical details of their structure. The first part is before us, and justifies us in saying that no student of these plants can afford to dispense with this work.

—— Flowering and Fine-foliaged Annuals.—Messrs. James Carter & Co., of High Holborn, have an extensive and interesting display of flowering and fine-foliaged annuals on view in the long corridor, in the Royal Botanic Society's Garden, Regent's Park. They are in fine condition now, but should be seen at once by those who contemplate a visit.

—— Small Things.—It is not so very long since something akin to a feeling of contempt was manifested towards those who spent their energies in investigating bugs and spiders, and *à fortiori* towards those who treated the microscopic research of otherwise invisible organisms as anything more than harmless pastime or ingenious trifling. Now, however, it is found that the investigation of the life-history of the minutest creatures may have most important results as to the welfare of the noblest of creatures—man himself. "In the midst of life we are in death" is a truism which does not yet come home to men in general as a truth, and yet it is absolutely certain that decay and degeneration go on contemporaneously with progress and development even in the healthiest organisms. Further, it is proved that decay and decomposition are associated with the presence of minute living creatures of various kinds in infinite numbers. Whether these bacteria, and like organisms, are the actual cause of the decay, or whether they are mere consequences, is open to doubt, but at any rate they are inseparably

connected with it. Moreover, Pasteur's experiments prove that pure air does not induce decomposition. If air can be rendered pure, and freed from the presence of these organisms, then decomposition does not occur. Hence it appears that the well-doing of patients after operations is vastly promoted, and their tendency to die greatly lessened, by the adoption of what are called antiseptic measures—measures, that is, which are calculated to prevent the access of, or to stop the growth of these minute creatures. Incomplete as our knowledge is on many points, there is a general consensus of opinion among surgeons that great advantages have arisen from the adoption of the antiseptic precautions so powerfully advocated by Mr. Lister; and on reading the statements of various surgeons, and noticing the differences of opinion expressed by them on secondary points, it would seem that in all probability the discrepancies in question arise simply from imperfect knowledge. Some of the organisms may be harmless, or only hurtful at a certain stage of their existence, or under special circumstances. All these facts indicate the necessity of further investigation, and they should impress on the outside public the necessity of awarding a generous and intelligent support to those who are working for the good of humanity, and not contemptuous indifference, still less hostility. It may seem incredible that the latter feeling should have any existence, but that it does exist is proved by the proceedings of anti-vivisection, anti-vaccination societies, and the like. It is estimated that one surgeon alone has, by his operations, added in sum the total of 22,272 years to the duration of human life; and this has been effected to a large degree owing to the experience obtained from the painless experiments which some so well-meaning but wrong-headed persons are doing their best to prohibit. It is only by protracted investigation of a similar character to that which has produced such beneficent results in the case of surgery that we must look for mitigation of the effects of Potato-murrain, Phylloxera, and the other ills which mock the efforts of the cultivator.

—— Destruction of the Palm-house in the Royal Gardens at Potsdam. — The beautiful Palm-house on the Pfaueninsel (Peacock Island), near Potsdam, constructed by Frederic William III., was destroyed by fire, together with all its valuable contents, during the night of May 19—20. It was erected for the celebrated collection of Palms purchased from Fulcheron, of Paris.

—— Java.—In the April number of the *Indian Forester* is an account by Dr. King of his visit, at the instance of the Indian Government, to the Cinchona plantations of Java. This report contains some facts of great importance to our cultivators, on which account we deem it well to record them. From this it appears that the soil is of volcanic origin, is rich in potash, and almost identical in composition with the soil on the Andes, where the Cinchonas grow wild. At an elevation of 5100 feet the temperature at 6 A.M. ranges from 50° to 60° Fahr., except during the two dry months, when it occasionally falls to 44° Fahr. The highest day temperature is 73°.5 Fahr., the mean of the year 53°, while the constant temperature of the soil at 5 feet from the surface stands all the year round at 64° Fahr. The annual rainfall varies from 120 to 140 inches. The rainy season extends from November to June, but there are very few days absolutely without rain. The climate is so remarkably uniform that the weather for the day can be predicted every morning from the temperature about sunrise. The Cinchonas flourish under such conditions better than in Sikkim, in particular the variety Ledgeriana (figured in our columns, 1879, vol. xii., p. 457), and which produces a bark yielding as much as 13 per cent. of quinine. The Dutch have introduced the system of grafting the better kinds of Cinchona, and they adopt a process of shaving off the bark of the trees. This process, it is alleged, does not materially injure the tree, the bark is renewed, and less harm is done than by the late Mr. McIvor's plan of stripping and mossing. Dr. King is satisfied that our Government possesses in Sikkim the true Ledgeriana, although, owing to different conditions, the yield of quinine is not so large as in Java.

—— Midland Union of Natural History Societies.—The third annual meeting of the Associated Scientific Societies of the Midland Counties, twenty-four in number, and comprising 3000 members, was held at Northampton last week, on Thursday and Friday, under the Presidency of Sir Hereward Wake, Bart., who delivered the opening address. The report of the Council, read by the Hon. Sec., Mr. Edward W. Badger, reviewed the progress of science and the more important work done by the scientific societies in the Midlands during the past twelvemonths. It recorded, among other things, the near completion of Mason's Science College at Birmingham (which will be opened with an address by Professor Huxley, F.R.S., on October 1 next), and the formation by one of the societies in the union—the Birmingham Philosophical Society—of a fund for the endowment of scientific research, which, though only recently commenced, already amounts to £700 from donations and £70 annual subscriptions. One grant has just been made to Dr. Geo. Gore, F.R.S. (author of the *Art of Scientific Discovery*), of £150 a year for three years, to facilitate the continuance of his original investigations. Lord Lilford read a most interesting paper on ornithology, and presented to the Northamptonshire Naturalists' Society a large collection of birds, all, with one exception, obtained within the northern limits of the county. A scientific *conversazione* took place on Thursday evening in the Town Hall. Friday was devoted to excursions, one party visiting Castle Ashby and the woods of Yardley Chase in pursuit of botanical and entomological objects; the other, devoted to geology, going in an opposite direction.

—— The Tithe System.—A meeting, which was numerously attended by Hop planters, fruit growers, and market gardeners, was held yesterday afternoon at Swanley, in connection with the movement which has been set on foot in Kent to obtain the abolition of extraordinary tithes, and a remission of tithes generally. Mr. Thomas May presided. The members of the deputation who recently waited on the President of the Board of Trade with reference to the farmers' grievances explained the result of their interview, which was considered to be very satisfactory. The meeting was addressed by various speakers, and a resolution was adopted in favour of a modification of the present tithe system and the total abolition of extraordinary tithes.

—— Fruit Trees in Bohemia.—According to recently published statistics, the approximate number of fruit trees in Bohemia, of all sorts, but chiefly Apple, is 14,000,000. Of these 10,000,000 are in gardens, 1,600,000 in waste lands, and about 2,000,000 on the sides of the public roads. The number of young trees annually planted is about 1,500,000. Between 6000 and 7000 miles of road are planted with fruit trees, mostly of the best sorts, and the revenue therefrom is very large. The fruit is largely exported to the North of Germany and Russia.

—— The Weather.—General remarks on the weather during the week ending June 21, issued by the Meteorological Office, London:—The weather during this period has been generally fine in Scotland and the extreme north of England, but over the other parts of our islands the sky has been very cloudy, with frequent showers and occasional thunderstorms. The temperature was a little above the mean in Ireland, "Scotland, W.," and "England, N.W.," and equal to it in "Scotland, N.," but elsewhere (though much higher than of late) readings were again below the mean for the time of year. The highest of the minima occurred at our north-western stations, and were registered on the 18th or 19th; on the former day the thermometer rose to 78° at Manchester, and 76° in several other places. The readings were lowest at the commencement of the period, and at Silloth and Markree Castle a minimum was recorded of 37° in the shade. The rainfall was less than the mean in the Scotch districts, and equal to the mean in "England, S.W.," but in all other districts the fall was more than the average. In "England, S." the excess was rather large. Bright sunshine shows a slight increase in Scotland, but a decrease in nearly all other places. The number of hours recorded varies from sixty-one in "Scotland, W." to about twenty-eight in the central and southern parts of England. The wind was northerly or north-easterly during the first three days, north-easterly to easterly on the 18th, generally easterly on the 19th, south-easterly on the 20th, and southerly (except in the extreme north) on the 21st. In force the wind was light or moderate on most days, but blew strongly along our east coast on the 15th, and reached the force of a gale at Shields and Spurn Head.

Home Correspondence.

The Gardeners' Royal Benevolent Institute.—Wednesday, July 7 next, should be a memorable day in the annals of the Gardeners' Royal Benevolent Institution—memorable from the fact that His Royal Highness the Duke of Connaught, K.G., will preside. I trust it will be memorable by having the largest subscription list ever obtained. That His Royal Highness will be supported by an influential gathering there is no doubt, and there is every prospect of a success both financially and otherwise. But while the committee are using every endeavour to promote the interests of the Society it is somewhat remarkable that the very class for whose benefit the Society was established do not assist it in the manner they ought to do. Possibly there are many to whom a guinea a-year is a great object, and for these every excuse should be made; but there are a great many of undoubted talent holding high positions in the profession who do not subscribe, and for these there is really no excuse except perhaps that of carelessness, not to say indifference. However, as an appeal is now being made to them by several influential persons, I shall say nothing more on this point, but hope and wait for a good result. My present object in addressing your readers is to say that it is of great importance we should have at our dinner a grand exhibition of fruit, to draw the attention of the company there assembled to what gardeners can do—to show the extent to which the public is indebted to their skill and talent. I hope that this year the gardeners will respond to a solicitation which will be made to them by our secretary to contribute some fruit upon the occasion. That there is abundance of fruit in the country is beyond doubt, witness the displays made at the recent shows at the Horticultural and Botanical Societies. If gardeners can send fruit to these exhibitions in such profusion, surely they can spare a little of it to aid the funds of their own Society. I know that if they would only seek permission from their employers to contribute towards the dessert, that permission would, in most cases, be readily granted; indeed very many employers would be gratified in being able in this way to aid the cause of the Institution. I sincerely trust the gardeners will strengthen the hands of the committee, and to prove that I practise what I preach I shall be happy to set an example by contributing a basket of the very best Grapes in the market, and I hope my example will be extensively followed. One word, in conclusion, to non-subscribing gardeners. "A rainy day" may come, and "a rainy day" does often come, and when distress and penury overtake a subscriber in his old age, the very fact of his having in his best days contributed to assist others, will be the means of his receiving assistance in his turn. *W. H. Gulliford, Member of the Committee.* [We think many of those who cannot subscribe a guinea a year might at least contribute a donation of a shilling, and as much more as they can afford. We shall be happy to receive such subscriptions and to hand them over to the secretary or treasurer of the Society. Eds.]

Sempervivum Disease.—In reference to "W. G. S.'s" note (p. 725), I beg to say I presume, from mention of the Rev. J. E. Vize's name therein, that the specimens of Endophyllum sempervivi, stated to have been found at Birmingham in 1879, were some found by me in that year in my garden at Moseley, Worcestershire, 3 miles from Birmingham, and given by me to Mr. Vize. In 1878 I bought a number of Sedums and Sempervivums. One patch of perhaps nine or ten plants of S. calcareum, part of the purchase, I planted on a raised border facing south. These were the plants on which I found the Endophyllum. The winter and spring were, as will be remembered, continuously wet. The whole of the plants of S. calcareum were affected, and as many of the leaves were almost covered with the fungus it imparted to them a very decided orange hue. The affected leaves were stripped off to prevent the spread of the fungus among my other Sempervivums, and were despatched to Mr. Vize through the post, but from a letter I have received from that gentleman to-day I gather they did not reach their destination. Fortunately he had previously received from me a few specimens of this fungus, or the occurrence of it would most probably not have been recorded. I have carefully examined the plants, but do not find the least trace of the Endophyllum now visible. *E. W. Badger, Moseley, near Birmingham, June 8.*

A Severe Thunderstorm.—We have had a terrible thunderstorm to-day, which raged for an hour from half-past 12 o'clock. The morning was bright and very hot, when suddenly there came a change, and we had a thorough downpour—first hail, and then rain—such as I have never seen before. The result is, that Brussels Sprouts, Beans, Onions, Lettuces, Potatos, &c., are literally cut to

pieces, and Pea blossoms are strewn thickly on the ground; indeed, things that were promising this morning are now simply a wreck; bedding plants, too, have suffered very much; Coleus and Alternantheras have lost every leaf. *W. Harris, The Gardens, Sudbury Hall, Derby.*

The Names of Veronicas.—It is to be regretted that curators of botanical gardens, institutions which ought to instruct those wishing to learn, cannot agree to adopt the same name for the same plant. At present any one going to three botanical gardens consecutively, say, for instance, Kew, Cambridge, and Hull, becomes utterly bewildered by the inconsistency of the names he sees given to plants. In no class is this more evident than in the Veronicas. This seems to justify nurserymen in sending out what they please under any name. One of these lately told me that when he was serving his apprenticeship at Kew, the curator there told him he would have to learn, not what a plant is, but what it is not. All nurserymen, for example, are ready to supply V. spicata, but I confess I am quite ignorant of what V. spicata is. I believe V. virginica is generally supplied for it. A month ago I sent a piece of a small rockery Veronica, very similar to Mr. Ware's V. rupestris, to a distinguished authority in London to be named, and he named it "the true V. spicata." The same is sold by Messrs. James Dickson, of Chester, as V. spicata. At Kew it is one of the many varieties of V. Teucrium. I sent it last week, with others, to the curator of one our best botanical gardens. He named it V. pulchella, adding, "a plant I have grown for years under that name, certainly no relation to V. spicata, which seldom flowers before September." The same botanist, in reply to some remarks of mine on the naming of the Veronicas at Kew, which I was studying last week, says: "The Veronicas undergo strange vicissitudes of nomenclature. At one time these (five varieties sent by me) were all 'prostrata' at Kew, then all 'orientalis,' and now it appears all 'Teucrium.'" Out of some thirty distinct Veronicas I cultivate I do not think one third possess a name they can call their own. *C. Wolley Dod, Edge Hall, Malpas, Cheshire.*

Fig, Dr. Hogg.—For cultivation and forcing in pots, this variety is indeed invaluable. It is a moderate grower and a free bearer, yielding fruit of medium size, which colours intensely at an advanced season; in fact, it is almost black when fully ripe, and of surpassing excellence. Its merits altogether are such as demand recognition as being worth the notice and attention of those interested in the cultivation and forcing of this excellent kind of fruit in pots. *Geo. Thos. Miles, Wycombe Abbey.*

Lilium giganteum.—It may interest "C. W.," as well as many others of your readers, to know that in the gardens of the Rev. W. W. Wingfield, at Gulval, Cornwall, there are several examples of the above beautiful white Lily, the tallest being from 7 to 8 feet high, with a dozen or more flower-buds on it, which will be in bloom in about a week's time. They have withstood the past winter in the open, quite unprotected. *W. Roberts, 9, Chapel Street, Penzance.*

The Best Time to Cut Down Old Vines.—I am led to ask for the best available information on this subject through one or two curious instances that have recently been brought under my notice. The cases are these:—Several large Vines were cut down within 6 inches of the root in December last year; the Grapes on those left are now ripe, but the beheaded Vines have given no sign of starting. The roots are outside—protected from the frosts of the past winter and spring—and the heads inside the house. The Vines bled but little, and the stems are quite healthy; but by some means, or rather from some cause, they have failed to push a bud, and the result is no break for an entire season. I prefer taking the opinions of others, assuming that these will be obligingly given in the case as stated, rather than venturing an explanation of my own. I may, however, state that neither bleeding nor root-chilling, nor weakness of the beheaded Vines, will explain the matter. The Vines were quite strong and healthy, and merely removed to prevent overcrowding and produce successional young wood in the house. The contemporary Vines, in all respects similar to the beheaded ones, are now finishing a capital crop, nearly all that could be desired in bunch and berry. The heading of this note will betray an apparent bias on my part to find an explanation in the time of cutting back the Vines, and I would specially wish those who favour me with their views to carefully note that feature of this interesting case. *D. T. Fish.*

Spring Flowers at Cranbourn Court.—There are now at Cranbourn Court, Windsor Forest, two beds of spring flowers, Prince of Wales' Feather shape, the finest that have ever come under my notice. They are made up of yellow, white, and blue Pansies, red, white, and pink Daisies, one solid mass of flowers clearly and artistically arranged; it is almost a sin to pull them to pieces to make room for other summer flowers. I might also mention that there is a large Oak which the gardener (Mr. Bland) has turned into a flower garden, and most attractive it is; for it received thousands of admirers during the Ascot race week, being plainly seen from the high road to Windsor. Mr. Bland has also adopted a plan of suspending baskets well furnished with bright-coloured flowers amongst the large forest trees, which has a very pleasing effect. *S. Johnson, Royal Nurseries, Ascot.*

Procumbent Broom.—The other day, in company with its finder, Mr. Charles Howie, Largo, I saw in the grounds of Largo House striking specimens of a drooping variety of our common Broom. Our friend, I believe, found the original a few years ago on Magus Muir, near St. Andrew's, and on sowing seed of it discovered that the greater part retained the trailing habit. It is usual on the lawn to support the centre stem, but on the rockeries it is allowed to assume its natural growth; and in both cases the effect produced by the dense mass of glowing yellow is memorable. For pot culture it is worthy of attention. I have seen it at a few other places, but it by no means has a distribution consistent with its merits. *John Wilson, St. Andrew's, N.B.*

English Gardeners. — Mr. Chapman and Mr. Fish have, in my opinion, both gone wide of the mark in stating the grievance of our gardeners of the present day. Mr. Chapman's remarks as to nurserymen's recommendations are quite uncalled for; it is a fact, to which many of our ablest gardeners can testify, that under the system of applying to nurserymen whenever a gentleman required a gardener, the most suitable man on their books at the time obtained the place, in which case it was not only an advantage to employers to receive the better judgment of a practical nurseryman, but also a mutual advantage to nurserymen and gardeners—it so held them together and gave them the means, so to speak, of assisting each other. It was but natural for a nurseryman, after perhaps giving the gardener employment while out of place, and then the assistance of his recommendation, that he should expect the gardener to assist him with any orders he might have at his disposal. Nurserymen cannot, any more than gardeners, live on the air. A gentleman who now requires a gardener generally advertises, and what is the result? He obtains in all probability from one to 150 replies; he is, consequently, in a fix as to choice, and in doing so it becomes not a question of superiority in the man, or of practical knowledge and experience, but one of who has the largest amount of testimonials, or who may be recommended by some personal friend or acquaintance, and in some instances low wages are taken into consideration. Under this system, in nine cases out of ten, the man with least experience, and consequently not suited for the place, gets it; and being unable to manage a place entirely beyond his capacity, he becomes not only a disgrace to himself, but also to the entire profession, his employer becomes disgusted, and having little experience himself, looks upon gardeners as muffs—and certainly not without grave cause, as many men seeking head-gardeners' situations might be better defined under the latter than under the former appellation. Gardening, like most other things, has experienced great changes during the last thirty years; the great facilities at command for travelling, and the great attractions offered in London and elsewhere, naturally draw our aristocracy from their country seats during the greater part of the year. Money cannot be spent both ways, and therefore some one must suffer, and it must be patent to all that the gardener has had to suffer, and more especially the qualified gardener, for in many instances he has had to submit to a decrease of pay or to give place to his inferior, and such will continue to be the case so long as the market is overrun as at the present day. It has often been a matter of great surprise to me that a nobleman or gentleman is content to pay his butler from £60 to £100 per annum, with everything found, and oftentimes his cook as much in proportion, while he has the conscience to offer his gardener £65 and often less, and expect talent at this price. There is an evil somewhere, but I do not consider the importation of German gardeners so great as to cause this evil; depend on it, it lies closer at home than that. *W. W. Mackay.*

Cold Orchard-houses.—It is thought by many that these structures are of little value, but I am of a different opinion, although I admit they would be of much more value with sufficient heating to exclude frost. I have under my charge a house 315 feet in length, and this, when shut close, will resist 10° or 12° of frost for several hours; and during the past seasons, when we have had but little fruit outside, inside this house we have had an abundance. It is planted with Figs, Peaches, Nectarines, Plums, Apricots, Cherries, Pears, Roses, &c., and everything this season is carrying a full crop but Pears; these are planted out, and generally fail. The house is also very useful for forwarding Peas, hardening off bedding plants, storing winter salads, Broccoli, &c. I have seen so-called orchard-houses with a goodly array of fruit trees in pots trained as neatly as specimen flowering plants, with labels as large as one's hand, but never did I see fruit come to full size and perfection in these. I maintain that a good orchard-house should have a good inside border, and a plentiful supply of water; then these may be made to yield a rich harvest with a comparatively small amount of labour. *James Corbitt.*

The Stopping of Laterals on Grape Vines.—Though much has been written on this matter it cannot be said to be threshed out, for probably no branch of practice is more important, as certainly none is more varied, than the treatment of laterals. But Mr. Hinds, in search of principles and facts, goes far beyond laterals when he attempts to prove the identical effects on the Vine of these and fruit. Every one admits that fruit, after it fairly emerges from its preliminary stages, draws its supplies from the Vine. It takes all and gives nothing. It feeds on its rich resources and impairs its vital powers. But leaves, no matter where placed, have been held to give strength to rather than take it from the Vine. It is, therefore, new to most of us to be told so authoritatively "that the laterals are to a cultivated Vine what an overflow pipe is to a cistern—they waste a good deal of the vigour of the Vine; but it would be a rash assertion to state that the Vine is none the worse for it." But now I am prepared to go far beyond this in rashness, and affirm that the Vines are probably very much the better for their laterals. But be that as it may, I return to the point I now wish to advert to—the identical effects on the Vine of fruit and branchlets. It will be best to state it in Mr. Hinds' own words, which are at once clear and forcible. After describing the evils of overcropping he asks, "Is it, then, too much to affirm that the Vine that is being drained of its resources by a useless crop of laterals is in any better condition than the one that is being overcropped? It is merely two ways of accomplishing the same end." Then follows the sentence, already quoted, about the overflow pipe, clearly proving that Mr. Hinds considers the functions of Grapes and of laterals identical. But are they not indeed and in truth widely diverse? Have not laterals leaves? Is it not the function of leaves to prepare food to elaborate strength, to recreate and redistribute vital force, to excite and extend the roots, in a word, to build up and enlarge the Vine? If mere wasteful appendages, whereabouts and in what form do they store their waste? We know that the Grapes are exhausting, and we also know what they do with the strength of the Vine—they convert it into the most luscious produce. But if laterals are waste-pipes, who, what, has ever been refreshed by their juice? Mr. Hinds' other illustration is also open to question. Many a young Vine with two shoots will have each of them about as strong as if there were but one. The reason is also obvious. The second and extra shoot quickens and extends the root-power of the Vine to such an extent as to place the two on a level in regard to food supply to the one. If such be the case, and it is, there is no physical nor vital reason why the Vine with two stems should not be able to carry a double load to the one with one. Restrictive pruners seem to ignore to a great extent the rudimentary fact in vegetable physiology, viz., that the action and reaction between bunch and root, top and bottom, is reciprocal; and hence that with each enlargement of the top there is a corresponding extension and enlargement of roots, and a marvellous stimulation and quickening of their activity as well. I also demur to Mr. Hinds' statement about large leaves properly ripened and placed, the larger the better, because size is an element in the measurement of working force; and just as the men with the largest bones and muscles can lift the heaviest weight, so can the largest Vine leaf bring up most sap, and convert most food into produce. In proof of which, if proof is wanted, note the huge nut-brown bud—nut-like in size as well as colour—at its base next autumntide, and the size of the bunch it will develope the following spring. *D. T. Fish.*

Seed Sowing.—I find in sowing seeds it is of great importance that the surface of the soil should be made firm, as in seasons like the past, with dry east winds blowing almost continually, if the beds are left with ever such a fine surface from the rake, it is not enough—one part of the seed dries up as soon as it has germinated, while another part does not germinate at all; so that a small portion only comes up, and this does not get established so soon as it would were the seed beds made firm. This season I have used the garden roller for almost everything, and I never saw seeds come up so well; every bed is as square as it should be, without a gap to fill up. This is by no means the case everywhere, as I have been the round of several gardens within the last few days, and everywhere I

hear the complaint, "My Beet has come bad," or "My Onions are very thin," or something of that sort. I think much of this would be avoided were the roller passed over as soon as the surface is dry—neither would the birds be able to take the seeds so easily. *J. Corbitt.*

Reports of Societies.

Royal Horticultural: *June* 22.

SCIENTIFIC COMMITTEE. — Sir J. D. Hooker, K.C.S.I., in the chair. The meeting was thinly attended, and but few subjects were brought before it.

Coccus on Acacia.—Mr. MacLachlan reported that he had examined the specimens referred to him at the last committee, and had consulted M. Signoret upon the matter, with the result that the insect was determined to be a species of Pulvinaria allied to that which causes so much injury to the Sugar-cane in Mauritius.

Malformed Peach Blossom.—Dr. Masters reported that he had examined the flower submitted to him at the last meeting, and found that it was produced on a stout stalk proceeding from the shoot of the year, a most unusual position in the case of the Peach. The sepals, petals, and stamens were all enlarged and thickened, but otherwise normal. The carpels were two in number.

Aristolochia ungulifolia.—Dr. Masters reported that the Aristolochia referred to him at the previous meeting was a species which he had named a few years since from dried Bornean specimens as A. ungulifolia. The present specimen was reported to have come from Java.

Alleged Hybrid Pelargonium.—Mr. P. Fry, Addington, sent specimens of a Pelargonium with very large proliferous trusses, and which it was supposed had originated as a cross between a Zonal Pelargonium and Geranium pratense—a view which the committee did not endorse.

Plants Shown.—Mr. Bull sent a Lily, referred by Mr. Elwes to L. columbianum, and which had the peculiar bulb of L. Washingtonianum and the foliage of L. Humboldt i. Other plants exhibited were Trichopilia hymenanthera, Bolbophyllum siamense, Angræcum sp., from the Comoro Isles, &c.

The following additions were made to the Lindley Library :—*Index Perfectus ad C. Linnæi Species Plantarum.* Given by Baron von Mueller.—*The British Moss-Flora.* Part I. By Dr. Braithwaite. Purchased.

FLORAL COMMITTEE.—Dr. Denny in the chair. It was a great relief to find but few subjects of any account in the Council-room on this occasion, and no surprise whatever was felt at the smallness of the attendance. First-class Certificates were awarded to Messrs. James Veitch & Sons for Erythrina marmorata, a bold and effectively variegated plant, with large brightly mottled leaves, introduced from the South Sea Islands ; for Pteris serrulata cristata bella, a very prettily crested form ; for Asparagus plumosus nanus, represented to be a pigmy form of the very handsome plant figured at p. 749, but wanting in distinctness from others already in cultivation. To Mr. William Bull for Lilium nitidum, an interesting Lily with a bulb like that of Washingtonianum, the habit of growth of L. Humboldtii, and the flowers like those of L. columbianum, with the important difference, however, that the last named only produces three to six flowers on a plant, while in L. nitidum there are a dozen or more. To J. McIntosh, Esq., Duneevan, Oatlands Park, Weybridge, for Lilium polyphyllum, a very rare species from the North-Western Himalayas, which has very rarely been seen in flower in this country; the flowers are cream-coloured and spotted with purple ; and not particularly striking. To Mr. Turner, Slough, for a fine new white border Pink named Mrs. Sinkins, a very full double flower about 2 inches in diameter, very sweet scented, and extremely free-flowering. To Messrs. Hooper & Co., Central Avenue, Covent Garden, for Canna Ehemanni, a stately-habited light-green leaved form with rosy-crimson flowers of a larger size than any that we have noticed in this genus before. To Mr. G. Braid, florist, Winchmore Hill, for Decorative Pelargonium Zulu Belle, a white flower with a dark maroon blotch on each petal, very distinct, and a smoother flower than many of the market varieties that have been certificated. To M. Victor Lemoine, Nancy, for Fuchsia Madame Galli Marie, a vigorous habited and free blooming variety with the tube and sepals scarlet, and the full double corolla white—a fine exhibition variety. Messrs. Veitch & Sons also exhibited a couple of well-flowered plants of Platycodon grandiflorum, a very fine old herbaceous plant, about 12 inches high, with large, open, bell-shaped, deep blue flowers. Mr. B. S. Williams sent four new Orchids, viz., Trichopilia hymenanthera, with a short spike of six flowers, which have a bold scoop-shaped lip, white, and prettily spotted, and narrow sepals and petals; Angræcum Scottianum, a singular and very rare species, this being one of two plants only that are known to be in the country. The plant has the habit and foliage of Vanda teres, while the flowers are white. It comes from the Comoro Islands ; Bolbophyllum siamense, a large orange-coloured flower with a movable lip ; and Cœlogyne corymbosa. Mr. Williams also showed Oleobachia palustris, an elegant greenhouse plant, resembling Aralia Veitchii, but having dark green digitate leaves, and apparently allied to Delabechea. Mr. Fry, the Gardens, Addington Park, exhibited several Zonal Pelargoniums, with immense proliferous trusses of flowers. The proliferous tendency, which hitherto has only appeared at intervals as a freak of Nature, appears in this case to have been quite fixed, so that when the flowers have been improved in quality a most useful set of plants for cutting from may be forthcoming.

FRUIT COMMITTEE.—H. Webb, Esq., in the chair. Mr. Marriott, Campbell's Creek Nursery, Castlemaine, Victoria, contributed a very handsome sample of Sturmer Pippin Apples grown in Australia ; also two dishes of a large and very showy variety wrongly named Gloria Mundi, and more closely resembling Waltham Abbey Seedling. The flavour in both cases was excellent, and especially so as regards the former. From Mr. T. H. Sutton, gr., Worksop Manor, came a very good Black Prince Pine, weighing about 6 lb. ; and Mr. Woodbridge brought up from Syon a nice sample of the Early Cluster Tomato, a seedling variation of the old Pear-shaped variety, with small deep red fruits. A heavily netted green-fleshed seedling Melon was shown by Mr. A. Hopkins, gr. to R. Johnson, Esq., Remnal Manor, Chislehurst, but it proved when cut to be deficient in flavour. The High Cross Hybrid Melon, which was certificated last week at Regent's Park, was shown to-day by Mr. James Hopkins, gr. to R. Thornton, Esq., but it failed to get an award, though of much better quality than many that have been submitted to the judgment of the committee. Mr. R. Dean again submitted samples of his new seedling Potato, The Cluster, which has very dwarf foliage, and handsome pebble-shaped, medium-sized tubers.

Pelargonium Society.—This Society awarded First-class Certificates to four varieties raised by M. Lemoine, of Nancy, which were shown at the meeting of the Floral Committee on Tuesday, having been grown by Mr. Barron at Chiswick. These were Pelargonium (Decorative) Madame Thibaut, a distinct and most attractive semi-double white flower heavily shaded with bright rose-pink. Pelargonium (Decorative) No. 108, a very pleasing flower, white with a dark maroon blotch on the upper petals, and a rose-coloured spot on the lower ones—a very neat flower, and the plant a sturdy grower. Pelargonium (Ivy-leaved) Gloire d'Orleans, a very fine double of a lustrous rosy-magenta shade of colour, and a remarkably bushy free-blooming habit ; and Pelargonium Mons. Dubus, an equally fine double flower, but very bright pinkish-rose in colour.

York Gala : *June* 16, 17, *and* 18.—This show was held on the above days at the old grounds, Bootham, and collectively was a great success, although here, as in most other places at the present day, stove and greenhouse flowering plants were fewer in number, and, with some exceptions, not equal in quality to what they were some years back. Finely grown and flowered as Pelargoniums have so long been seen here, this year's display quite outstripped anything that has preceded it for the even excellence of the immense number shown. This remark applies to the Show varieties, the Fancies, the Zonals, as also to the Bicolor and Tricolor sections, which collectively were forthcoming in such condition and quantity as sufficed to fill the large tent devoted to them, and in themselves they were an exhibition worth going some distance to see. The herbaceous and alpine plants as now exhibited at York, in both numbers and condition go to fairly represent this important department of gardening, and combined with the bedding plants, grown and shown as they are here in large pans in the best possible order, they form a feature that we do not meet with elsewhere.

The leading feature of the show was the groups of miscellaneous plants staged for effect, each occupying a space not exceeding 200 square feet. There were five competitors, and the 1st prize group, shown by Mr. Letts, gr. to the Earl of Zetland, Upleatham, Marske-by-the-Sea, was composed of elegant Palms, Ferns, variegated Pines, Dracænas, and Caladiums, mostly in small pots, except the large, tall examples, which were used to stand out in relief with just sufficient small flowering plants to give the required amount of colour ; the whole was edged with Panicum variegatum, Adiantums, and small examples of Pandanus Veitchii. The 2d prize went to a very nicely arranged group shown by Mr. R. Simpson, Selby, much in advance of what is usually met with in the provinces ; the back was made up of Palms, Ferns, and Dracænas, with mixed flowering and small foliage plants in front. The 3d and 4th prizes went respectively to Mr. Berry, gr. to W. Dove, Esq., York, and Mr. Stephenson, gr. to Mr. Alderman Walker.

STOVE AND GREENHOUSE FLOWERING PLANTS.—Messrs. Cole, Withington, Manchester, were the only exhibitors of twelve, and took the 1st prize. In the class for six Mr. Letts was well 1st, with much the best specimens in the exhibition—large and finely flowered, with plenty of fresh green foliage down to the pots. The collection consisted of an immense Stephanotis floribunda, quite 5 feet through, bearing a quantity of very large trusses of flower ; Ixora coccinea, equally large and well bloomed ; a grand Azalea Brilliant, Erica tricolor elegans, Anthurium Scherzerianum, and Ixora Williamsii. With three Mr. Letts was also easily 1st, showing Allamanda grandiflora, trained bush fashion ; Erica insignis, and Dracophyllum gracile, all well flowered. Mr. Wright, gr. to G. Talbot, Esq., Leeds, was 2d.

FINE-FOLIAGE PLANTS.—These were very well shown by Mr. Letts and Messrs. Cole, who took the prizes in the principal class for eight in the order of their names. Mr. Letts' plants were remarkably fresh and bright looking. Croton majesticus, C. Johannis, and C. Weismanni, all splendidly coloured ; Gleichenia rupestris glaucescens, G. Mendelli, the latter 6 feet through, and in such extraordinarily fine condition as we have not before seen it ; a good Cycas revoluta, Chamærops humilis elegans, and Dasylirion plumosum, a splendid specimen. Messrs. Cole's plants were also large and fine ; they comprised Palms, in which Cocos Weddelliana and Kentia Fosteriana were beautiful examples ; Croton Disraeli, nicely coloured ; C. angustifolius, and others. For four fine-foliage plants Mr. Winterbourne, gr. to T. Simpson, Esq., Weetwood, was 1st with a good group, in which there was a finely grown Encephalartos villosus, over 10 feet through.

ORCHIDS.—These were not so numerously shown as we have seen them at York. For six, Mr. Mitchell, gr. to Dr. Ainsworth, Broughton, Manchester, took the lead with a nice lot, consisting of Thunia Bensoniæ, Aerides Dayanum, Odontoglossum Pescatorei, Calanthe veratrifolia, a very large mass of Phalænopsis Luddemanniana, and Cypripedium barbatum ; 2d, Mr. Hayward, gr. to Captain Hincks, Breckonbro', near Thirsk, his best plants being Odontoglossum cirrosum and Lælia purpurata. With three, Mr. Mitchell was also 1st, showing a beautiful plant of Aerides Lobbii, an equally fine Epidendrum vitellinum majus, bearing some thirty spikes of very large finely coloured flowers ; and Cattleya Mendelli ; 2d, Mr. Hayward, in whose collection was a good form of Odontoglossum vexillarium.

FERNS.—In the class for eight stove and greenhouse varieties Messrs. Cole were 1st, with a nice even lot, containing good healthy plants of Brainea insignis, Davallia Mooreana, Gleichenia rupestris, Thamnopteris australasica, and Cibotium Schiedei ; 2d, Mr. Berry, having amongst others a couple of fine tree species—Cyathea medullaris, and Dicksonia antarctica. With four, Mr. Letts took the 1st prize, showing clean, well-grown plants of Davallia bullata, Pteris scaberula, Gleichenia Speluncæ, and Gymnogramma sulphurea ; 2d, Mr. A. Scott, York. Hardy Ferns were in great force, several of the collections being so evenly balanced as to make it difficult to decide between the competitors. For twelve, Mr. A. Scott occupied the post of honour with a group all good. He had beautiful plants of Trichomanes Andrewsii, Osmunda regalis cristata, Hymenophyllum Wilsoni, Adiantum Capillus-Veneris, and various large examples of Athyrium, Polystichum and Lastrea. Mr. C. Rylance Bold Lane Nursery, Aughton, was a very close 2d ; and Mr. J. Rodwell, Burton Lane, York, 3d, with smaller but well-grown plants. With six varieties Mr. W. R. Robinson, York, came in 1st, having a fine half-dozen, in which was a grand plant of Polypodium (vulgare) elegantissimum var. Stansfieldii. Of thirty-six varieties, in not more than 6-inch pots, there were four exhibitors, running each other very close ; Mr. Rodwell, however, took the 1st with a well-assorted collection ; Mr. A. Scott being 2d, and Mr. W. R. Robinson 3d. For Lycopodiums Mr. Berry was 1st with a very fine half-dozen, in which L. Wildenovii, L. viticulosa, and L. lævigata arborea were unusually good ; 2d, Mr. Stephenson, showing well-grown plants, but the varieties not equal to the 1st prize lot.

PELARGONIUMS AND FUCHSIAS.—Mr. Rylance was well 1st with twelve Show varieties, his plants reminding us of the days when Turner, Bailey, and Ward used to come out at the London shows in their best form ; his finest examples were of Queen Bess, Brigantine, Madame Hilaire, Prince Leopold, Mrs. Bradshaw, Empress, and Kingston Beauty. Messrs. Lazenby & Sons, York, who were 2d, also had a fine lot, most noticeable in which were Duchess of Edinburgh, Queen Bess, Digby Grand, and Claribel. Mr. May, Hope Nursery, Bedale, was 3d, and Mr. Eastwood, gr. to F. W. Tetley, Esq., Weetwood, Leeds, whose group was also really well done, was awarded an extra prize. For six show varieties Mr. McIntosh, gr. to J. T. Hingston, Esq., Clifton, Yorkshire, was 1st with plants a little smaller than some shown, but quite equal in other respects ; 2d, Mr. Eastwood, who was 1st for three show varieties. The Fancy kinds were not so numerously represented, but Mr. Rylance's half dozen were fully as good as used to be seen in years past at the best exhibitions of these plants, being large and completely clothed with blossoms. Mr. Eastwood, with smaller but well flowered examples, was 2d. Zonal and Nosegay varieties were well shown, and with twelve varieties Mr. Stephenson was placed 1st, having plants with large flowers, but deficient in foliage ; Mr. McIntosh came in 2d, and Messrs. Lazenby 3d. For six Mr. Winterbourne was 1st, with a large and finely flowered lot, in which Mrs. W. Paul and Grand Duke were extremely good ; 2d, Mr. Eastwood. Bronze Pelargoniums were shown in such order as few have seen them. 1st for six was Mr. Barnes, gr. to Mrs. Jackson, Pocklington, with immense well-furnished specimens, finely coloured ; 2d, Mr. Clarke, gr. to Miss Wharton, York. With Tricolors there was an extensive

and good competition, Mr. Barnes again coming in 1st, with large and well-finished specimens. Fuchsias were well flowered, the plants large, but mostly a little too closely trained. Mr. Clarke was 1st, with an even six, mostly old-established varieties ; and Mr. McIntosh 2d.

Herbaceous Calceolarias, &c., were represented by the old-fashioned Yorkshire strain—well formed, handsomely marked flowers, but not equal in habit or strength of constitution to the best as now seen in the South. Mr. Gowthorpe, gr. to Miss Steward, Bishopthorpe, was 1st for eight varieties, and Mr. Berry 2d, both showing nicely grown plants with bright blooms. A very fine group of seedling Gloxinias, some thirty varieties, were contributed by the Rev. G. E. Gardner, Heworth, York ; they received an extra prize. Some seedling Gloxinias were also shown by Mr. Clayton, gr. to J. Fielden, Esq., Grimston Park, Tadcaster, amongst which were three of the most distinct, finely marked, and largest flowered varieties we have seen.

Bedding Plants, shown in large pans, as we have already said, are extremely effective, and brought out as they are here make a telling display. For sixteen distinct kinds, excluding Pelargoniums, Mr. R. Simpson had the premier award, his most noticeable examples being Nierembergia gracilis, Coprosma Baueriana variegata, Lobelia Ebor, Sedum aizoides variegatum, Alternanthera versicolor, and Ophiopogon spicatus aureo-variegetus ; 2d, Mr. A. Simpson, Heworth Nurseries ; 3d, Mr. Stephenson.

Roses and Cut Flowers.—To those who are in the habit of seeing the immense specimens of pot Roses shown at the metropolitan exhibitions, those that are met with at York look small, but nevertheless they are very well managed, clothed with healthy stout foliage, and bear a full complement of fine flowers. In the class for six plants, distinct varieties (open), Messrs. Pybus & Son, Monkton Moor, Ripon, took 1st ; Messrs. Jackson & Co., Bedale, 2d ; and Mr. May, 3d. For nine varieties, in 8-inch pots, the prizes went to the same exhibitors, in the same order. For fifteen varieties, in 8-inch pots, Messrs. Jackson & Co. occupied the post of honour, Mr. May coming in 2d, and Messrs. Pybus 3d. For forty-eight single blooms (open) Mr. May was 1st, as also for thirty-six single blooms Messrs. Jackson being 2d. For twenty-four Mr. May was again 1st, Messrs. Jackson 2d, and Mr. Eastwood 3d. With twelve white and yellow Roses (amateurs) Mr. E. R. Whitwell, Darlington, took 1st ; Mr. Eastwood 2d. Twelve Tea-scented Roses, one variety : 1st, Mr. E. R. Whitwell ; 2d, Mr. Swann, gr. to Col. Brooshoot, Hull. For eighteen distinct varieties, twelve ditto, and twelve hybrid perpetuals, Mr. Eastwood was 1st. For twelve bunches of stove and greenhouse flowers, Mr. McIndoe, The Gardens, Hutton Hall, Guisborough, was 1st, with a very fine lot composed of Ixoras, Anthurium Scherzerianum, Heaths, Tabernæmontana coronaria flore-pleno, &c. Messrs. Cole were 2d, showing, as they usually do, a good box. Twenty bunches hardy flowers : with these Mr. McIndoe was again to the front, his best kinds being Dodecatheon Jeffreyanum, Anthericum Hookerii, Verbascum phœniceum purpureum, &c.

Fruit was well represented generally, both as to quantity and quality. In the class for ten dishes Mr. McIndoe was easily 1st, with an even lot, consisting of very well finished Muscat of Alexandria and Black Hamburgh Grapes, Smooth Cayenne and Queen Pines, Alexandra, Noblesse, and Bellegarde Peaches, Violette Hâtive Nectarines, Brown Turkey Figs, and a couple of Melons, all nicely staged. Mr. Clark, gr. to the Marquis of Ripon, Studley Royal, came in 2d, showing amongst others a very fine dish of Castle Kennedy Figs, very large James Veitch Strawberries, well coloured Violette Hâtive Nectarines, and Black Hamburgh Grapes. For six dishes Mr. McIndoe was also 1st ; his Grapes, both Muscats and Black Hamburghs, were better in this class than in the first one ; he had also in this collection a good Queen Pine. Mr. Clayton was a very close 2d, with a good Queen Pine, Muscat of Alexandria and Black Hamburgh Grapes, nice bunches and good berries, but a little short in colour ; and good dishes of Peaches, Nectarines, and Figs. Mr. Clark was 3d, the best in his collection being Castle Kennedy Figs, very nice Black Hamburgh Grapes, and Dr. Hogg Peaches. For four dishes Mr. McIndoe again came in 1st, thus making a sweep of all three collections : his exhibits were similar to those shown in the preceding classes. Mr. Woods, gr. to A. Wilson, Esq., Tranby Croft, near Hull, was 2d, with beautifully coloured Violette Hâtive Nectarines, a good dish of Royal George Peaches, well coloured Black Hamburgh Grapes, and a fine Melon. With two bunches of black Grapes Mr. Wallis, gr. to Sir H. Meysey-Thompson, Kirby Hall, York, was 1st, showing good bunches of extremely well-finished fruit ; 2d, Mr. McIndoe. In the corresponding class for white Grapes Mr. Wallis and Mr. McIndoe were placed equal 1st, the former having small but beautifully coloured Muscat of Alexandria, the latter very good Buckland Sweetwater. In a class for any new variety, two bunches, Mr. McIndoe was 1st, with small bunches containing some large berries of Duke of Buccleuch ; Mr. Wallis was 2d for Royal Ascot. With good Queen Pines Mr. Clayton was 1st, and Mr. Letts 2d ; and Mr. Coleman, gr. to Earl Somers, Eastnor Castle, took 1st, with a large and finely coloured dish of Nectarines ; Mr. Miles, gr. to Lord Carington, High Wycombe, being 2d, with smaller but well coloured fruit. For Peaches Mr. Wallis had 1st, staging a fine dish of Grosse Mignonne ; Mr. Coleman 2d, having equally good fruit of the same variety. In the class for green-fleshed Melons Mr. Coleman was 1st, Mr. Clark 2d. With a scarlet-fleshed Melon Mr. Clark took 1st, Mr. McIndoe 2d. In Figs Mr. Clark was 1st, with a fine dish of Castle Kennedy ; Mr. McIndoe 2d. Strawberries were remarkably well represented. Mr. Chuck, gr. to C. S. A. Thelluson, Esq., Doncaster, was 1st, with a magnificent dish of President, very large and splendidly coloured ; Mr. Clark, who was 2d, had very good James Veitch. Mr. McIndoe was 1st for Cherries, with May Duke.

We are glad to learn that the show was a complete success financially, about 45,000 persons having paid for admission during the three days it was open. As compared with last year the receipts show an excess of about £120.

The Scottish Pansy : *June* 18.—This Society held its thirty-sixth annual competition in Edinburgh on Friday, the 18th inst., and from whatever point of view it is looked at it may be taken as the most successful show ever held. In point of numbers there were 274 stands, being more than double the number one has been accustomed to see. The prize-list proves that this is a thoroughly national Society, as the competitors were from all parts of the country. The public might naturally think that there must be a great sameness and want of variety in a Pansy show, but this is certainly not the case, as any one must admit on seeing the wonderfully brilliant and varied colours of the Fancy Pansies intermixed with the quieter shades of those known as show Pansies ; whilst the tables set apart for lady competitors —to whom prizes are offered for the most artistically arranged table-glasses and bouquets of bedding Violas—were exceedingly attractive, and were much admired by all the visitors. The quality of the Fancy Pansies was greatly in advance of those exhibited at any previous show, and the unusually large number of blooms of this class tabled separately for the opinion of the judges, shows that the taste for them is on the increase amongst amateurs and gardeners as well as nurserymen. We were glad to learn that the funds of this old Society are in a very satisfactory condition, so that the sister societies that have sprung up in different parts of the country are increasing rather than diminishing the success of the national society. Most of the prizes were largely competed for, while the quality of the flowers was so equal that the Judges had great difficulty in coming to a decision, so that it was no disgrace to those who were unsuccessful.

The following First-class Certificates were granted :—To Messrs. Downie & Laird, Edinburgh, for Fancy Pansies, Robert Laird, L. Y. Heathcote, and R. K. Mitchell ; to Messrs. Dicksons & Co., Edinburgh, for Fancy Pansies, Perfection, Miss Duncan, and Mrs. W. M. Welsh. Certificates of Merit were awarded to Mrs. Taylor, Corstorphine, for Fancy Pansies. Minnie Nicoll, and Mrs. Mitchell ; and to Mr. George Ross, Laurencekirk, for Fancy Pansies, J. C. Findlater and Mrs. D. L. Whitton.

To show how widely the prizes were divided, we annex the numbers taken by some. Mr. Borrowman, Beeslack, having gained sixteen prizes, carried off the Medal, as he did last year ; Mr. Ross, Laurencekirk, gained fourteen prizes ; Dicksons & Co. took thirteen prizes ; Mr. Skinner, Penicuik, seven ; Mr. Fleming, Berwick, six ; Mr. Paul, Paisley, five ; Mr. Forbes, Rosshalt, five ; Mr. Thomson, Rothesay, four ; Mr. Findlay, Lennox Castle, three ; Messrs. Downie & Laird, three ; Mr. McComb, Montrose, three ; Mr. Cuthbertson, Corstorphine, three ; Mr. Cocker, Aberdeen, two. Amongst the ladies' classes for the arrangements of bedding Violas it was gratifying to see the great amount of interest taken by the public in the very tastefnl and pleasing effect produced by these easily cultivated flowers, the more so as they can be grown by every one in town or country however small their gardens may be. When made up with Fern fronds or other light green, the effect is charming, and this Society ought to feel indebted to the ladies who so successfully showed how much can be made of these flowers. Miss Owen, Knockmullen, Gorey, Ireland, took 1st honours for the table glass, Mrs. Guthrie taking the 2d prize. Miss Lorimer was 1st for the bouquet of Pansies or Violas. Mrs. W. Welsh was 1st for six most tasteful bunches of Violas ; Miss Fleming 1st for six Show and six Fancy Pansies.

Chertsey and District Horticultural.—The summer exhibition of this Society was held in the grounds of Ashley Park, Walton-on-Thames, by the kind permission of Mrs. Sassoon, on Thursday, June 17. The Society is well supported by the gentry of the neighbourhood, the exhibits in most cases being very creditable to the gardeners. Groups of plants arranged for effect form a principal feature, and one tent was devoted to this. Two sets of prizes were offered: the largest group was 7 feet by 14 feet. Mr. Cornhill, Oatlands Park, gained the 1st prize easily ; his plants were not only well arranged but they were also well grown. The front line was formed of neat little plants of Harrison's Musk and small plants of different species of Lycopod ; the second line mostly of Maidenhair Ferns and Gloxinias, while Palms, broad-leaved Crotons, and flowering plants formed a background. The other exhibitors were a good way behind, but their groups were very creditable. In the smaller groups, Mrs. H. Cobbett, York Lodge, Walton-on-Thames (Mr. A. Millican, gr.), gained the highest award, but all the exhibitors in this class arranged their plants so that the pots were too much seen. The best flowering stove and greenhouse plants were from Mr. Cornhill ; his group contained a good Bougainvillea glabra and a fair specimen of Darwinia tulipifera. The collection from H. Rogers, Esq., Oatlands Park (W. Polley, gr.), was very nearly as good, and it contained a very good Anthurium Scherzerianum. Mr. Cornhill, also gained the 1st prize in foliage plants : the best was a very fine example of Bonapartea juncea ; besides this there was a good Dicksonia antarctica, and a nice plant of Cocos Weddelliana. The same exhibitor had a 1st prize for half a dozen very fine Gloxinias ; the size and quality of the flowers were all that could be desired—as many as a score of them on one plant. Mr. A. Millican exhibited the best hardy and British Ferns, and very fine they were—Trichomanes radicans in splendid masses, also well grown examples of the Lady Fern and Hart's-tongue. The same exhibitor deservedly obtained a 1st prize for six excellent pans of Lycopodiums. Liliums were well represented from the gardens of James McIntosh, Esq., Oatlands Park (Mr. Taylor, gr.) ; they were very well grown plants, and comprised L. purpureum, L. Hansoni (two very fine examples), L. parvum, and varieties of L. Thunbergianum. The best twelve plants for the table came from A. Gillespie, Esq., Weybridge (Mr. Povey, gr.) ; the same exhibitor held a similar position for some well grown Fuchsias : they were well furnished with flowers, and the lower branches drooped over the pots as they ought to do. Mr. Povey gained a 1st prize also for cut flowers ; his stand contained a number of Orchids, and amongst others the rather difficult-to-manage Epidendrum bicornutum. There were excellent collections of Ferns, Petunias, Pelargoniums, Caladiums, &c., but none of them of very remarkable quality, and the Roses were scarcely up to the mark. There was fairly good fruit. The best black and also the best white Grapes were from the garden of J. W. Wilson, Esq., Weybridge (Mr. Russell, gr.). Mr. Taylor had the best Strawberries, British Queen, while Mr. Cornhill showed good Peaches and Nectarines, gaining the 1st prize in each instance. Mr. Russell had the best green-fleshed Melon, and Mr. Millican the best scarlet-flesh. A number of very good baskets of vegetables were exhibited, Mr. Cornhill's being the best of them. The same exhibitor was 1st in a good competition of Cucumbers, the variety being Tender and True. The cottagers exhibited good fruit, although but little of it was ripe ; good vegetables, such as Cabbages and Potatos ; also a few flowers in pots.

The Weather.

STATE OF THE WEATHER AT BLACKHEATH, LONDON,
For the Week ending Wednesday, June 23, 1880.

Month and Day.	Barometer: Mean Reading Reduced to 32° Fahr.	Barometer: Departure from Average of 18 years.	Temperature of the Air: Highest.	Temperature of the Air: Lowest.	Temperature of the Air: Range.	Temperature of the Air: Mean for Day.	Temperature of the Air: Departure of Mean from Average of 60 years.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Dew Point.	Hygrometrical Deductions from Glaisher's Tables 6th Edition: Degree of Humidity. Sat. = 100.	Wind: Average Direction.	Rainfall.
June	In.	In.	°	°	°	°	°	°	°		In.
17	29.94	+0.15	64.6	50.0	14.6	57.2	— 2.1	54.4	90	ENE : S.E.	0.01
18	29.75	—0.04	78.3	49.3	29.0	61.7	+ 2.2	52.9	73	E.N.E	0.00
19	29.52	—0.27	73.4	53.5	19.9	60.8	+ 1.0	55.6	83	N.E. : S.	0.12
20	29.47	—0.32	68 9	55.0	13.9	60.0	+ 0.1	54.4	82	E. : S.S.E.	0.13
21	29.52	—0.28	75.2	49.8	25.4	60.7	+ 0.6	51.9	72	S.W. : S.S.E	0.00
22	29.59	—0.21	60.8	53.6	7.2	55.9	— 4.5	52.8	90	E.S.E. : WNW	0.21
23	29.58	—0.23	70.8	52.0	18.8	58.7	— 2.0	54.9	87	WNW : S.E.	0.05
Mean	29.62	—0.17	70.3	51.9	18.4	59.3	— 0.7	53.8	82	variable	sum 0.52

June 17.—A dull cloudy day. Warmer. Occasional showers in morning.
— 18.—A very fine day. Warm. Clear. Strong breeze. Dull with rain after 10 P.M.
— 19.—Dull and showery till 11 A.M. Very fine and bright afterwards. Overcast at midnight.
— 20.—A fine day, generally cloudy. Warm. Rain fell in early morning.
— 21.—A fine bright warm day. Partially cloudy. Overcast at night.
— 22.—Overcast, dull throughout. Frequent rain. Cooler.
— 23.—Generally fine, though cloudy. Occasional rain in afternoon. Cool.

London : *Barometer.*—During the week ending Saturday, June 19, in the vicinity of the Metropolis the reading of the barometer at the level of the sea increased from 30.05 inches at the beginning of the week to 30.09 inches by the evening of the 14th ; decreased to 29.92 inches by the morning of the 16th ; increased to 30.14 inches by the morning of the 17th; and decreased to 29.69 inches by the end of the week. The mean reading for the week at sea level was 29.99 inches, being 0.14 inch above that of the preceding week, and 0.02 inch above the average.

Temperature.—The highest temperatures of the air observed by day varied from 78¼° on the 18th, and 74° on the 13th, to 57¼ on the 15th ; the mean value for the week was 68°. The lowest temperatures of the air observed by night varied from 46° on the 13th to 53½° on the 19th ; the mean value for the week was 49¾°. The mean daily range of temperature in the week was 18¼°, the greatest range in the day being 29°, on the 18th, and the least 7¼, on the 15th.

The mean daily temperatures of the air and the departures from their respective averages were as follows :—13th, 58°.2, —0°.5 ; 14th, 57°, —1°.9 ;

15th, 52°.3, —6°.7; 16th, 52°.8, —6°.3; 17th, 57°.2, —2°.1; 18th, 61°.7, × 2°.2; 19th, 60°.8, × 1°. The mean temperature of the air for the week was 57°.1, being 2° below the average of sixty years' observations.

The highest readings of a thermometer with blackened bulb in vacuo, placed in the sun's rays, were 147° on the 13th, 154° on the 18th, and 148° on the 19th; on the 16th the reading did not rise above 63°. The lowest readings of a thermometer on grass, with its bulb exposed to the sky, were 40° on the 10th, and about 43° on the 14th, 17th, and 18th; the mean of the seven lowest readings was 45½°.

Wind.—The direction of the wind was variable, and its strength gentle.

The weather until Friday was generally dull, cold, and showery, but fine, bright, and warm afterwards.

Rain fell on five days; the amount measured was 0.96 inch.

ENGLAND: *Temperature.*—During the week ending Saturday, June 19, the highest temperatures of the air observed by day were above 78° at London, Cambridge, Birmingham, and Nottingham, and below 71° at Truro, Plymouth, Leeds and Sunderland; the mean value from all stations was 73½°. The lowest temperatures of the air observed by night were below 45° at Brighton, Cambridge, Norwich, Nottingham, and Hull; and above 50° at Plymouth, Bristol, and Liverpool; the general mean from all places was 47¼°. The extreme range of temperature in the week was above 32° at London, Cambridge, and Nottingham, and below 22° at Plymouth and Sunderland; the mean range of temperature from all stations was 26¼°.

The mean of the seven high day temperatures was above 68° at Brighton, Cambridge, Norwich, Birmingham, and Nottingham, and below 64° at Sheffield, Hull, and Sunderland; the general mean from all places was 66¼°. The mean of the seven low night temperatures was below 50° at London, Wolverhampton, Nottingham, and Hull, and above 53° at Truro and Plymouth; the mean value from all stations was 51¼°. The mean daily range of temperature in the week was above 20° at Cambridge and Nottingham, and below 12° at Truro, Plymouth, Liverpool and Sunderland; the mean daily range from all places was 15°.

The mean temperature of the air for the week from all stations was 57°, being ½° lower than the value for the corresponding week in 1879. The mean temperature was above 58° at Brighton, Cambridge, Norwich, and Birmingham, and below 55½° at Wolverhampton, Sheffield, Hull, and Sunderland.

Rain.—The amounts of rain measured varied from 0.96 inch at London, 0.88 inch at Hull, and 0.80 inch at Liverpool, to 0.17 inch at Leeds and 0.30 inch at Birmingham; the average fall over the country was 0.55 inch.

The weather during the week was generally dull, cold, and showery, though fine at times.

A *thunderstorm* occurred at Liverpool on the 19th inst.

SCOTLAND: *Temperature.* — During the week ending Saturday, June 19, the highest temperatures of the air varied from 73° at Dundee to 64° at Leith; the mean value from all places was 69¾°. The lowest temperatures of the air varied from 41° at Paisley to 47½° at Edinburgh; the general mean from all stations was 44¼°. The mean range of temperature in the week from all places was 25½°.

The mean temperature of the air for the week from all stations was 57½°, being 1½° higher than the value for the corresponding week in 1879. The mean temperature was above 59° at Dundee, and below 55½° at Leith.

Rain.—The amounts of rain measured during the week were the heaviest at Edinburgh, 0.61 inch, and Leith, 0.52 inch; and the least at Paisley, 0.03 inch. At Greenock no rain was measured; the average fall over the country was a quarter of an inch.

DUBLIN.—The highest temperature of the air was 66¼°, the lowest 41¾, the extreme range 24½°, the mean 56¾°, and the fall of rain 0.10 inch.

JAMES GLAISHER, F.R.S.

Enquiries.

He that questioneth much shall learn much.—BACON.

INDIAN PLANTS. — I have received some seeds from Poonah with names that I do not understand. Can you kindly give me their botanic names? — 1, Red Bargie; 2, Soap Nut [Sapindus emarginatus]; 3, Sominden Soke; 4, Gold Mohur. *Henry Stevens.*

Answers to Correspondents.

BEGONIAS: *E. Fornachon.* Yours is a very fine strain of flowers, but they are too much like those already known to be of any great commercial value. For home decoration they are perhaps equal to any, as they seem to possess vigour of habit.

BEGONIAS FOR BEDDING: *A. B. Bystock.* The tuberous-rooted sorts generally will do very well bedded out. The earlier varieties of the Sedeni type are especially adapted for this purpose, but we believe any of them may be used. They should be started in gentle heat, hardened off, and then planted out as soon as weather permits like other half-tender bedding subjects. A partially shaded and sheltered situation is best for them.

COLUMBINES: *C. W. D.* The flowers had unfortunately fallen to pieces before they reached us.

COMPETITION AT EXHIBITIONS: "*S.*" asks if in a flower show the gardener and under gardener are ever allowed to compete from the same garden for a prize in the same class? Certainly not.

DAHLIA: *J. C. M.* Your double-faced Dahlia is simply due to the union of two stalks. It is not uncommon.

EASTER: *Almanac*, who has to provide a supply of fruit of a certain kind at Easter, is informed that that event falls during the next five years as follows:—1881, April 17; 1882, April 9; 1883, March 25; 1884, April 13; 1885, April 5.

FUCHSIAS: *R. P. W.* They are large in size, but possess no other merit. We cannot say what their names may be.

GALL ON RHODODENDRON: *C. E. W.* The excrescence is due to the attack of a fungus (Exobasidium Rhododendri). We advise you to burn the affected plants. It is Rhododendron ferrugineum, not an Azalea.

IVY ON TREES: *Subscriber.* The Ivy will probably kill the Oak trees in time, but the process is sometimes a slow one. However, if the timber of the Oak is preferred to the picturesque character of the Ivy, by all means have it removed: it will certainly do the Oak no good.

MONOGRAPHS: *C. W. D.* No.

NAMES OF PLANTS: *R. L.* 1, Athyrium Filix-fœmina rhæticum; 2, Lastrea Filix-mas cristata; 3, Woodwardia radicans; 4, Woodwardia orientalis. Neither of the Ferns you mention are hardy; they require greenhouse treatment.—*D. J.* Nephrolepis tuberosa.—*O. W.* Philadelphus mexicanus.—*T. H. Balding.* Polemonium cœruleum, white variety; 2, Tradescantia virginica; 3, Geranium sanguineum; 4, Lastrea Filix-mas.—*D. C. P.* Verbascum blattaria.—*J. MacDonald, Faldfield.* 1, Origanum Dictamnus; 2, Crucianella stylosa; 3, Verbascum phœniceum; 4, Sedum kamschaticum; 5, Statice armeria, white variety; 6, Abutilon vexillarium.—*Inquirer.* 1, Aerides odoratum; 2, Vanda Roxburghii.—*J. H. Crookbank.* 1, Centaurea montana; 2, a Verbascum, not recognised, possibly a mule; 3, Spiræa hypericifolia; 4, Dabeocia polifolia; 5, Anchusa sempervirens; 6, Potentilla tridentata.—*James Cocker & Son.* Thermopsis fabacea.

PANSIES: *J. C. & Co.* A strain of large, brightly coloured, and consequently very showy fancy Pansies for border cultivation, but certainly not equal to the finest Scotch strains as show flowers.

SHRUBS UNDER TREES: *A. B.* There is nothing evergreen so good as Ivy for planting under the shade of large trees. Hypericum calycinum is useful for the same purpose.

TANNER'S BARK: *A. B.* This has not much value as a dressing, but is sometimes useful on heavy soils to assist in lightening them. It would be much more beneficial if charred before being used, that is, "smother-burned" in a heap in the same way as ballast.

VALUATION: *A. B.* No doubt the landlord, in valuing such things as you mention, acts well within his rights; but it is for you to consider whether it will pay you to accept his terms. If you do take possession of the land on the terms mentioned, you should protect yourself by stipulating that the same things shall be valued when you give it up, to make the bargain a fair one between both parties.

☞ FOREIGN SUBSCRIBERS sending Post-office Orders are requested to make them payable at the post-office, King Street, Covent Garden, London, and at the same time to inform the Publisher at the office of this Journal.

COMMUNICATIONS RECEIVED.—G. N.—W. S.—W. H.—W. C.—T. C. B.—B. S. W.—G. D.—J. S.—W. B. H.—W. Foster.—A. Warel.—T. D. H.—Visitor.—H. L. & Co.—Inquirer.—C. F. C.—C. H.—H. G.—T. E.—A. R.—G. E. B.—R. J. L.—E. P.—W. T. T. D.—F. S.—E. Turnbull.—J. H. J.—R. T. C.—J. A. C.—A. Van G.—T. N.—C. L.—W. H. C.—W. N. (next week).—T. C.

Markets.

COVENT GARDEN, June 24.

Business remains much the same as last week, with a large supply of good Strawberries from Southampton, which are making good prices. *James Webber, Wholesale Apple Market.*

FRUIT.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Apricots, per box	2 0– 3 0	Lemons, per 100	6 0–10 0
Cherries, per box	1 6– 2 6	Melons, each	3 6– 7 0
Cob Nuts, per lb.	1 0– 1 6	Oranges, per 100	6 0–12 0
Gooseberries, green, per ½-sieve	4 6– 5 0	Peaches, per doz.	12 0–18 0
Grapes, per lb.	1 6– 5 0	Pine-apples, per lb.	2 0– 5 0
		Strawberries, per lb.	1 0– 5 0

VEGETABLES.—RETAIL PRICES.

	s. d. s. d.		s. d. s. d.
Asparagus, Sprue, per bundle	1 0– ..	Horse Radish, p. bun.	4 0– ..
— English, p. 100	5 0– 6 0	Lettuces, Cabbage, per doz.	0 6– 1 6
Beans, French, p. lb.	0 9– ..	Mint, green, bunch	0 4– ..
Beet, per doz.	2 0– 4 0	Mushrooms, p. baskt.	1 6– 2 0
Cabbages, per doz.	1 0– 2 0	Onions, per bushel	5 0– 7 0
Carrots, per bunch	0 8– ..	— Spring, per bun.	0 6– ..
— New, per bunch	0 9– ..	Parsley, per lb.	0 9– ..
Cauliflowers, doz.	3 0– 6 0	Peas, English, per qt.	2 0– ..
— English, each	1 0– ..	Potatos (new), per lb.	0 2– 0 6
Celery, per bundle	1 6– 2 0	Radishes, per bun.	0 2– ..
Chilis, per 100	3 0– ..	Small salading, pun.	0 4– ..
Cucumbers, per doz.	8 0–12 0	Spinach, per bushel	2 6– ..
Endive, per 2 doz.	1 6– 3 0	Tomatos, per dozen	2 0– 3 0
Garlic, per lb.	1 0– ..	Turnips, new, bunch	0 8– ..
Herbs, per bunch	0 2– 0 4	Vegt. Marrows, doz.	8 0– ..

New Potatos:—Jersey Kidney, 10*s.* to 12*s.* per cwt.; Round, 9*s.* to 10*s.*; French Round, 8*s.* to 9*s.*

PLANTS IN POTS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Arum Lilies, p. doz.	6 0–12 0	Hydrangea, per doz.	12 0–24 0
Bedding Plants, various, per doz.	1 6– 2 6	Lilium eximium, doz.	30 0–60 0
Begonias, per doz.	6 0–18 0	Lobelia, per dozen	4 0– 8 0
Bouvardias, per doz.	12 0–24 0	Mignonette, per doz.	5 0– 9 0
Calceolaria, per doz.	6 0–12 0	Musk, per dozen	2 6– 6 0
— Herbaceous, doz.	6 0– 9 0	Myrtles, per doz.	6 0–12 0
Cyperus, per dozen	4 0– 9 0	Nasturtiums, dozen	4 0– 6 0
Dracæna terminalis	30 0–60 0	Palms in variety, each	2 6–21 0
— viridis, per doz.	12 0–24 0	Pelargoniums, dozen	9 0–24 0
Erica various, per dozen	12 0–30 0	— Ivy-leaved, doz.	4 0– 8 0
Euonymus, various, per dozen	6 0–18 0	— Tricolor	4 0–12 0
Ferns, in var., doz.	4 0–18 0	— scarlet, per doz.	4 0– 9 0
Ficus elasticus, each	1 6– 7 6	Roses, Hybrid Perpetual, per doz.	18 0–36 0
Foliage Plants, various each	2 0–10 6	— Fairy, per dozen	6 0–10 0
Fuchsias, per dozen	9 0–15 0	Spiræa, per dozen	6 0–18 0
		— palmata, doz.	18 0–30 0
		Stocks, per dozen	4 0– 8 0

CUT FLOWERS.—WHOLESALE PRICES.

	s. d. s. d.		s. d. s. d.
Abutilon, 12 blooms	0 4– 0 6	Mignonette, 12 bun.	6 0– 9 0
Anemone, 12 bun.	3 0– 6 0	Pansies, 12 bunches	2 0– 6 0
Arum Lilies, per dozen	3 0– 6 0	Pelargoniums, 12 sprays	6 0– 1 0
Azalea, 12 sprays	0 6– 1 0	— zonal, 12 sprays	0 3– 0 9
Bouvardias, per bun.	1 0– 4 0	Pinks, white, 12 bun.	3 0– 9 0
Calceolaria, p. bunch	0 9– 1 0	Primula, double, per bunch	1 0– 1 6
Carnations, per dozen	1 0– 3 0	Ranunculus, p. doz.	4 0– 8 0
Cornflower, per doz.	6 0– 9 0	Roses (indoor), doz.	1 0– 9 0
Eucharis, per doz.	4 0– 6 0	— Roses, Fr., doz.	2 0– 6 0
Forget-me-not, 12 bunches	3 0– 9 0	Spiræa, 12 sprays	0 6– 1 0
Gardenias, 12 blms.	2 0– 8 0	Stephanotis, 12 spr.	3 0– 6 0
Heliotropes, 12 sp.	0 6– 1 0	Tropæolum, 12 bun.	1 0– 3 0
Lily of the Valley, per bunch	1 6– 2 6	Tuberoses, per dozen	2 0– 4 0
		Wallflowers	4 0– 9 0

SEEDS.

LONDON: *June* 23.—The attendance at market today was very small, and the amount of business doing was in proportion. No transactions are to be noted in Clover seed at the moment. Mustard and Rape still continue to be enquired for, but there is hardly so much doing in them as was the case last week. Canary is still slow of sale, while Hemp is almost entirely neglected. There is an increased enquiry for Trifolium, which may be ascribed to the extremely poor prospects of the new crop here, combined with the absence of any definite information from France, as to the probable extent of the yield there. Blue Peas continue to sell freely; Haricot Beans in fair demand.—*John Shaw & Sons, Seed Merchants*, 37, *Mark Lane, London, E.C.*

HAY.

Tuesday's Whitechapel Market report states that there was a large supply of fodder, which was chiefly of an inferior quality. Trade was dull, at the following quotations:—Prime Clover, 100*s.* to 130*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 105*s.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 39*s.* per load.—On Thursday there was a moderate supply of hay and straw on sale. The trade was dull, and prices were rather easier for hay, as follows:—Prime Clover, 100*s.* to 130*s.*; inferior, 60*s.* to 95*s.*; prime meadow hay, 80*s.* to 102*s.* 6*d.*; inferior, 30*s.* to 70*s.*; and straw, 30*s.* to 39*s.* per load. — Cumberland Market quotations:—Superior meadow hay, 98*s.* to 110*s.*; inferior, 40*s.* to 75*s.*; superior Clover, 120*s.* to 132*s.*; inferior, 84*s.* to 100*s.*; and straw, 33*s.* to 40*s.* per load.

POTATOS.

The Borough and Spitalfields Markets reports state that there has been a fair supply on sale, and trade ruled quiet at the following quotations:—Champions, 100*s.* to 120*s.* per ton; Victorias, 100*s.* to 120*s.*; German reds, 3*s.* to 5*s.* per bushel; New Lisbon, 8*s.* 6*d.* to 10*s.* per cwt.; Malta spring, 9*s.* to 10*s.*; Jersey kidneys, 12*s.* to 14*s.*; Cherbourg round, 9*s.*; do. kidneys, 11*s.*—Last week's imports were 1316 boxes and 5382 packages from Lisbon, 590 bags from Harlingen, 642 cases from Barfleur, 5 barrels from La Palmas, 167 sacks from Boulogne, 200 bags Hamburg, 237 baskets Rotterdam, and 2500 packages from Jersey.

Government Stock.—On Monday the closing price of Consols was, for delivery, 98⅝ to 98¾, and 98 11/16 to 98 13/16, for the account. Tuesday's figures were, for delivery, 98½ to 98⅝, and 98⅝ to 98¾ for the account. The final quotations of Wednesday were 98½ to 98⅝, for both account and delivery. On Thursday Consols closed at 98½ to 98⅝ for delivery, and 98 9/16 to 98 11/16 for the account.

HUGH LOW AND CO.

Have pleasure in informing their Friends and the Public that their

STOCK OF ORCHIDS IS VERY EXTENSIVE,

and well worth the notice of intending Purchasers, who are cordially invited to an Inspection of the Plants.

At the Clapton Nursery Orchids are grown in Eleven Houses, one of which is 155 *ft. in length and* 30 *ft. in width.*

Mr. Boxall has recently returned, bringing with him, in cases measuring over 30 tons, the fine Collection of PHALÆNOPSIS made during his stay in the Philippine Islands.

Eleven Span-roofed Houses, of an aggregate length of 976 feet, have been added to the Glass Structures of the Nursery, to meet the increasing demand for Ornamental and Flowering Plants.

CLAPTON NURSERY, LONDON, E.

CARSON'S PAINT.

PATRONISED BY

HER MAJESTY the QUEEN. H.R.H. the PRINCE of WALES. H.R.H. the DUKE of EDINBURGH.

The British Government. The Indian Government. The Colonial Governments. 15,000 of the Nobility, Gentry, and Clergy.

IS EXTENSIVELY USED FOR ALL KINDS OF

1 Cwt. and Oil Mixture Carriage Free.

OUTDOOR WORK.

Discount—Five per Cent. for Cash.

IT IS SPECIALLY APPLICABLE TO

WOOD, IRON, BRICK, STONE and COMPO, CONSERVATORIES, GREENHOUSES, FRAMES, &c.

SOLD IN ALL COLOURS. PRICES, PATTERNS, and TESTIMONIALS FREE.

WALTER CARSON & SONS,

LA BELLE SAUVAGE YARD, LUDGATE HILL, LONDON, E.C.; 21, BACHELORS' WALK, DUBLIN.

ORCHID BASKETS (great reduction in).—Teakwood Rods, rounded edges, made with strong copper or galvanised wire. Every kind made for growing Orchids, at 50 per cent. less than usually charged. Sample sent carriage free on receipt of twelve stamps. TEAK RODS supplied, prepared and drilled, ready for making up.

ALFRED GRANT AND CO., Steam Works, 39½, Leather Lane, London, E.C.

HAY RICK CLOTHS.

To cover 20 loads	20 feet	by 24 feet,	£2	13	2
To cover 25 ,,	24 ,,	by 30 ,,	3	15	2
To cover 30 ,,	30 ,,	by 30 ,,	4	14	5
To cover 35 ,,	30 ,,	by 34 ,,	5	7	3

All other sizes at proportionate rates. Carriage paid to any railway station in England. Terms, cash. Samples on application.

THOMAS H. HUNKIN, St Sampson's, Guernsey.

SILVER SAND, fine, 10*s.* per ton; coarse, 11*s.* per ton—by truckloads. Kent, Surrey, Sussex and Hampshire PEATS; Surrey and Sussex LOAM—by truckloads. Sand, Peat, and Loam packed in bags, sacks, and casks. Write for particulars to

W. SHORT, Horticultural Depôt, Reigate, Surrey; and 7, Fendale Street, Bermondsey, London, S.E.

Gather Honey from Your Flowers.

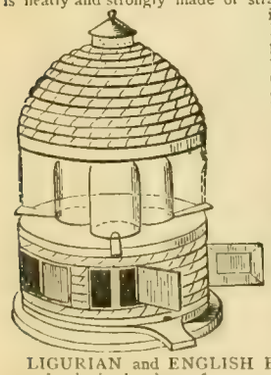
NEIGHBOUR'S Celebrated BEEHIVES.

PHILADELPHIA EXHIBITION, 1876.

PARIS EXHIBITION, 1867, 1878.

Three Silver Prize Medals awarded George Neighbour & Sons.

The IMPROVED COTTAGE BEEHIVE, as originally introduced by G. Neighbour & Sons, working three bell-glasses, is neatly and strongly made of straw; it has three windows in the lower Hive. This Hive will be found to possess many practical advantages, and is more easy of management than any other Beehive that has been introduced.



Price, complete £1 15 0
Stand for ditto 0 10 6

Also BAR FRAME HIVES of most approved construction, at 7*s.* 6*d.*, 12*s.* 6*d.*, to 25*s.* each, and Philadelphia Frame Hives, complete with Cover and Stand, 42*s.*

An Italian Alp Queen, with full directions for uniting to Black Stocks, at current prices.

LIGURIAN and ENGLISH BEES.—Stocks and swarms may be obtained as heretofore.

THE APIARY. By Alfred Neighbour. 5*s.*, postage 5*d.*

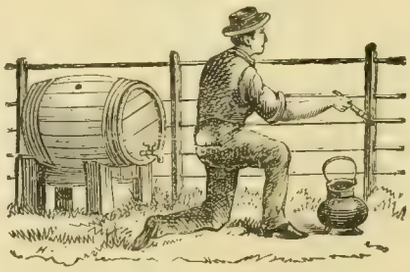
A newly arranged CATALOGUE of other improved Hives, with Drawings and Prices, sent on receipt of two stamps.

GEO. NEIGHBOUR AND SONS, 127, High Holborn, W.C., or 149, Regent Street, London, W.

Oil Paint No Longer Necessary.

HILL AND SMITH'S BLACK VARNISH, for Preserving Ironwork, Wood, or Stone.

(*Registered Trade Mark.*)



This Varnish is an excellent substitute for oil paint on all outdoor work, while it is fully two-thirds cheaper. It was introduced upwards of thirty years ago by the advertisers, and its genuine good quality, notwithstanding a host of unprincipled imitators, is fully attested by its constantly increasing sale. It may be applied by an ordinary labourer, requires no mixing or thinning, and is used cold. It is used in the grounds at Windsor Castle, Kew Gardens, and at the seats of many hundreds of the Nobility and Gentry, from whom the most flattering testimonials have been received.

Sold in casks of about 30 gallons each, at 1*s.* 6*d.* per gallon at the Manufactory, or 1*s.* 8*d.* per gallon carriage paid to any Station in the Kingdom

Unsolicited Testimonial.

"*Piercefield Park, June* 21, 1876.—Sirs,—I have this day forwarded from Chepstow to your address a black varnish cask, to be filled and returned with as good Varnish as the last we had, which I candidly admit was the best we ever had. Address Varnish to Piercefield Park, Chepstow.—I am, Sirs, yours respectfully, Wm. Cox."

CAUTION.—Hill & Smith would particularly warn their Customers against the various cheap Varnishes now so much advertised.

H. & S.'s Varnish has been an article of common use on most of the large estates in the kingdom for upwards of thirty years; and their constantly increasing trade in it, and the numerous Testimonials they receive, stamp it as a truly genuine article. Every cask is legibly marked with their name and Registered Trade Mark as above, without which none is genuine.

Large Illustrated CATALOGUE of Fencing, Hurdles, Field and Entrance Gates, &c., sent free on application to

HILL AND SMITH, Brierley Hill Ironworks, Staffordshire; 118, Queen Victoria Street, London, E.C.; and 180, Buchanan Street, Glasgow.

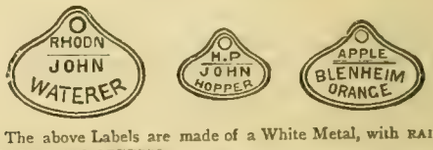
WATERPROOF TREE and PLANT LABELS, specially adapted for Garden Purposes. They stand all weathers, and by using our Prepared Pencil the writing cannot be effaced, and remains discernible at all times. For sample and price apply to the Manufacturers,

FISHER, CLARK AND CO., Boston.

PAINT.—Large quantity for sale, specially prepared for Horticultural Buildings, Greenhouses, &c., 2½*d.* per lb.—all colours. Improved Zinc White Paint, 4½*d* per lb. Cash.—A. LEETE & CO., 129, London Rd., Southwark, S.E.

Under the Patronage of the Queen.

J. SMITH'S IMPERISHABLE STRATFORD LABELS.



The above Labels are made of a White Metal, with raised black-faced letters

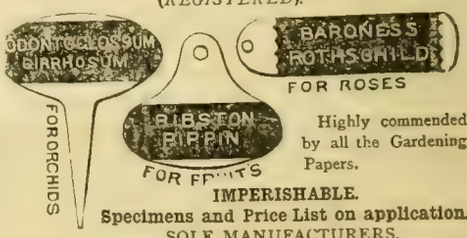
The *Gardeners' Magazine* says:—"We must give these the palm before all other plant labels, as the very first in merit."

Samples and Price Lists free.

J. SMITH, The Royal Label Factory, Stratford-on-Avon.

THE "ACMÉ" LABELS

(*REGISTERED*).



Highly commended by all the Gardening Papers.

IMPERISHABLE.

Specimens and Price List on application.

SOLE MANUFACTURERS,

STEVENS & PINCHES,

48, LEICESTER SQUARE, W.C., and 27, OXENDON STREET, S.W.

GARDEN STAKES, LABELS, VIRGIN CORK, MATS, RAFFIA, &c. None cheaper. Prices of WATSON AND SCULL, 90, Lower Thames St., London, E.C.

NETTING for FRUIT TREES, SEED BEDS, RIPE STRAWBERRIES, &c.

TANNED NETTING for protecting the above from Frost, Blight, Birds, &c., 2 yards wide, 3*d.* per yard, or 100 yards 20*s.*; 4 yards wide, 6*d.* per yard, or 50 yards 20*s*

NEW TANNED NETTING, suited for any of the above purposes, or as a Fence for Fowls, 2 yards wide, 6*d.* per yard; 4 yards wide, 1*s.* per yard; ¼-inch mesh, 4 yards wide, 1*s.* 6*d.* per yard.

TIFFANY, 5*s.* and 6*s.* per piece of 20 yards.

LAWN TENNIS NETS from 16*s.* to 25*s.*

EATON AND DELLER, 6 & 7, Crooked Lane, London Bridge.

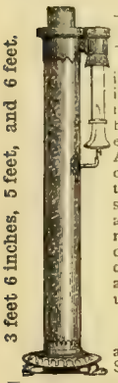
"EUREKA" FUMIGATORS are the best and cheapest for all purposes. May be had from all Seedsmen, &c., 2s., 2s. 9d., 4s. 3d., 6s. 6d. each, package extra. TOBACCO CLOTH, 10d. per pound. SEED DRILLS. CAP GLASSES, SYRINGES, &c. LISTS free. SYERS, Bowdon, Cheshire.

X PIPES.—PIPES.—PIPES. X

The Cheapest House in the Trade for HOT-WATER PIPES and CONNECTIONS. 4-inch Pipes, 1s. 11d. per yard. Other sizes equally low.

F. AND J. SILVESTER, Castle Hill Foundry, Engineering and Boiler Works, Newcastle, Staffordshire.

By Royal Letters Patent.



3 feet 6 inches, 5 feet, and 6 feet.

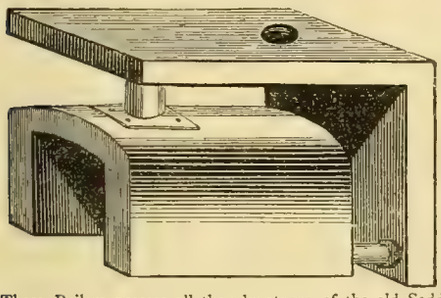
RITCHIE'S GAS LIGHTING and HEATING APPARATUS.

No Flue required. Specially adapted for Drying Newly-built Houses. Silver Medal awarded in 1878 at Wolverhampton Exhibition. The deleterious and unpleasant vapours arising from the burning of ordinary coal gas are prevented from escaping, and are made to circulate within the Apparatus or Stove in such a way that they become thoroughly condensed, and are carried off in the form of a liquid, in which will be found the sulphur and other poisons which are drawn from and would in the ordinary way be left in and mixed with the surrounding atmosphere; consequently health is not prejudicially affected, Works of Art, Plants, Pictures, Books, Furniture, &c., are not injured, and the atmosphere is rendered uncontaminated and perfectly healthy.

Prices from 50s. to £10 10s.

Full particulars and testimonials forwarded on application to RITCHIE AND CO., 23, St. Swithin's Lane, London, E.C.

JONES'S PATENT "DOUBLE L" SADDLE BOILER.



These Boilers possess all the advantages of the old Saddle Boiler, with the following improvements—viz., the water-space at back and over top of saddle increase the heating surface to such an extent that a "PATENT DOUBLE L SADDLE BOILER" will do about twice the amount of work with the same quantity of fuel; the cost of setting is also considerably reduced, and likewise the space occupied; at the same time these Boilers are simple in construction, and being made of wrought-iron are not liable to crack. They are made of the following sizes:—

Sizes.			To heat of 4-in. Pipe.	Price.		
High.	Wide.	Long.	Feet.	£	s.	d.
20 in.	18 in.	18 in.	300	7	0	0
20 ,,	18 ,,	24 ,,	400	8	0	0
20 ,,	18 ,,	30 ,,	500	9	0	0
24 ,,	24 ,,	24 ,,	700	12	0	0
24 ,,	24 ,,	30 ,,	850	14	0	0
24 ,,	24 ,,	36 ,,	1000	16	0	0
24 ,,	24 ,,	48 ,,	1400	20	0	0
28 ,,	28 ,,	60 ,,	1800	25	0	0

Larger sizes if required.

From Mr. CHARLES YOUNG, *Nurseries, Balham Hill, S.W., May* 29, 1873.

"Having given your Patent 'Double L.' Boilers a fair trial at my Nurseries, I beg to say that they are most satisfactory. I consider them the best in use, and without doubt the most economical of all boilers; they will burn the refuse of other tubular boilers I have in work."

PRICE LISTS of HOT-WATER PIPES and CONNECTIONS, with Boilers, of all sizes and shapes; or ESTIMATES for HOT-WATER APPARATUS, erected complete, will be sent on application.

J. JONES AND SONS, Iron Merchants, 6, Bankside, Southwark, London, S.E.

When ordering Boilers please refer to the above advertisement.

JONES & ATTWOOD.

ENGINEERS and IRONFOUNDERS, STOURBRIDGE.

JONES'S IMPROVED EXPANSION JOINT.

THE BEST HOT-WATER JOINT.

Medal Awarded Horticultural Show, Aston, 1875.

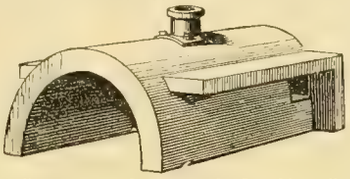
SIMPLE, DURABLE, NEAT, CHEAP.

Specially adapted for CHURCHES, SCHOOLS, MANSIONS, PUBLIC BUILDINGS, &c.

Illustrated CIRCULAR and Price LIST; also Estimates for Heating with the most improved BOILERS, EXPANSION JOINT PIPES, or COILS, on application.

Silver Medal, 1874.

THE TERMINAL SADDLE BOILER.—First-class Certificate, 1867; Highly Commended, 1873; and First-class Certificate, 1875.



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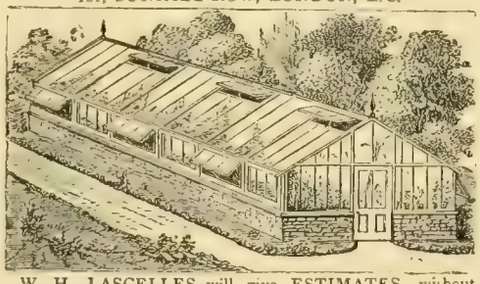

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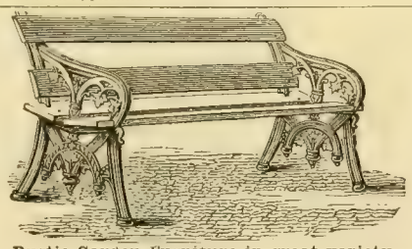

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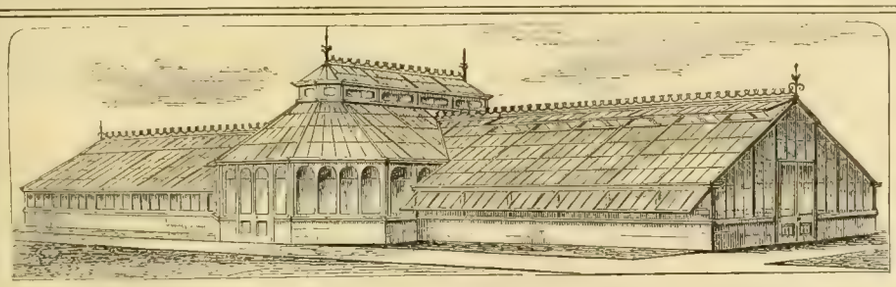

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IMPROVER, under a Head Gardener.—Age 20.—Mr. FRANCIS LEE, Preston, Uppingham.

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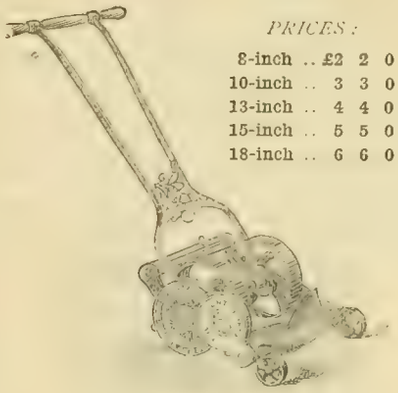

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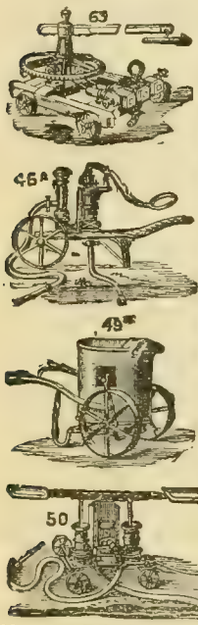

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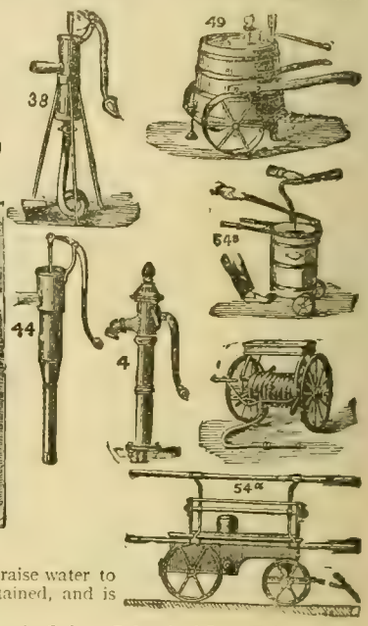

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